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PUBLIC DOCUMENTS

OF THE

STATE OF WISCONSIN

BEING THE REPORTS OF THE VARIOUS

STATE OFFICERS, DEPARTMENTS AND INSTITUTIONS

For the Fiscal Term Ending June 30, 1912

VOLUME 11

MADISON
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1914

NORTHERN WISCONSIN COLONY
AND TRAINING SCHOOL
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NINTH BIENNIAL REPORT

OF THE

FREE LIBRARY COMMISSION

OF WISCONSIN

1911-12

Published by Authority of Law

MADISON
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1912

Wisconsin Free Library Commission

Ex-Officio:

C. R. VAN HISE, *President of the University of Wisconsin,* Madison.

CHARLES P. CARY, *State Superintendent,* Madison.

REUBEN GOLD THWAITES, *Secretary State Historical Society,* Madison.

Appointed by the Governor:

MRS. CHARLES S. MORRIS, Berlin.

WILLIAM H. HATTON, New London.

Officers:

WILLIAM H. HATTON, *Chairman.*

REUBEN GOLD THWAITES, *Vice-Chairman.*

MATTHEW S. DUDGEON, *Secretary.*

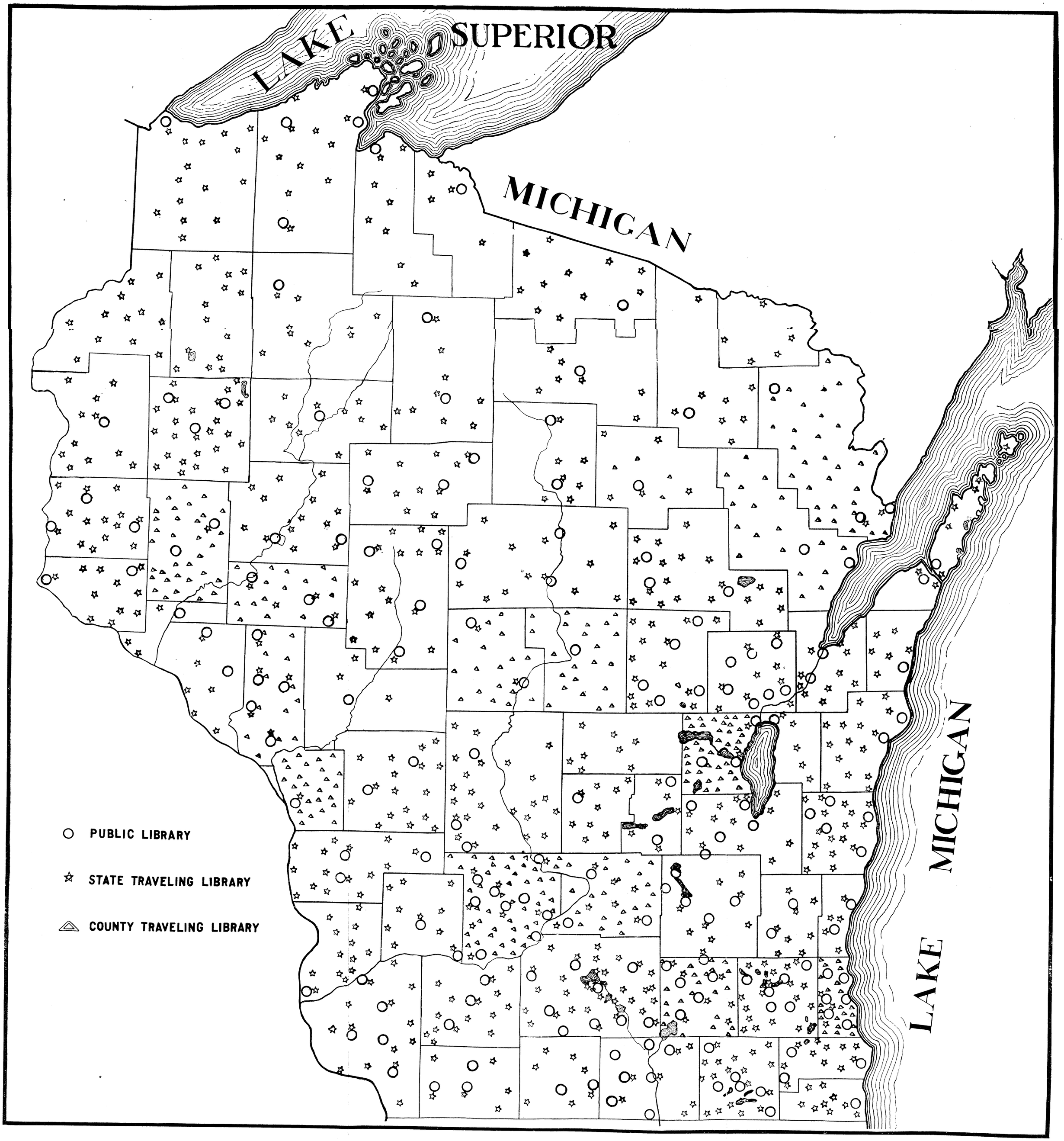
MADISON, July 1, 1912.

To Hon. FRANCIS E. MCGOVERN, *Governor:*

SIR:—I have the honor to transmit, herewith, the ninth biennial report (1911–1912) of the Wisconsin Free Library Commission, in accordance with the provisions of section 383a, of the Wisconsin Statutes of 1898.

Very respectfully,

W. H. HATTON,
Chairman.



WHERE LIBRARIES ARE LOCATED

WISCONSIN FREE LIBRARY COMMISSION

SECRETARY'S REPORT

It is a matter of some interest to the state that the Wisconsin Free Library Commission is under the state law engaged in a greater number of activities than any commission in the country. It is the only commission which is the administrative body in control of a legislative reference department. It is also the only commission which conducts a library school. As the commission is now organized it is administered through four departments: one department engaged in establishing, organizing and maintaining public libraries, one conducting the traveling library work of the state, one an instructional department including the library school of the university which is still under the control of the commission, and the legislative reference department.

WHAT THE COMMISSION DOES

1. It helps establish, organize and maintain public libraries. If a town is large enough to support a public library, the commission begins by furnishing a traveling library which costs the locality nothing. Then it sends speakers, puts articles in the paper, writes letters and does everything in its power to explain why a library will help the town and to line up the citizens behind a movement for a public library. It advises and counsels; it furnishes lists of books to be bought and tells how to buy them; it sends workers to help catalog the books and organize the library. When the town is ready for a new building, it makes suggestions as to plans, shows pictures of buildings elsewhere, meets with the library board and gives counsel and advice. If an application is to be made for a Carnegie gift, the details are often arranged by the commission.

No matter how large or how old a library is, the commission keeps in touch with it, visits it periodically, sees that it is kept up to date, sends speakers to arouse interest, publishes lists of new books and material on new subjects, and assists in every way in making it an effective, aggressive, moral, social, educational, and utilitarian force in the community. During the biennial period the commission workers have made five hundred visits to libraries in the state, each visit extending from a few hours to several days.

2. The library commission makes librarians. Because there are not enough well trained librarians in the state of Wisconsin, the library commission six years ago established a library school to train librarians who might take charge of Wisconsin libraries. This school is now as big and, in its field, as good as any in the country. In its instruction it tends toward the practical rather than the theoretical. The instructors first show the students how to do things and then take them out to do these things in Wisconsin libraries, in Wisconsin towns, with Wisconsin people. So it occurs that while learning to work they do work for Wisconsin libraries which it would cost the libraries of the state thousands of dollars to have done by others. The school has grown so that the legislature of 1909 suggested that the university ought to coöperate by appropriating funds to assist in running it. This the university now does, although the school is still under the control of the library commission.

The commission also conducts each year a summer session of six weeks. This session is primarily to help the librarians from the smaller Wisconsin towns whose salaries are not large enough to enable them to attend the full professional course.

This work is done by the instructional department of the library school.

3. The library commission loans books where there are no public libraries. During the last two years, the commission sent out 1,949 boxes of books to communities where without them there would be little or nothing to read. These traveling libraries are small collections of books which are sent in stout, hinged boxes by the state from one community to another. They circulate free of charge except the cost of trans-

portation. The libraries are made up of the best popular books for adults and children, in fiction, history, travel, biography, science and literature. They are intended for farming communities and small villages not enjoying public library privileges. The traveling library should be kept in the most centrally located and most easily accessible place that can be found. The local postoffice is usually the best place, but it may be placed in the general store, or a private residence, and should if possible be accessible continuously or at frequent intervals. The commission sends magazines and papers to lumbering camps. Wherever there is a group of men or women or boys or girls who wish to study any subject, the commission supplies not only a box of books upon the subject but a study outline as well. The commission sends out books printed in German for the good old German citizen who is too old to learn to read English; it sends Bohemian books for the Bohemian, Norwegian books for the Norwegian, Swedish books for the Swede, Polish books for the Polock, and Yiddish books for the good citizen who can read no other language.

4. The commission helps legislators legislate. The legislative reference library is administered by the free library commission. In it you can find all that you can find collected anywhere on law making subjects and much that can not be found elsewhere. This department has helped the lawmakers of Wisconsin to understand and to frame such measures as the railroad commission law, the public utilities act, the workmen's compensation law, the corrupt practice measures, and the industrial education law. The department, of course, puts into form not its own ideas but the ideas of the legislator. Back of each bill drafted is the written request of a member of the legislature, containing definite directions and duly signed. No draftsman is permitted to draw a bill without such a written request.

5. The library commission prepares and issues publications of value.

(1) *The Wisconsin library bulletin.* A bi-monthly periodical is issued by the commission as an economical way of communicating with the libraries and library officials of the state.

(2) *Book lists.* To inform librarians as to the material which should be placed in their libraries, the commission is-

sues from time to time various carefully selected lists. Among those more recently issued are the following: (a) *Suggestive list of children's books.* A carefully compiled annotated list of about 500 titles, compiled by Helen T. Kennedy of the library school. (b) *Sociological material free or easily obtainable.* Two hundred and fifty-six titles of the best material upon sociological subjects constantly under discussion, such as conservation of natural resources, corrupt practice acts, etc. The American Library Association reissued this list for distribution outside of the state. (c) *Farm bulletins.* Lists of the best free bulletins on farm crops, the dairy herd, butter, cheese and milk, etc. (d) *Social or economic conditions, recent fiction depicting.* (e) *Civic advance and improvement.* A list of valuable material, much of which is obtainable without expense, issued because the city library as a municipal institution should assist the municipality in organized efforts for civic improvement. (f) *The monetary question.* A selected list relating to currency, banking, etc., with special reference to the Aldrich and other similar plans. (g) *Books popular with young people,* as indicated by voluntary vote. (h) *The use of the library in the schools.* (i) *Selected list on peace.* Compiled by the Wisconsin Library School, revised and approved by Lewis P. Lochner, of the staff of the World's Peace Foundation. (j) *Anthologies.* (k) *Home economics:* Free and inexpensive literature, prepared by Katherine Hahn, librarian of Stout Institute, Menomonie, Wisconsin. (l) *General references on income tax, and special references to the Wisconsin law.* (m) *Simple technical books.* The best and simplest books on various industries.

(3) *Legislative reference library bulletins.* In the past this department has issued for the use of the legislators 25 small pamphlet bulletins on legislative subjects, including bulletins on such subjects as: Accident insurance for workingmen; Blacklisting; Boycotting; Certified public accountants; Corrupt practices at elections; Exemption of wages; Initiative and referendum; Juvenile courts; Lobbying; Mortgage taxation; Municipal electric lighting; Municipal gas lighting; Municipal home rule charters; Primary elections; Proportional representation; Railway co-employment; Recall; Taxation of trust companies; Telephones, interchange of service; Tenement house legislation; Trust company reserves; Tuberculosis.

I

PUBLIC LIBRARY EXTENSION AND ORGANIZATION

The Wisconsin Free Library Commission is continually helping to establish, organize and maintain public libraries throughout the state. But some one may ask:

WHY HAVE LIBRARIES

1. Because public libraries are an essential part of a complete educational system. Wisconsin believes thoroughly in education. *Hon. William H. Hatton,* for many years a student of educational problems, says: "Public libraries are an essential part of a complete educational system. * * * A community which does not maintain a public library lacks one of the necessary elements of a complete modern educational equipment." *Hon. John B. Winslow,* Chief Justice of the Supreme Court of Wisconsin, said recently in an address: "In this great educational forward movement, it is very plain that the library is having every day a greater share. * * * With every properly equipped library which throws open its inviting doors to the public or makes its way in its snug box to the rural community, there is a distinct addition to the teaching forces of the state, for every library is a school, and every competent librarian is a teacher."

2. **Because libraries are schools for adults.** Few adults and only a part of the children of school age go to school but "A well equipped public library furnishes means whereby those who have left the school before finishing the course may continue and study. Society is required to educate the man of forty just as much as the boy of five. The public library may very properly be designated a graduate school, a type of continuation school, a school for persons of all ages."—*W. H. Hatton.*

"The public library is the university of the people. It is a dominant factor in civic efficiency," says the Ottawa (Canada) *Citizen,* in commenting upon a speech made at Ottawa by Senator Hatton.

"A college training is an excellent thing, but after all, the better part of every man's education is that which he gives himself; and it is for this that a good library should furnish the opportunity and the means."—*James Russell Lowell.*

"The public library is an adult school; it is a perpetual and lifelong continuation class; it is the greatest educational factor that we have; and the librarian is becoming our most important teacher and guide."—*Sir Walter Besant.*

3. **Because libraries are the only schools which reach the many who are workers and must earn a living while they learn.** Wisconsin without intending it is doing an educational injustice to young and old who cannot quit work in order to attend school.

Within the state of Wisconsin there is spent each year of public moneys fourteen million dollars for school purposes. All of this money is expended in order to educate that minority which has sufficient money and leisure to attend school. If it is important that educational processes reach every individual, must the public not concern itself with devising ways and means of educating that majority who must work and can learn only while they work, adults as well as children?

The only municipal institution which, morning, noon and night, week days and Sundays, summer and winter, is open to those who can spare from their work only a scant moment here and there, is the public library. The only agency which goes far afield into the rural districts and reaches the farmer and his family in his home is the traveling library. In other words, what the schools do for the minority who can quit work and attend them, the libraries must do for the majority who must work and can learn only as they work.

There are approximately 8,000 school buildings in the state for the use of the minority who go to school. There are only 73 public library buildings in the state for the use of the other inhabitants of the state. There are 16,000 teachers in the state to teach this same minority who go to school. There are only 213 librarians in the state (less than one-half of that number devote their entire time to library work) who are prepared to serve the two millions to whom libraries should be made accessible.

No one would for a moment suggest the decrease of the funds spent for the maintenance of schools. The query presents itself, however, whether or not the worker who cannot go to school is not worthy of more educational attention than he has received, and whether or not he is in a position to complain that he has been slighted in the educational procedure of the state.

4. **It will help and supplement the vocational school work.** There are already in the libraries of the state many books that are helping in the industrial education of citizens, young and old. The state realizes that it must help young people by establishing vocational schools and otherwise. Every person, whether in or out of one of these regular schools, needs reading matter collateral to the industry he is studying, and unable to buy for himself, must go to the library.

5. **The library helps workers to do their work.** Every man woman and child in the state has a job at which other persons have worked, and about which there is something in print which would make it possible for him to do better work. A successful farmer in Dane county, after he had farmed for fifty years, remarked that he had lost money all his life because he had not read up properly on fertilizers and fertilizing. A man in a big concern in Milwaukee found his job was disappearing because his department was to be abolished. He went to the library, found books that explained fully the work of a new department, and instead of stepping out of the old job into idleness, and poverty, he stepped into a better job which paid him more money. The library will help the home worker too. If the housewife would read what the library has to offer in domestic science, her product would not be so often invidiously compared with that which "mother used to make." More reading on the part of mothers would decrease infant mortality. The library also supplies information for mechanics, as well as for working men of all classes. There are books that will help a hod carrier to become a brick layer, and that will teach the electrician's helper something of the science back of electrical work. The Wisconsin Library Commission only a few weeks ago sent out to the libraries of the state a carefully selected list of this sort of books. The public

official can be helped in his work. The city engineer of more than one city in the state is trying disastrous street-building and street-oiling experiments which have been unsuccessfully tried elsewhere over and over again. The failures are fully recorded and explained in print, and a ten-cent pamphlet might have saved the city thousands of dollars had the city officials given the city librarian an invitation to collect data on street construction and street oiling before they undertook the work.

6. The library furnishes rest, relief and recreation for tired workers. Sometimes after we have worked hard, we need rest and relief more than anything else, and we are entitled to it. "I can conceive of no healthier reading for a boy, or girl either than Scott's novels, or Cooper's, to speak only of the dead," says James Russell Lowell. A good love story may do a tired washerwoman more good than a treatise on a washing compound. A book of humor and wit which Lincoln would have enjoyed, or a stirring historical novel, or a tale of adventure, or even a detective story,—often one of these refreshes and is worth much to us. All of these are in your city library and at your disposal.

7. It helps make intelligent citizens. "How are we to make sure of that high quality of citizenship which will be necessary in such a democracy as we shall have? * * * I have no doubt that the part of the library will be no insignificant one. * * * Doubtless the usefulness of the library will develop year by year along lines either not now thought of or only dimly perceived, until it shall become a very center of uplifting work, from which shall radiate in all directions the influences which make for human betterment and civic righteousness."—*Chief Justice John B. Winslow.*

No matter what you think of the income tax in Wisconsin. you must concede that it was the duty of every voter to study the matter. Did you know that every library in the state had a carefully seclected list of material on all sides of the income tax question sent out by the commission? Did you know that the library commission sent out a complete list of material on all phases of the monetary question, selected lists on commission form of government, on parcel post, on primary elections, on

tuberculosis, on water power, on workmen's compensation, and on many other public questions? Did you know that your city library has a list of material easily obtainable which will tell you and your fellow townsmen what has been done in other towns and what must be done in your town in order to build up the city, give it better streets, advance it industrially, create a larger country trade, help the neighboring farmers, and improve the city and its tributary region in finance, morality and beauty?

8. The library builds up good morals. "Good books are great things to make good people," wrote a preacher to the commission when asking for a travelling library for his rural community. At any rate, a boy at home with a book in his hand is better than a boy on the street corner with a cigarette in his mouth. And if the older boy who works all day wants to find a warm, pleasant place to spend his evening, he can go to the library. Is there any other place in your town where he can spend an evening except the saloon?

9. The library is more democratic than any other institution in the city. The churches admit an individual to membership because of his beliefs. Colleges, academies, and even trade schools provide entrance examinations which are well calculated to exclude many. As a matter of fact not more than one child in twenty ever finishes the high school and only one in one hundred and twenty ever enters college. The saloon may be the poor *man's* club, but it is not the poor *woman's* club and for her it furnishes no opportunity. It is the function of the library, however, to serve all; to make readily accessible to every individual in the community the printed material of value to him. No questions are asked involving either dogma, intellectual equipment, age, or sex. The library is therefore a more democratic institution than church or school or saloon.

10. By its co-operative principle, the library makes one dollar do the work of many. Instead of each of us buying for ourself we ought to co-operate—pool interests—buy books that everybody can read. Buy a book for your own private library, and you read it yourself. Pay a dollar in taxes for a library book, and before the book is through working, twenty-five or thirty persons will have read it.

11. What some wise ones think of libraries.

Benjamin Franklin:

If any one ever had more hard common sense than Andrew Carnegie, who now spends his spare money building public libraries, it was old Benjamin Franklin; and Benjamin Franklin founded the first free public library one hundred eighty one years ago in Philadelphia.

William McKinley:

"There is no way in which a community can more benefit itself than in the establishment of a library which shall be free to all citizens."

Theodore Roosevelt:

"After the church and the school, the free public library is the most effective influence for good in America."

William Jennings Bryan:

"The system of free public libraries now being established in this country is the most important development of modern times."

In short, we ought to have libraries because: Back of all library work is the big fact that there is somewhere something in print, in book, pamphlet, periodical, which is of value to every individual. In some cases, a wholesome novel or humorous sketch re-creates by relieving and resting and entertaining a weary man or woman. Sometimes a book, for example a well written biography of Lincoln, or a book on electricity, awakens sleeping ambitions and dormant energies. Sometimes a book does a good work by filling in the time which an idle boy or man might have spent on the street corner. Sometimes a book gives information which makes it possible for a man, a woman or a child to do better work.

Few know what there is in books which will re-create, inspire, entertain, and help. Some are too poor to buy the book they need, others lack the ambition to want the book. *It is the function of the library and of the library commission, therefore, to procure and place in each citizen's hand the particular book that will help him do his work and live his life.*

WHAT ONE LIBRARY DID

Thirty years ago a public library was established in a small town, with the desire to give to the boys and girls of the community the freedom to "browse" among the books, that is so stimulating a feature of the good home library. This public library was modeled on the plan of a good home library broadened by adding a wider variety of clean and wholesome books. It was open, at first, but twice a week.

With many of the boys, the first results were disappointing. For instance four lads who often came together to the library would each draw a volume of the lightest fiction or adventure and evidently exchanged these, and others they borrowed in town, among themselves, so that each read a great number of volumes. The appetite seemed to grow with the supply and the boys were reading far too much of the kind. They browsed among the shelves, however, and the building of a local electric light plant brought to their minds a volume entitled "Electricity in the Service of Man". which they had seen on the shelves of the library. They dropped all other books for this, which any librarian would have thought beyond their range. Soon they had a "woodshed" converted into an experiment station and, with some companions, were clamoring for other scientific books. Workers with even meager knowledge of electrical equipment were rare at the time and one of these boys soon drifted west, invented an electrical device to be used in mines and became a successful and well-to-do man of affairs at an age when many young men are leaving college. He had seemed a rather stolid boy, tho' of clean habits, until the library gave him the point of contact he needed. Another of the four invented a successful electrical device and has sales agencies in European centers as well as in America. Two others are college graduates. One has succeeded remarkably in training boys in an academy and the other is a successful business man in a large city.

The woodshed drew other boys with an attraction that would have made a public school famous. Two of these boys who loved out-of-door things ran across a leaflet by H. H. Ballard which led them to start an Agassiz club, and put them in touch with the Smithsonian Institute. Later one of them

travelled widely for the Smithsonian and other scientific institutions and the other became a professor of botany in a great university.

These instances are recalled mainly as a reason for encouraging children to browse among the books for older people. Contrive as we may, many boys and girls do not get out of their beaten tracks of thought and really find themselves except as they fairly stumble on a page or book that opens new fields and spurs them to use latent talents. We continually smother leaders like Burbank and Edison by insisting on a narrow range of reading and study and work that seems to us best suited to the needs of the average boy.

Does not our customary differentiation of books and departments in libraries too often keep boys and girls absorbed and satisfied within a narrow range, until they lose freshness of view and courage to grapple the unusual?

A good library, freely roamed, gives a reader glimpses of outlying opportunities that, more often than we know, rouse latent ambitions and capacities.

II

LEGISLATIVE REFERENCE DEPARTMENT

DR. CHARLES MCCARTHY, CHIEF.

During the last session of the legislature and also during the special session, this department has as heretofore maintained a bill-drafting force. While a large number of bills, the framing of which required comparatively little close study or special skill, were drawn under the direction of the legislators, some of the measures upon which the department was engaged were such as to require extended preliminary study. These measures included the following: the incime tax law, the corrupt practices act, the initiative and referendum provisions, the water power law, the act establishing the industrial commission and defining its powers, the workmen's compensation act, and the various measures providing for industrial education.

In addition to assisting in the preparation of legislation of this type the department has another and no less important function. By furnishing data and draftsmanship for bills it has made it possible for the legislator without legal knowledge to put his ideas and convictions into proper legislative form; it has furnished to the laymen something of a lawyer's skill in drafting; it has given the farmer and mechanic a legislative equality with the skilled lawyer, and has thus in many cases greatly improved his ability to serve his district.

At times it has been necessary for the commission to employ special assistants in order to obtain the requisite skill. During the last session Prof. D. O. Kinsman, of the Whitewater Normal School, was brought to Madison and employed for several months upon the preparation of the income tax bill. William Duffus has also been employed for many months upon the various phases of the immigration problem and the problem of the development of the undeveloped resources of the state.

It should be noted, however, that fortunately for the state much work has been done and much information gathered

without any expense whatsoever to the state. During the summer of 1910 Dr. McCarthy visited Europe and gathered valuable data relating to the problems of industrial education. This was included in the report of the committee which was then at work upon the problem of legislation for vocational training. In the same trip he also gathered information which was of value in framing the workmen's compensation law. Immediately after the last session, John C. Sinclair, a graduate of the University of Minnesota, and a lawyer by profession, who had become interested in the work of the department and had rendered valuable assistance in bill drafting, went to Europe at his own expense and made an extended study of various coöperative institutions. Upon his return he entered into the employ of the board of public affairs and developed a valuable report upon various phases of coöperation, having back of his investigation in this country the background of his European study. The chief of the department who had established a close relationship with the Bureau of municipal research in New York city, was able to secure for the Board of public affairs the coöperation of that bureau. As a result much valuable investigation work has been carried on by those who were receiving no compensation from the state of Wisconsin. The department has also been a general clearing-house for expert knowledge on legislative subjects and has often placed at the disposal of the legislators the special knowledge of experts in various parts of the country. Frequently the department has been able to bring to the assistance of the legislators those members of the instructional staff of the university who have been specially equipped to aid in solving legislative problems. Often, too, advanced students in the university have made valuable contributions by investigational work in special subjects.

Largely as the result of the achievements of the Wisconsin legislative reference library, similar libraries are being established in many states and a congressional measure is now pending which seeks to establish a national legislative reference department.

III

LIBRARY SCHOOL

MARY EMOGENE HAZELTINE, PRECEPTOR.

Chapter 416 of the laws of 1909 provided that the school of library science theretofore conducted by the Wisconsin free library commission, should thereafter be known as the school of library science of the university. The same chapter also contained the following language: "The regents of the university are hereby authorized to coöperate with the free library commission in the maintenance of the library school and to aid the school by appropriating out of the funds of the university such sums as will aid in securing specialized teaching and equipment for said school, and otherwise to aid such school in such manner as will conduce to the development of said school and of library science in the state."

At the time of the last biennial report the regents of the university had been unable to coöperate with this commission in the maintenance of the library school or to aid the school as authorized by this law. For the school year of 1911–1912 the regents appropriated $7,500 to the library school receiving from the commission in return, however, tuition to the amount of $2,064 so that the net amount expended by the regents upon the library school was $5,436. The commission has also, through its library school without receiving any compensation therefor, furnished a very considerable amount of instruction to a number of joint course students whose tuition fees have been paid directly to the regents of the university. The commission has also, without compensation, offered instruction in library science to those in attendance at the summer session of the university.

Thus it occurs that while the library school is known as "The school of library science of the university", and while the university devotes some funds to its maintenance, the school still remains under the control of the commission. The instructors in the school are, therefore, in the employ of the commission and devote their time while not teaching in the

school to visitation, inspection and organization of the public libraries of the state. Their work in this field is akin to university extension work since they are constantly instructing the librarians of the state and rendering them more efficient in their work. Each instructor has a circuit of libraries which she visits and with which she is in constant communication by correspondence. In this way the instructor becomes practically the consulting librarian for the small library and is able to give it much valuable assistance.

The secretary of the commission acts as director of the school and gives a portion of his time to administrative and instructional duties. The executive clerk of the commission, has charge of the financial and clerical matters connected with the administration of the school. Dr. Charles McCarthy, Miss Ono Mary Imhoff, and Miss L. E. Stearns contribute to the school in instructional and lecture work. Dr. McCarthy and the secretary of the commission also lecture in other departments of the university without compensation. In addition to this the commission continues to furnish to Miss Elva Bascom, the editor of the American Library Association Booklist, editorial quarters and stenographic help in exchange for which the commission becomes the owner of a very large number of books sent to the Booklist for review purposes. All of these books are at the disposal of the library school and such of them as are of permanent value in school work are placed in the school quarters.

It should be noted that during two calendar months of the school year, February and March, the students spend their entire time in performing the duties involved in librarianship in various libraries of the state. During this period the instructional staff spend their time in supervising the work of the students. It is a matter of satisfaction to the school and one of considerable interest to the university that the service rendered by the students during these two months is of substantial value to the libraries of the state. The state has found that the service rendered by twenty-five to thirty-five energetic library students fresh from technical instruction, working enthusiastically in public libraries under intelligent supervision, enables these libraries to attain standards of organization and efficiency which they would not be able to attain without this assistance. For example, during February and

March, 1912, thirty-three students performed work in thirty-six different libraries in the state, while four instructors devoted themselves largely during this period to supervision. The technical work thus performed by the students as a part of the school work aggregates a total of sixty-six months of skilled services, having a definite monetary value of several thousand dollars. The school may then be said to have returned to the public at large value to the amount of the sum mentioned.

On the other hand to bring the technical training theretofore acquired into direct contact with practical problems and actual library conditions has proved a most effective educational method. During this apprentice work the students acquire a keen appreciation of the demands and possibilities of librarianship and return to their school duties with added enthusiasm and interest. During this same period it is also possible for the school authorities to valuate the student and to determine upon the professional capacity of the various candidates for graduation.

While the instruction given includes of necessity the technical and the mechanical, the school does not stop at this. It is its purposes: (1) To implant a clear conception of the broad possibilities of library work; (2) To give to the student an equipment which will enable him to consummate this conception.

The Wisconsin free library commission also offers in the library school quarters each year a short course of instruction in library science, opening it, however, only to practical librarians. In 1911 this took the form of a ten day conference, there being in attendance 157, this number being drawn from several states other than Wisconsin.

The number of graduates from the library school for the various years since it was established are as follows: 1907, 22; 1908, 19; 1909, 19; 1910, 26; 1911, 24; 1912, 31. It is a peculiarity of library schools that they can instruct and graduate only a very limited number of students, the 31 graduating from the library school of the University of Wisconsin in 1912 being a number larger than was graduated in that year from any other library school.

Of the 141 who have graduated from the Wisconsin library school 118 are in library positions, 13 of the graduates have married, and 10 are now living at home. Our graduates oc-

cupy positions in the following states: Alabama 2, California 1, Colorado 2, Idaho 1, Illinois 16, Indiana 6, Iowa 9, Kansas 4, Maryland 1, Michigan 4, Minnesota 7, Missouri 4, Montana 2, Nebraska 3, New Mexico 1, New York 2, North Dakota 5, Ohio 4, Oregon 4, Pennsylvania 4, Texas 1, District of Columbia 3, and Wisconsin 34.

IV

TRAVELING LIBRARY DEPARTMENT

LUTIE E. STEARNS, CHIEF.

Thought is the first faculty of man; to express it is one of his first desires; to spread it his dearest privilege.—Raynal.

The work of the department. The traveling library department has continued its work of establishing traveling libraries in rural communities during the past biennial period. The table of statistics will show that 609 communities were served, during the fiscal year 1911–12, this being a gain of 214 over the last biennial report. The books were read a total of 115,095 times during the fiscal year 1911—12. The number of new or resumed stations added during the year was 179, a healthy growth. Over 1,000 requests were filled for traveling libraries, boxes of magazines, foreign collections, study club libraries, small groups for individual study, magazine references, pamphlets, etc.

There are still hundreds of small communities in the state that have not accepted the invitation extended by the commission through the various channels utilized for making known the possibility of securing libraries. More forms of publicity and advertising have been used than ever before, all of which have borne fruit, but not in proportion to the number of communities that the commission wishes to serve. The forms of publicity utilized have been the exhibition of traveling libraries at county fairs with the distribution of a circular outlining the method by which libraries may be secured and also containing an application blank to be returned to the commission with the necessary signatures. But few of the thousands of application blanks distributed personally in this manner have been returned to the commission. Another method tried has been the distribution of application blanks to the students in attendance at the summer normal school courses. These have brought forth good results in many instances, though not in proportion to the number of application blanks distributed. Farmers' institutes have been tried all over the state where

talks have also been given. These in turn have resulted in the establishment of some libraries, but again not in proportion to the number of blanks distributed. Personal letters have been sent to citizens in communities listed in the state directory, which have brought forth some replies, but again not in proportion to the number circularized. Letters have been sent to the teachers in the state graded and country schools listed in the state teachers' directory. These have borne fruit, but again not in proportion to the number whose interest should be enlisted. The agricultural weeklies of the state have published articles relating to the traveling library system and the ease with which collections may be secured. Some gains have been made through this medium, but again not in proportion to the number of subscribers to such journals. The newspapers of the state have from time to time published advertising material from which inadequate returns have been received. The method has also been employed of driving about in the various counties from one settlement to another, with personal talks to rural postmasters, school teachers, and others interested. This latter method has been one of the most successful employed and it is hoped to do more of this sort of advertising in the future, as it is found that much is gained through personal explanation and solicitation.

The need of more field workers. What is needed more than anything else in the department is one or more persons who shall devote her or their whole time to the rural communities of the state, going about from one locality to another, visiting rural schools and the people in the smaller hamlets. Only those who have tried to cover the state realize its area, that it is nearly as large as all of the New England states put together, and that there are hundreds of rural hamlets remote from the railway centers. No form of printed or written publicity can take the place of the personal visit with its opportunity for explanation and argument. The traveling library department will never cover the field completely until more rural workers are employed. The vexed question of the discontinued station would be very largely solved through the employment of field agents who could look into local conditions and find the remedy for indifference or neglect.

Aid to study clubs. The work for the study clubs has vastly increased during the last biennial period. It has also taken on a new note through the issuance of a circular by the traveling library department, outlining new topics which might be of interest to club women, such as offering material on the Initiative, Referendum, Recall, Development of democracy, Legal rights of women, Minimum wage law, and other subjects of current discussion. As a result of the issuance of this circular, more requests were received for material on topics of the day than during the entire preceding years of the commission history. The coöperation of the university extension division in aiding and supplying material desired is cordially acknowledged. The work of the study club department has grown to such an extent that the time of a special assistant has become an absolute necessity, as the chief of the traveling library department, who has personally attended to the work, cannot afford to devote the time necessary to its accomplishment without neglecting the other phases of the traveling library work. There are over 200 study clubs in Wisconsin at the present time, each of which would be glad of more assistance if it could be given. The labor of one person could with profit be largely devoted to the study club work, and this work would be justified in the results obtained in the state, as the club women are gradually leaving the self-cultural side and are taking up the study of topics which will promote better citizenship in the state at large.

County systems. The number of county traveling library systems has not been increased during the biennial period, as it has been thought advisable to wait until counties themselves asked for assistance in establishing such systems. An organization of this sort superimposed upon a county does but little good. The initiative should come from within a county and particularly from some librarian who is willing to give the matter the necessary time. The compensation allowed under the law, $50 a year, is wholly inadequate for the service that should be rendered. Many librarians possessed of the true missionary spirit are, however, willing to undertake the work of county extension, irrespective of compensation offered. Where this spirit does not prevail, however, and where the librarian feels that the additional responsibility is altogether

too burdensome, a county system is apt to suffer for lack of attention. There are a number of librarians of county systems who are doing splendid work in their whole-hearted endeavor to reach every man, woman and child in the district with wholesome literature. The best managed systems are those in the charge of librarians at the head of good public libraries, and no system should be established which cannot receive the attention of a trained and skilled worker, one who is giving her entire time to library interests.

Under the state law, the commission is authorized to give aid and assistance in the management of county systems. This it has done and at all times stands willing to do. During the past biennial period some of the county traveling library systems have been overhauled by the department, the boxes exchanged, new custodians secured and other details of county library management attended to. In cases where a continuance of the appropriation has been in doubt, county boards have been addressed by the chief of the department with good results.

The statistical table will show the increase in the number of libraries and stations during the past biennial period.

The traveling library department welcomes any suggestions or constructive criticism of its work at any time.

The great aim of the department, which is always kept in mind, is to finally furnish every man, woman and child in the state of Wisconsin wholesome reading matter of an inspirational, educational or recreational nature.

RECOMMENDATIONS

When one is engaged in library work each phase of it as it is separately considered seems the most important. Looking over the entire field, however, it would seem that the following phases of the work are worthy of special attention.

Rural traveling libraries. On the principle that the most work ought to be done where the need is greatest, it is clear that traveling library work should be emphasized. Families who live some distance from any village or city are altogether without access to books except those which are within the

home. Often we find that the Bible and a mail-order house catalog are the only books in the family library. A service which will reach such homes as these is what the state most needs. It is true also that the present is an opportune time for work in rural communities. Both the country residents themselves and the people at large are now interested in plans for rural education and for bettering rural living conditions. Some of the many plans advanced for rural betterment will work; some will not. Meanwhile, so far as its resources will permit, the library commission is steadily doing actual educational work and is each year sending out tens of thousands of books to rural homes. Traveling libraries are a demonstrated success. The work is worthy of more money than the commission is able to devote to it to the end that more books may be purchased, more workers put in the field, more publicity given so that every community may realize that it may obtain a library, more libraries be actually sent out, and more rural homes supplied with good reading matter.

Study club work. Additional emphasis should also be placed upon the study club work of the commission. Some most excellent work has been done by groups of persons who, deprived of other educational agencies, have obtained an outline of study upon some subject and have been sent a group or books to use in their study work. This work has been carried on in the traveling library department but no person has been able to devote any considerable time to this branch of work. To develop its possibilities and properly maintain its operation would consume the greater portion of one worker's time.

Libraries in charitable and penal institutions. While this matter is somewhat outside of the scope of the activities of this commission, it would seem wise to call attention to another matter.

In several states, including New York, Iowa, Nebraska and Minnesota, considerable progress has been made in establishing libraries in the charitable and penal institutions. It has been demonstrated that a well selected library in such an institution is of very definite assistance in furthering the work of the institution. These institutions in Wisconsin are inadequately equipped in this particular. This commission, in several instances, has attempted to assist the authorities in mak-

ing an advance along these lines. The institutions themselves, however, are for the most part without the funds necessary to purchase books. The commission recommends that adequate appropriations be made to the board of control for the installation of carefully selected libraries in all of these institutions, and pledges its hearty assistance to the project.

LIBRARY BUILDINGS

This biennial period has been marked by considerable activity in the erection of library buildings. The library at Barron is in the course of construction and will be opened to the public early in the year 1913. At Columbus the $10,000 Carnegie library will be completed sometime during the latter half of the year 1912. Ft. Atkinson is the recipient of a gift of $10,000 from Henry Southwell of Chicago to be devoted to the erection of a Dwight Foster public library. On Thanksgiving Day, 1911, Jefferson dedicated a beautiful library building, the gift of Andrew Carnegie. Kilbourn is erecting a building which will probably be completed during 1913. At Lancaster G. W. Ryland bequeathed his home and grounds to the city for public library purposes. Andrew Carnegie gave $15,000 for the erection of a branch building in the eastern part of the city of Madison which will be ready for occupancy during the current year. At Merrill a Carnegie library building costing $17,500 was opened in August, 1911. Mineral Point is contemplating the erection of a municipal building which will include splendid quarters for the public library. Hon. J. C. Tripp of Prairie du Sac has donated $10,000 for the erection of a library building in that place. A gift of $10,000 for a branch library at Racine was at first rejected by vote of the common council but later upon reconsideration the gift was accepted. Upon New Years Day, 1912, Reedsburg dedicated a beautiful $10,000 Carnegie Library. At Sturgeon Bay there is being erected a Carnegie library to cost $12,500.

MATTHEW S. DUDGEON,
Secretary.

LIBRARIES IN STATE INSTITUTIONS

Name of institution.	Place.	No. volumes.	Librarian.
Home for feeble minded	Chippewa Falls	415	A. W. Wilmarth.
Industrial school for boys	Waukesha	2,000	A. J. Hutton.
Normal school	La Crosse	5,703	Florence S. Wing.
Normal school	Milwaukee	18,720	Delia G. Ovitz.
Normal school	Oshkosh	15,542	Louise F. Encking.
Normal school	Platteville	9,762	Bee A. Gardner.
Normal school	River Falls	8,460	Lovila M. Mosher.
Normal school	Stevens Point	11,509	Mrs. F. G. Short.
Normal school	Superior	10,000	H. L. Eaton.
Normal school	Whitewater	10,600	Fanny R. Jackson.
Northern hospital for insane	Winnebago	1,080	Adin Sherman.
School for the blind	Janesville	†5,240	Julia Enright.
School for the deaf	Delavan	3,500	.....
State historical library	Madison	*360,000	Reuben G. Thwaites
State law library	Madison	52,500	G. G. Glasier.
State prison	Waupun	3,000	Daniel Woodward.
State public school	Sparta	475	J. F. Brown.
State reformatory	Green Bay	500	C. W. Bowron.
University of Wisconsin	Madison	*231,000	Walter M. Smith.

*This number includes pamphlets.
†3,145 of these are in raised characters.

COUNTY TRAVELING LIBRARY SYSTEMS

County.	Headquarters.	No. of Libraries.	No. of Volumes.	Active Stations.	Circulation Reported.	Custodian.
Columbia	Portage	47	1,357	22	5,045	Mrs. W. G. Clough
Dodge	No report.					
Dunn	Menomonie	34	1,275	34	1,500	Mrs. Mabel Rafferty
Eau Claire	Eau Claire	1	614	5*	2,487	Miss Laura Olsen
Jefferson	Jefferson	23	1,072	21	3,212	A. J. Thorne
La Crosse	La Crosse	52	1,558	25	1,384	Miss Mary A. Smith
Langlade	Antigo	3	119	4	789	Eileen Duggan
Marinette	Marinette	35	1,879	36	7,119	Miss Ada McCarthy
Milwaukee	Milwaukee	24	969	21	2,437	Miss Mary M. Brady
Oconto	Oconto	27	1,518	1*	3,246	Miss Neva Mayberry
Portage	Stevens Point	29	1,379	24*	....(†)...	Miss Mary Dunegan
Sauk	Baraboo	6	1,184	47	4,596	Miss Kate M. Potter
Trempeal'u	Whitehall	15	576	15	....(‡)...	Miss A. F. Shaffer
Winnebago	Oshkosh	4	2,582	38	2,464	Miss Julia Rupp
Wood	Grand Rapids	35	1,335	18	815	Miss Edith Rablin

(*) Two libraries sent to some stations.
(†) Record not kept.
(‡) Fignres not given.

Place.	Population 1910.	Assessed valuation.	Receipts.			Expenditures.									
			Tax.	Other receipts (excluding unexpended balance).	Total.	Salaries—Library Service.			Janitor service.	Books.	Periodicals.	Binding.	Heat.	Other expenditures	Total.
						Librarian.	1st. assistant	Other assistants.							
Abbotsford	947	$232,350	$260 00	$54 55	$314 55	$110 00				$39 64	$8 45		$1 52	$14 60	$174 21
Algoma	2,082	1,270,467													
Antigo	7,196	4,288,806	2,995 00	1,270 00	4,265 00	840 00	$300 00	$240 00	361 00	662 11	112 80	254 35	446 90	583 53	3,598 19
Appleton	16,773	13,415,655	3,000 00	374 41	3,374 41	840 00	480 00	300 00	390 00	640 88	149 22	144 79		496 30	3,441 19
Arcadia	1,212	669,825	500 00	38 92	538 92	120 00			85 75	72 92	31 75	42 85	30 86	63 75	447 88
Ashland	11,594	8,021,615	500 00	78 14	578 14	720 00	100 90			450 31	104 00	72 45		780 00	2,254 76
Augusta [1]	1,405	575,595													
Baraboo	6,324	4,035,499	2,250 00	174 54	2,424 54	600 00	300 00		240 00	687 79	68 45	145 00	268 33	328 80	2,330 57
Barron	1,449	677,561	500 00	24 13	524 13	240 00				123 23	24 50	24 20		192 40	524 33
Bayfield	2,300	1,330,890	1,000 00	83 55	1,083 55	360 00			125 00	226 28	29 80	15 05	123 10	415 74	1,335 97
Beaver Dam	6,758	3,391,833	1,400 00	584 32	1,984 32	600 00	360 00			219 36	89 25	58 45	273 61	342 57	1,943 24
Belleville	422	426,380	308 10	16 06	324 16	65 00				114 01	11 00		10 64	45 03	245 68
Beloit	15,125	12,089,082	4,000 00	425 34	4,425 34	660 00	480 00	420 00	480 00	721 47	160 69	410 10	189 18	881 67	4,401 11
Berlin	4,636	2,810,640	1,000 00	201 45	1,201 45	480 00			70 65	273 81	43 80	27 40	250 00	232 70	1,418 36
Black Creek [2]	516	325,304													
Black Earth	479	232,065	37 00	3 50	40 50	25 00									
Black River Falls	1,917	665,016		370 30	370 30	240 00			11 25	11 80	22 85	15 05	41 15	115 26	457 36
Bloomington	620	543,478	73 66	92 82	166 48				5 00	15 37	18 80			106 82	145 99
Boscobel	1,525	549,075	25 00	203 50	228 50	240 00			11 85	79 00	15 00			105 20	231 05
Brodhead	1,517	1,269,222	600 00	213 97	813 97	300 00	48 00		36 00	148 39	73 39	38 95	37 32	124 47	806 52
Burlington	3,212	2,198,765	500 00	138 33	638 33	300 00			13 50	184 63	32 55		24 66	174 74	744 58
Cedarburg [1]	1,777	1,572,270													
Chippewa Falls	8,893	3,727,194	2,500 00	89 34	2,589 34	480 00	330 00	150 00	360 00	642 06	123 94	160 51		418 78	2,665 29
Clintonville	1,747	1,086,821	400 00	10 11	410 11	120 00			17 00	146 67	27 25			30 90	221 82
Colby	869	325,255	160 00	10 52	170 52	60 00				34 95	14 80		9 00	44 21	168 16
Colfax	701	280,612	100 00	15 52	115 52	72 00						72 00		44 40	116 40
Columbus	2,523	2,508,091	1,000 00	253 01	1,253 01	540 00			38 50	193 82	58 30	99 15	118 37	192 21	1,226 85
Cumberland	1,445	601,024	1,000 00	41 74	1,041 74	450 00				132 26	45 30	33 20	146 58	200 25	1,007 59
Darlington	1,808	1,133,345	1,000 00	85 00	1,085 00	240 00			66 00	283 51	49 75	91 96	143 25	152 24	1,085 00
Delafield	250	1,316,938		39 59	39 59				3 75	25 06				9 49	38 30
Delavan	2,450	1,555,261	1,750 00	697 13	2,447 13	720 00	240 00		335 00	285 97	113 60	136 85	265 14	588 22	2,644 78

De Pere	4,477	2,095,286	1,225 90	84 95	1,310 85	360 00	120 00		69 00	459 88	62 62	99 93		208 24	1,374 67
Dodgeville	1,791	1,803,280	200 00	108 29	308 29	104 00			11 75	105 00	7 25	50 16	314 27	3 25	126 86
Durand	1,503	668,247	750 00	31 51	781 51	240 00			42 50	85 10	43 05	29 05	50 00	74 56	556 76
East Milwaukee	707	2,418,150		48	48					29 53					29 53
Eau Claire	18,310	9,815,107	6,000 00	632 24	6,632 24	90 00	600 00	540 00							
								300 00	761 25	917 68	226 70	382 75	493 56	887 41	6,276 88
Edgerton	2,513	2,430,097	1,000 00	908 67	1,908 67	3 0 00			276 50	296 60	68 53	83 20	214 10	283 45	1,534 38
Eleva[2]	319	174,433													
Elkhart Lake	499	489,195		3 25	3 25									3 25	3 25
Elkhorn	1,707	1,223,225	500 00	96 03	821 03	240 00			16 50	115 46	41 95	55 05		135 81	6 4 77
Elroy	1,729	701,242	1,000 00	525 80	1,525 80	360 00			360 00	158 05	51 75	28 90	201 84	121 01	1,281 55
Evansville	2,061	2,081,265	1,200 00	154 68	1,354 68	300 00			207 45	160 32	47 10	61 80	231 21	300 31	1,378 19
Fairchild	678	337,620	100 00	7 22	107 22	50 00				19 19	12 25			2 66	84 10
Fennimore[1]	1,159	797,597													
Fond du Lac	18,797	12,243,650	5,500 00	377 16	5,877 16	600 00	480 00	420 00							
								240 50	675 00	1,178 76	173 74	202 45	313 22	707 23	4,371 17
Fort Atkinson	3,877	2,310,970	879 72	31 51	911 23	300 00			48 40	69 45	127 60		67 52	190 52	841 19
Fox Lake	851	512,570	200 00	284 27	484 27	100 00				201 35	25 40	26 25		25 02	367 02
Galesville[1]	973	638,951	50 00	1,057 78	1,107 78	300 00			11 40	233 31		2 00	12 50	526 87	958 58
Genoa Junction[2]	709	518,270													
Glen Beulah[2] [4]	500														
Glenwood	954	416,874		44 86	44 86	12 00								16 16	28 16
Grand Rapids	6,521	4,647,253	1,000 00	1,932 64	2,932 64	45 00	25 00			672 64	75 00			1,194 50	2 647 14
Green Bay	25,236	17,321,934	6,100 00	1,141 59	7,241 59	840 00	600 00	480 00	430 70	1,523 18	280 08	319 28	395 81	1,523 92	6,902 08
								420 00							
Hartford	2,982	1,926,835	200 00	80 00	280 00	100 00				146 98		52 34		12 32	311 64
Hartland	728	385,601	25 00	94 92	119 92					30 00				72 68	102 68
Hayward	2,869	1,861,198	1,000 00	19 16	1,019 16	300 00			110 00	177 03	50 80			284 40	914 73
Hillsboro	804	482,026	300 00	7 91	307 91										
Horicon	1,881	1,156,960	350 00	19 95	369 95	240 00				32 15	20 50	23 25		134 91	459 81
Hortonville[2]	863	633,696													
Hudson	2,810	1,455,789	1,200 00	242 86	1,442 86	600 00	90 00		151 45	146 29	103 65	60 65	166 20	214 10	1,532 34
Independence	664	377,255	150 00	9 82	159 82	50 00				88 87	8 35			13 81	161 03
Iron River[2]															
Ironton[2]															
Janesville	13,894	15,031,301	4,000 00	62 30	4,062 30	900 00	480 00	420 00	600 00	939 39	187 90	399 80	197 97	1,050 27	5,209 23
Jefferson	2,582	2,397,138	1,000 00	1,037 79	2,037 79	420 00	50 00		80 00	163 94	39 00		128 50	930 59	1,619 53
Johnson Creek[2]	425	401,680													
Kaukauna	4,717	3,494,415	1,200 00	79 37	1,279 37	480 00			197 25	271 30		54 85	236 15	125 32	1,376 97
Kenosha	21,371	25,143,739	20,791 44	624 55	21,415 99	960 00	540 00	540 00 420 00 240 00	780 00	1,707 31	234 25	349 07	100 00	6,345 87	13,024 00
Kewaunee	1,839	1,046,870	564 71	90 98	655 69	240 00			20 00	87 77	34 65			270 06	652 48
Kilbourn	1,170	1,409,763	760 23	17 50	777 73	240 00				215 95	24 50		9 00	43 87	533 32

[1]New library. [2]No report.

STATISTICS OF PUBLIC LIBRARIES—Continued.

Place.	Population 1910.	Assessed valuation.	RECEIPTS.			EXPENDITURES.									
						Salaries—Library Service.									
			Tax.	Other receipts (excluding unexpended balance).	Total.	Librarian.	1st. assistant	Other assistants.	Janitor service.	Books.	Periodicals.	Binding.	Heat.	Other expenditures.	Total.
La Crosse	30,417	20,475,907	6,000 00	3,257 36	9,257 36[3]	1,200 00	840 00	600 00 540 00 480 00 480 00	794 88	1,560 37	277 31	264 85	294 68	1,671 38	8,747 00
Ladysmith[2]	2,352	1,538,885													
Lake Geneva	3,079	2,845,341	2,175 80	167 07	2,342 87	660 00	420 00		235 30	144 22	65 45	26 55	179 67	409 98	2,061 17
Lake Mills	1,672	1,186,865	600 00	270 32	870 32[3]				65 00	205 39	36 60	39 90	166 78	186 74	990 41
Lancaster	2,329	1,976,112	750 00	50 57	800 57	420 00				176 35	50 30	45 55		89 06	781 26
La Valle	421	185,910	125 00	48 70	173 70	54 00				58 29	15 90	19 65	5 25	39 51	196 60
Lodi[2]	1,044	837,487													
Madison	25,531	39,523,355	11,500 00	4,860 43	16,360 43	1,200 00	900 00	900 00 600 00 600 00 600 00 360 00 540 00	1,026 80	2,187 32	384 29	817 33	958 48	4,558 52	15,546 73
Manitowoc	13,027	9,326,835	3,500 00	621 62	4,121 62	720 00	360 00	360 00	600 00	684 35	140 75	121 71	274 66	846 90	4,089 37
Marinette	14,610	6,012,391	4,500 00	62 12	4,562 12	900 00	540 00	360 00 240 00	420 00		163 35	166 40	311 98	445 96	3,392 69
Marshfield	5,783	3,386,950	2,090 31	235 69	2,326 00	840 00	360 00		112 00	323 39	96 40	240 70		297 90	2,265 49
Mayville	2,282	1,739,000	450 00	85 85	535 85	240 00				114 21	32 29	9 50		185 75	581 75
Mazomanie	917	334,776	135 00	216 10	351 10	50 00			2 70	54 20	13 70		23 25	101 62	246 56
Medford[2]	1,846	884,846													
Menasha	6,081	2,861,392	2,890 00	820 73	3,710 73[3]	540 00	480 00		315 00	671 11	61 20	81 80	375 00	855 75	2,934 86
Menomonee Falls	919	471,292		16 56	16 56				2 32		11 00		7 40	78 26	239 18
Menomonie[2]	5,036	2,821,418													
Merrill	8,689	3,429,557	1,750 00	7,043 85	8,793 85	600 00	300 00		242 12	263 26	87 98	156 20	310 50	3,702 82	5,662 96
Milton Junction[4]	833	1,846,931	100 00	64 22	164 22					51 80	7 80	1 20		21 81	82 61
Milwaukee	373,857	460,548,763	108932 18	9,210 06	118142 24				11,419 15	18,548 21	1,485 76	1,161 18			97,303 26
Mineral Point	2,925	1,940,443	750 00	31 48	781 48	230 00			27 70	64 77	19 03	39 85	46 94	408 20	816 49
Mondovi	1,325	728,513	565 00	36 36	601 36	280 00			30 00	88 52	41 00	1 11	17 90	58 12	495 79
Monroe	4,410	5,306,970	1,800 00	29 97	1,829 97	600 00	150 00		6 00	429 11	91 19	65 71		241 24	1,580 25
Mosinee	482	163,339	450 00	410 21	860 21	350 00				22 83	49 05		48 50	103 22	578 50
Mt. Horeb	1,048	705,835	100 00	169 99	269 99	106 00			20	46 71	5 15		9 05	85 04	252 15

Necedah[1]	1,054	599,541	300 00		300 00	96 00			28 60	60 00			25 22	64 64	274 46
Neenah	5,734	3,746,170	2,740 44	151 38	2,891 82	720 00	300 00		540 00	364 06	101 75	118 43	273 95	236 77	2,639 96
Neillsville	1,957	1,144,746	587 54	26 78	614 32	312 00				290 30	37 62	39 00		418 98	1,097 90
New London	3,383	2,448,773	750 00	73 90	823 90	360 00				204 60	56 60	35 70		53 07	679 97
New Richmond	1,988	1,102,809	515 50	50 70	566 20				18 80	157 93	52 00	13 20	12 00	25 26	374 01
No. Fond du Lac	1,960	699,705	250 00	27 71	277 71										234 00
North Freedom	647	324,960	40 00	41 56	81 56	24 00				16 37	12 35		83 00	45 64	99 19
North Milwaukee	1,860	2,016,782	500 00	13 38	513 38	275 00				86 39	18 50		21 50	14 91	414 30
Oakfield	522	419,380	170 54	8 17	178 71	26 50			6 10	67 72	14 50	24 60	4 90	43 73	188 05
Oconomowoc[2]	3,054	1,885,795													
Oconto	5,629	2,251,804	1,500 00	378 32	1,878 32	600 00	180 00		212 95	258 30	105 00	119 07	221 83	189 06	1,941 21
Oconto Falls[2]	1,427	688,155													
Oregon	712	677,905	312 00	45 15	357 15	100 00			7 75	90 14			5 50	159 31	362 70
Orfordville	475	424,909	75 00	16 72	91 72	60 00					5 50			1 63	67 13
Oshkosh	33,062	23,033,613	5,075 00	4,271 34	9,346 34[3]	1,000 00	600 00	500 00 500 00 600 00 300 00	1,260 00	2,343 95	267 30	620 40	90 85	1,747 61	9,417 81
Park Falls	1,972	932,045	575 00	27 00	602 00					208 95	17 10			28 21	426 76
Pewaukee	749	350,808	144 00	3 00	147 00				21 50	100 00		1 60	16 17	97 04	286 31
Platteville	4,452	3,799,395	1,000 00	302 70	1,302 70	540 00			21 70	171 02	59 84	41 60		226 92	1,061 08
Plymouth	3,094	2,369,105	1,173 29	159 05	1,332 34	480 00			25 00	289 33	57 00	56 00		292 37	1,209 70
Portage	5,440	3,213,333	1,400 00	143 15	1,543 15	600 00				499 32	100 55	57 87		164 57	1,638 31
Port Washington	3,792	2,278,280	75 00	110 23	185 23[3]	150 00			3 00	19 25	8 42			8 85	189 52
Prairie du Chien[2]	3,149	1,011,549													
Prairie du Sac	699	638,070	150 00	18 42	168 42				8 50	81 42	24 75			39 96	211 63
Prescott[2]	936	425,793													
Racine	38,002	26,549,968	10,000 00	440 43	10,440 43	900 00	720 00	720 00 720 00 420 00	840 00	2,241 05	235 12	359 32	410 00	1,488 47	9,314 96
Randolph	937	590,435	75 00	6 15	81 15	150 00								2 00	80 00
Reedsburg	2,615	1,666,715	1,000 00	99 75	1,099 75	270 00			108 15	86 11	61 00	93 05	121 96	181 69	1,010 04
Rhinelander	5,637	2,880,722	1,800 00	682 45	2,482 45[3]	720 00	120 00		252 25	282 96	73 80	45 75	175 75	218 06	1,891 07
Rib Lake[2]	1,018	448,110													
Rice Lake	3,968	1,917,065	1,000 00		1,000 00	240 00			90 00	291 04	50 40	59 60	94 25	109 11	1,054 40
Richland Center	2,652	2,155,978	1,250 00	57 21	1,307 21	360 00			187 50	315 34	52 18	88 50	224 52	216 03	1,429 07
Ripon	3,739	2,720,700	1,200 00	241 77	1,441 77	480 00			240 00	56 00	63 75	41 00	200 00	273 72	1,440 75
Seymour	1,109	757,517	200 00	64 35	264 35	50 00				177 52	21 61	30 18		48 33	347 89
Shawano	2,923	1,895,964	325 00	248 80	573 80	156 00				120 53	36 05			258 42[4]	585 00
Sheboygan	26,398	15,824,523	4,979 83	180 05	5,159 88	1,020 00	720 00	600 00	660 00	833 25	108 80	240 99	86 75	912 22	4,223 79
Shell Lake	902	221,645	100 00	149 22	249 22	84 00			11 00	58 00	6 00	13 50		149 24	321 74

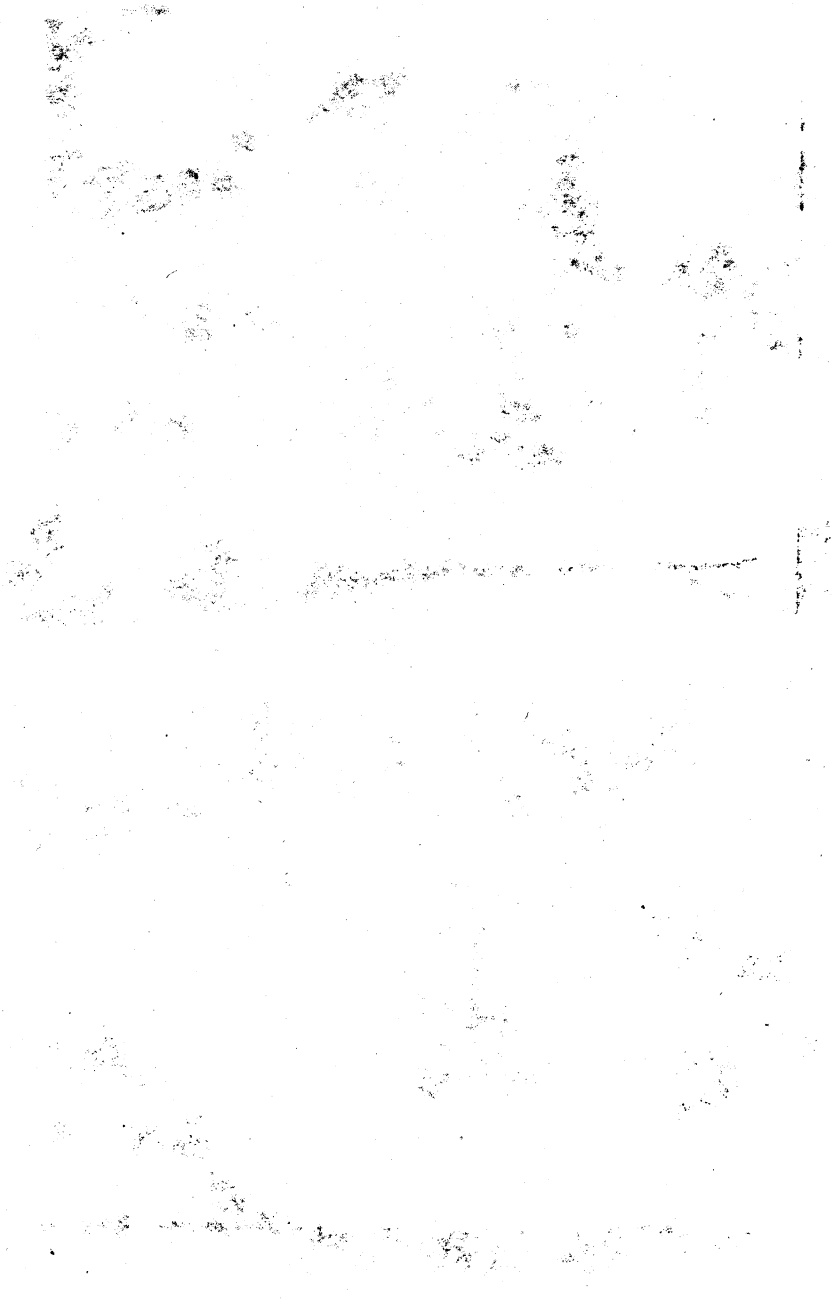
[1]New library.
[2]No report.
[3]Includes endowment fund.
[4]Not separately assessed.

STATISTICS OF PUBLIC LIBRARIES—Continued.

Place.	Population 1910.	Assessed valuation.	RECEIPTS.			EXPENDITURES.								
						Salaries—Library Service.								
			Tax.	Other receipts (excluding unexpended balance).	Total.	Librarian.	1st assistant	Other assistants.	Janitor service	Books.	Periodicals.	Binding.	Heat.	Other expenditures.	Total.
Shullsburg	1,063	625,717	100 00	39 56	139 56					129 13	14 50			36 55	180 18
Shiocton[2]	536	228,508													
South Milwaukee[2]	6,092	4,326,505													
Sparta	3,973	2,304,173	1,950 00	140 57	2,050 57	480 00	180 00		221 00	298 20	62 00	60 35	293 49	265 43	1,860 47
Spring Green	730	508,854	75 00	184 96	259 96	25 00				13 71	25 65			43 33	107 15
Spring Valley[1]	972	460,329													
Stanley	2,675	998,627	1,300 00	12 45	1,312 45	525 00			75 50	273 23	58 67	34 05	98 50	350 01	1,424 96
Stevens Point	8,692	3,578,023	2,000 00	282 61	2,282 61	600 00	120 00		330 00	309 63	83 50	101 08	162 70	776 75	2,448 66
Stoughton	4,761	2,977,286	1,300 00	1 00	1,301 00	420 00			254 00	136 81	94 25	76 75	188 85	96 72	1,299 88
Sturgeon Bay	4,262	1,932,491	1,300 00	89 81	1,389 81	540 00				159 10	60 75	38 44		806 55	1,634 84
Sun Prairie	1,119	1,237,956	100 00	55 00	155 00	50 00				36 93		11 70		2 40	101 03
Superior	40,384	27,702,677	12,500 00	570 57	13,070 57	1,200 00	780 00	720 00 720 00 600 00 540 00	928 50	3,125 03	328 25	638 65	351 91	2,387 65	12,908 49
Thorp[2]	741	353,610												13 26	13 26
Tigerton[1]	728	239,939		13 26	13 26										
Tomah	3,419	1,792,119	1,200 00	65 59	1,265 59	400 00			51 96	325 32	57 85	159 15	35 84	195 58	1,220 20
Tomahawk	2,907	1,507,015	500 00	187 50	687 50	300 00				167 03				79 10	246 13
Two Rivers	4,850	2,788,429	1,025 00	253 32	1,278 32	540 00	300 00			238 76	41 58	36 03	109 00	125 61	1,390 98
Viroqua	2,059	15,540,385	1,000 00	62 44	1,062 44	360 00			82 50	182 27	59 90	26 25	215 81	457 31	1,384 04
Washburn	3,830	1,448,966	1,800 00		1,800 00	480 00			150 00	46 59	50 25	61 05	207 50	238 22	1,233 61
Waterloo	1,220	857,634	150 00	17 06	167 06	26 00				126 00			5 00	20 43	177 43
Watertown	8,829	5,770,762	2,675 00	131 97	2,806 97	900 00	240 00		515 81	407 89	89 80	74 55	359 67	222 31	2,820 03
Waukesha	8,740	7,609,929	1,500 00	70 00	1,570 00	420 00			240 00	241 02	40 50	120 51	302 10	261 08	1,664 61
Waupaca	2,789	1,882,447	600 00	66 17	666 17	348 00			24 55	108 98	49 35	22 80	32 20	138 63	724 51
Waupun	3,362	1,590,595	1,165 30	155 33	1,320 63	380 00			120 00	139 99	71 45	49 01	122 55	170 67	1,103 67
Wausau	16,560	9,579,521	2,900 00	3,639 69	6,539 69	900 00	300 00	300 00	202 50	1,006 60	131 90	222 45	272 43	2,475 53	5,761 41
Wauwatosa	3,346	3,499,575	1,500 00	98 50	1,598 50	600 00				314 96	85 50	87 53	141 68	264 91	1,494 58
West Allis	6,645	10,381,724	500 00	7 00	507 00	240 00			5 75	248 29	15 05	78 20	16 50	78 10	706 89
West Bend	2,462	1,709,980	400 00	110 58	510 58	240 00			9 25	127 87	31 70	5 60		86 69	521 11

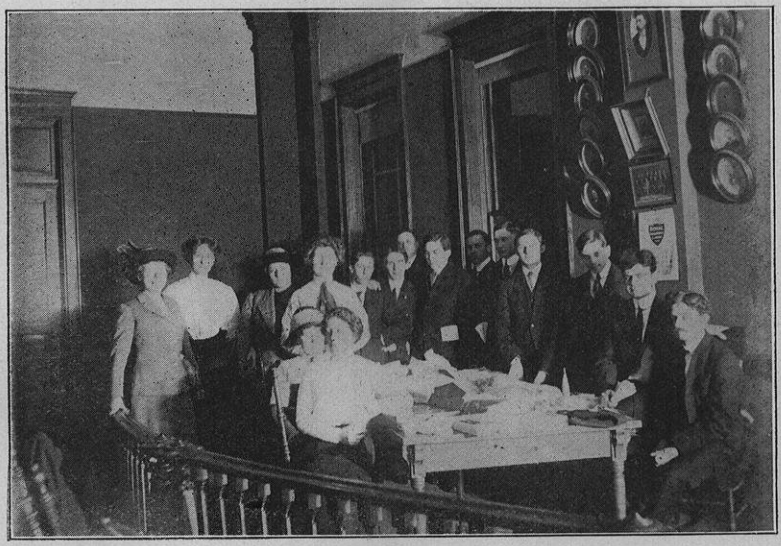
NORTHERN WISCONSIN COLONY
AND TRAINING SCHOOL
PROFESSIONAL LIBRARY

WOMAN'S CLUB AT PORTAGE (WIS.) PUBLIC LIBRARY



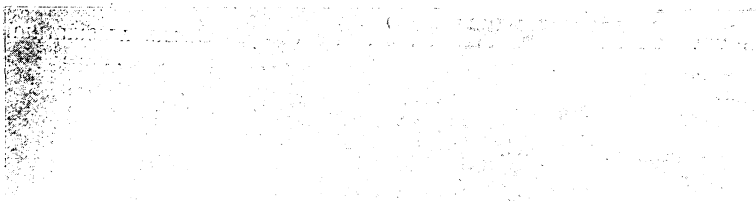
READING ROOM OF MILWAUKEE PUBLIC LIBRARY SHOWING SOLUTION OF DIFFICULT INDIRECT LIGHTING PROBLEM

Vaughn & Meyer, Electrical Engineers



UNIVERSITY EXTENSION CLASS IN RETAIL SELLING AND STORE MANAGEMENT, ROOM OVER APPLETON (WIS.) PUBLIC LIBRARY

UNIVERSITY EXTENSION CLASS IN RETAIL SELLING AND STORE MANAGEMENT, IN OSHKOSH (WIS.) PUBLIC LIBRARY



UNIVERSITY EXTENSION CLASS IN SALES, PURCHASE AND SHIPPING METHODS, IN REFERENCE ROOM OF APPLETON (WIS.) PUBLIC LIBRARY

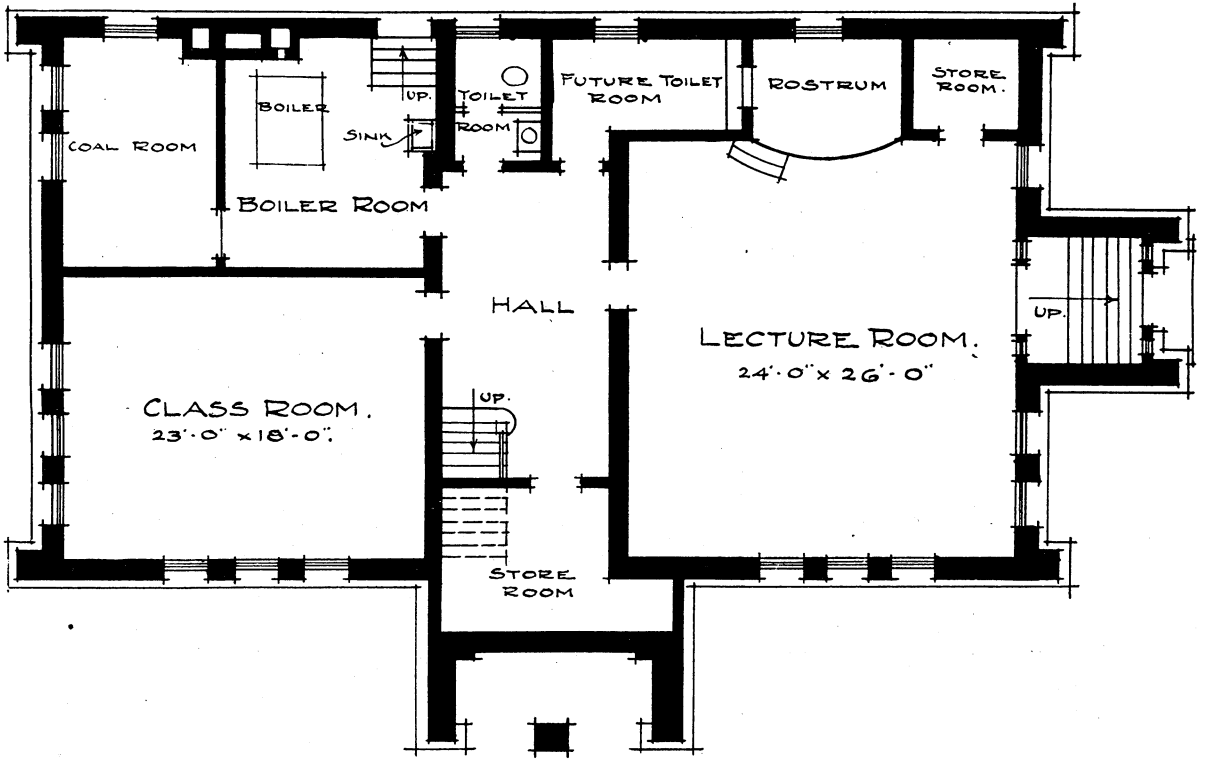
REST ROOM AND DEPOSIT STATION AT THE RUBBER CLOTHING CO. FACTORY, RACINE, WIS.

JEFFERSON PUBLIC LIBRARY (Cost $10,000)

Claude & Starck, Architects, Madison, Wis.

COLUMBUS PUBLIC LIBRARY Cost, $10,000

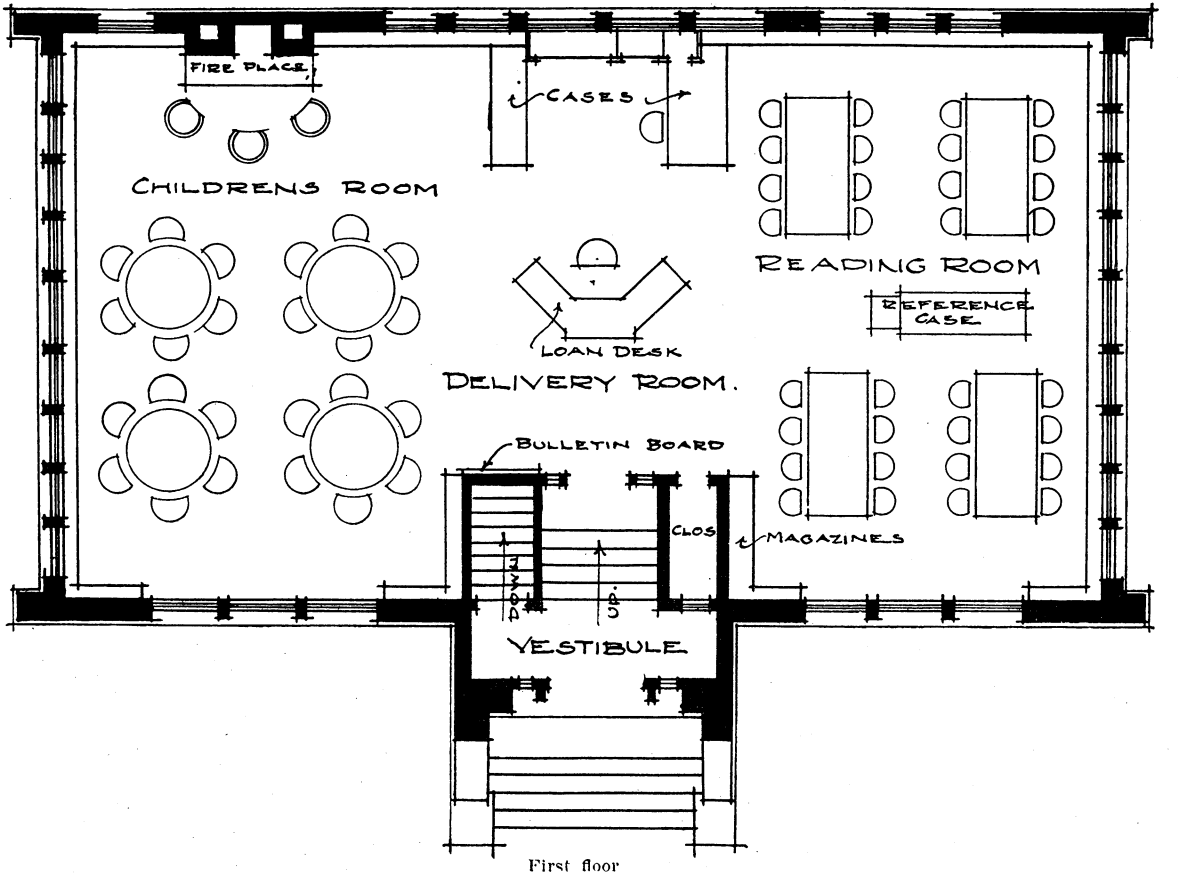
Claude & Starck, Architects, Madison, Wis.



Basement

PLAN OF LIBRARY BUILDINGS AT JEFFERSON AND REEDSBURG

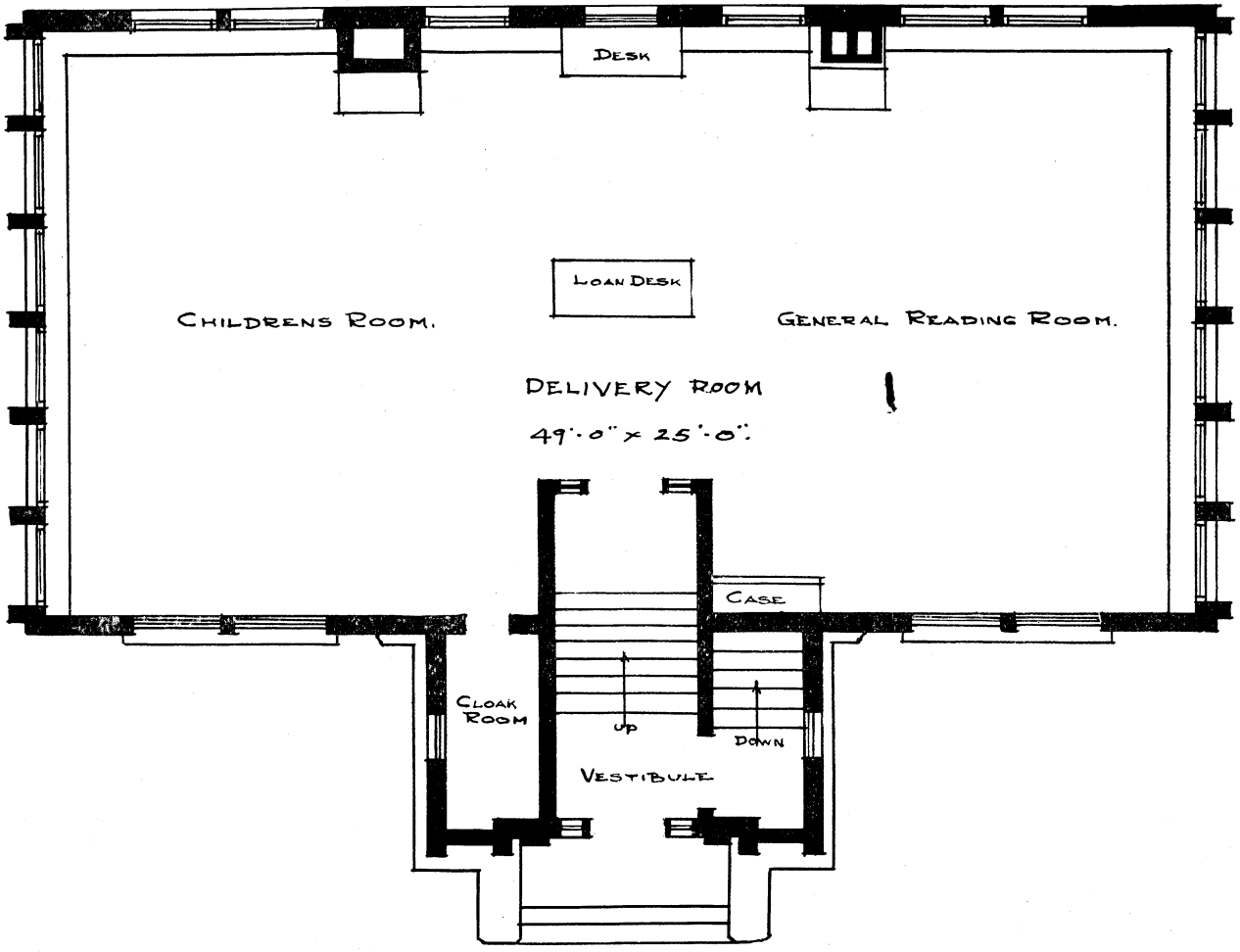
Claude & Starck, Architects, Madison, Wis.



First floor

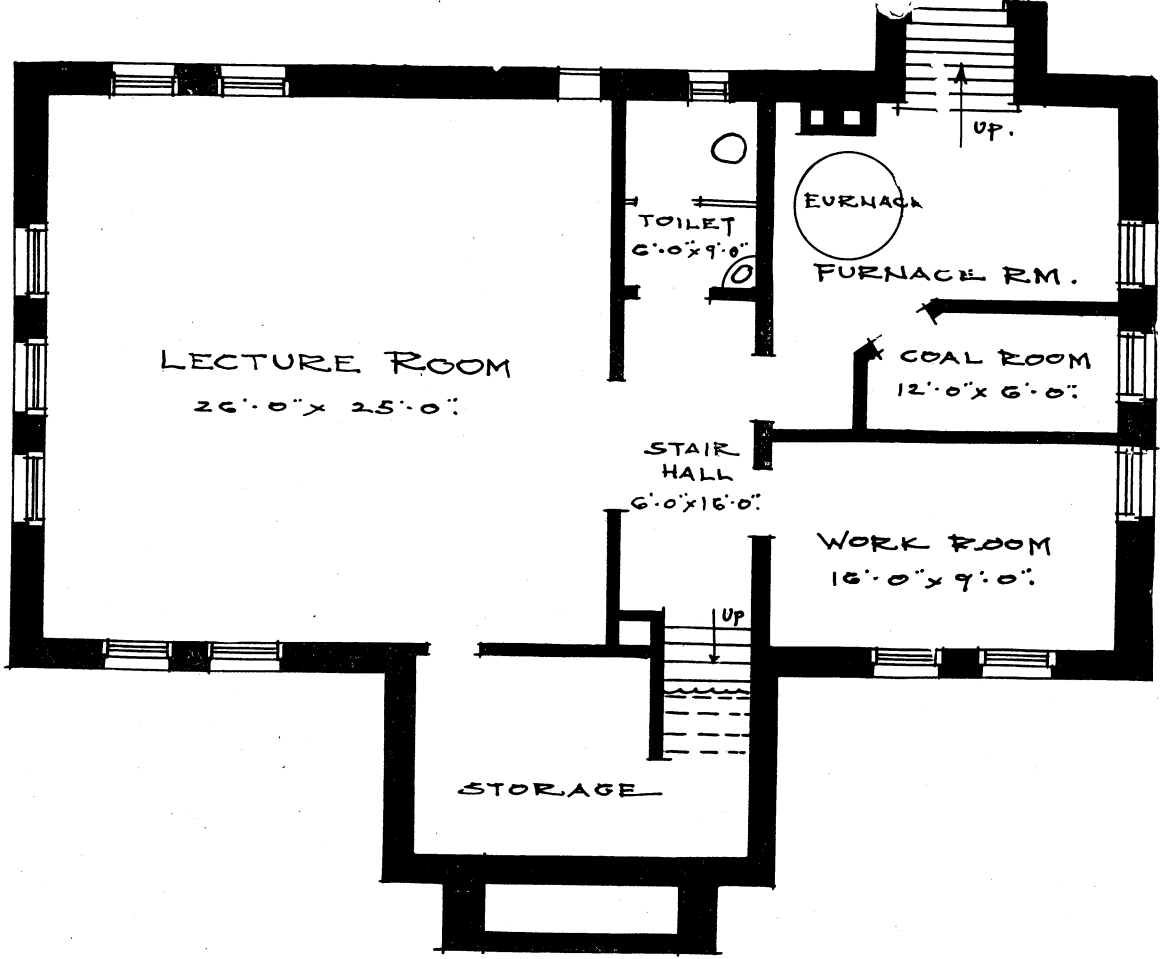
PLAN OF LIBRARY BUILDINGS AT JEFFERSON AND REEDSBURG

Claude & Starck, Architects, Madison, Wis.

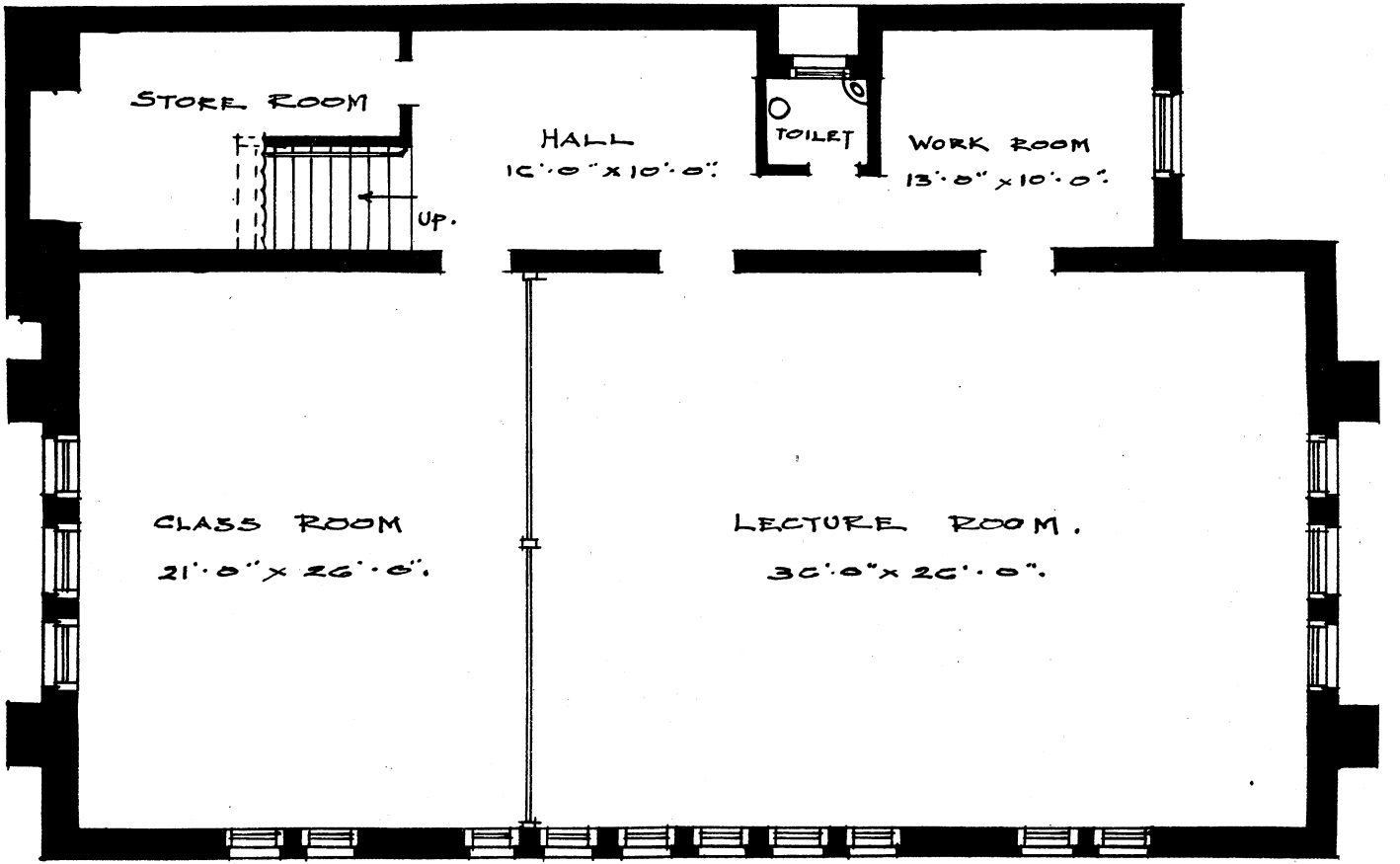


FIRST FLOOR PLAN OF LIBRARIES ERECTED AT KILBOURN AND AT BARRON.

Claude & Starck, Architects Cost, Kilbourn Library, $6,000 Cost, Barron Library, $6,500

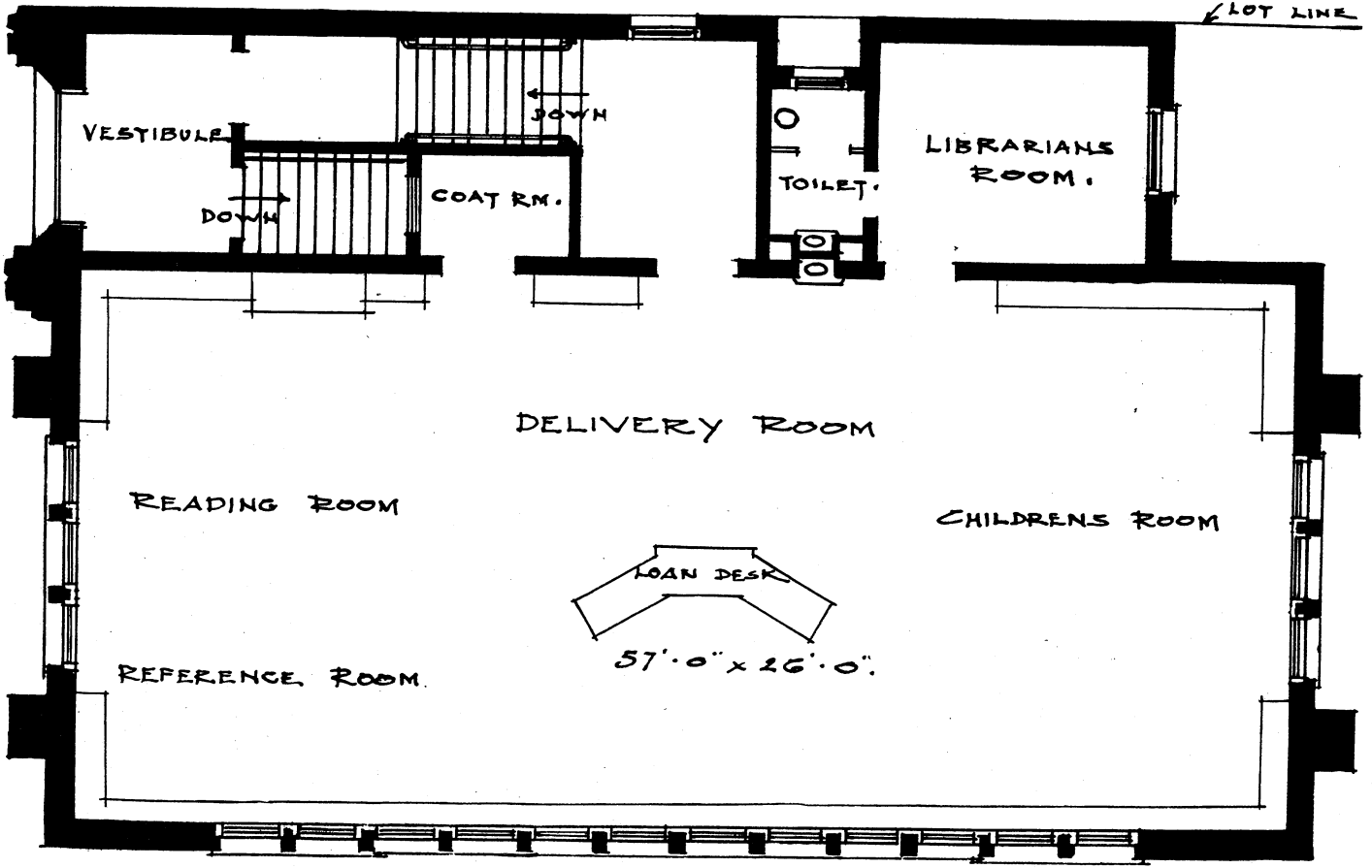


BASEMENT PLAN OF LIBRARIES AT KILBOURN AND BARRON



BASEMENT PLAN
BRANCH LIBRARY
MADISON. WIS.

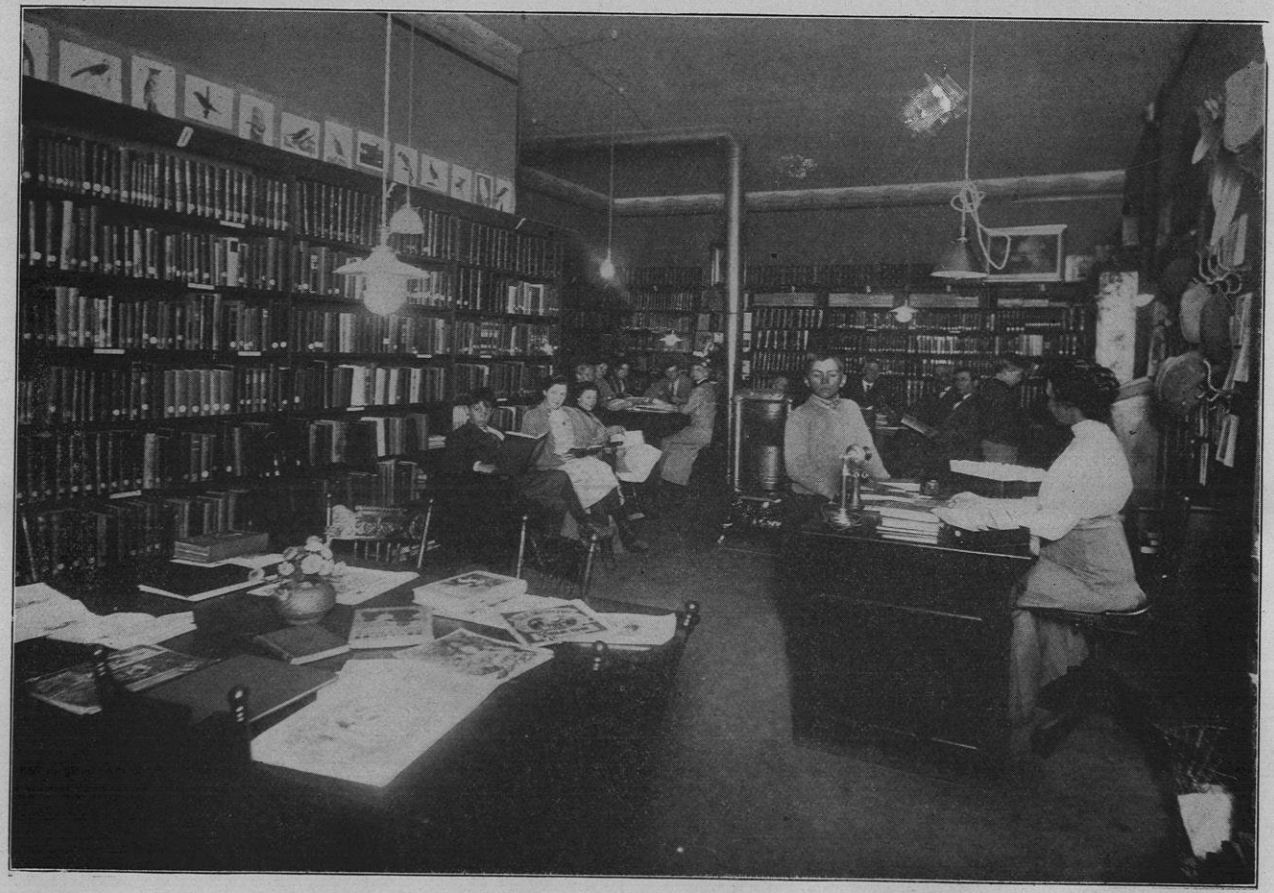
CLAUDE & STARCK. ARCH'TS.
MADISON. WIS.



FIRST FLOOR PLAN
BRANCH LIBRARY.
MADISON, WIS.

CLAUDE & STARCK, ARCH'TS.
MADISON, WIS.

Cost $15,000

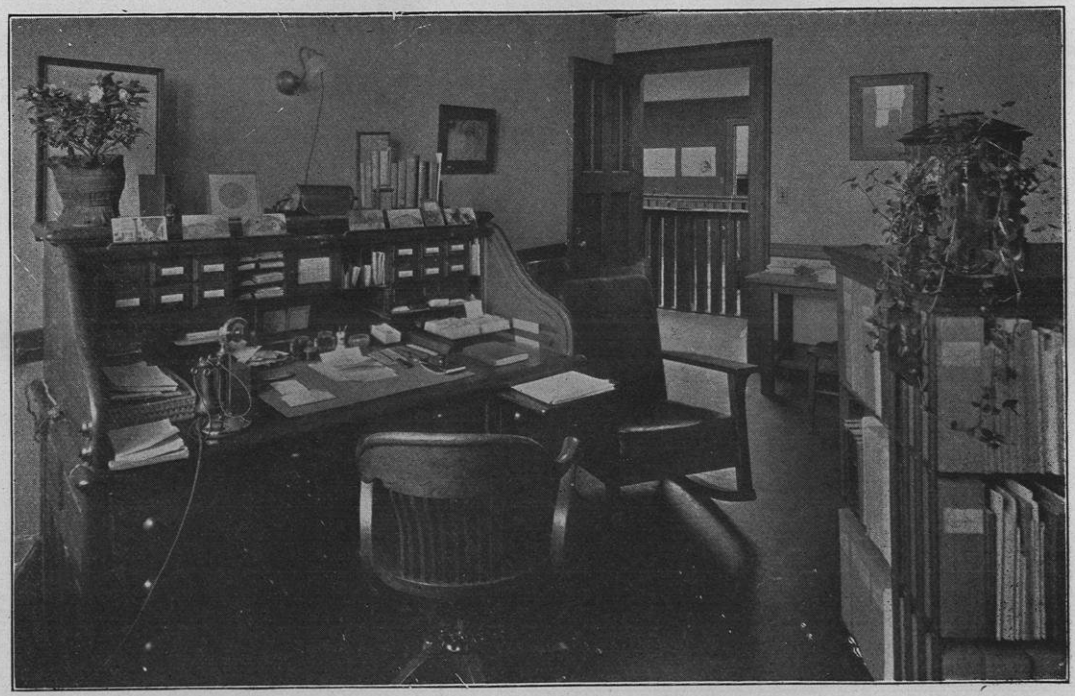


FREE PUBLIC LIBRARY, BRODHEAD, WIS. (1,500 inhabitants)

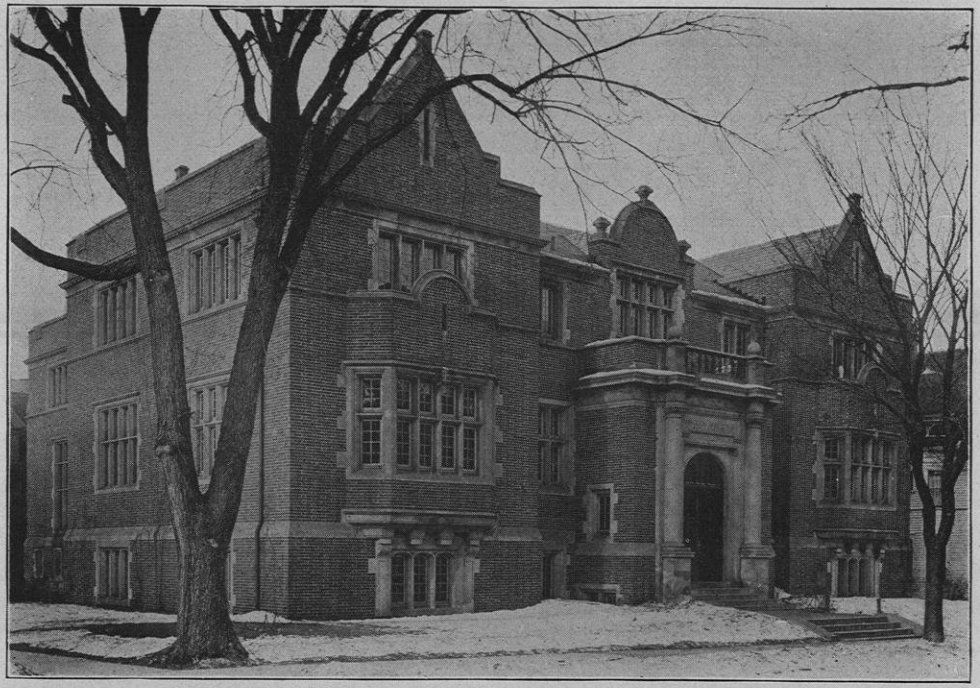
KILBOURN PUBLIC LIBRARY.
Claude & Starck, Architects, Madison, Wis.

TRAVELING LIBRARY STATION, COUDERAY, WIS.

TRAVELING LIBRARY STATION, BANGOR, WIS. (See X on awning)



LIBRARY SCHOOL—PRECEPTOR'S OFFICE



LIBRARY SCHOOL—UNIVERSITY OF WISCONSIN

WHERE THE STUDENTS OF THE WISCONSIN LIBRARY SCHOOL DO SOME OF THEIR REFERENCE WORK

JEFFERSON PUBLIC LIBRARY

LIBRARY SCHOOL—LECTURE ROOM

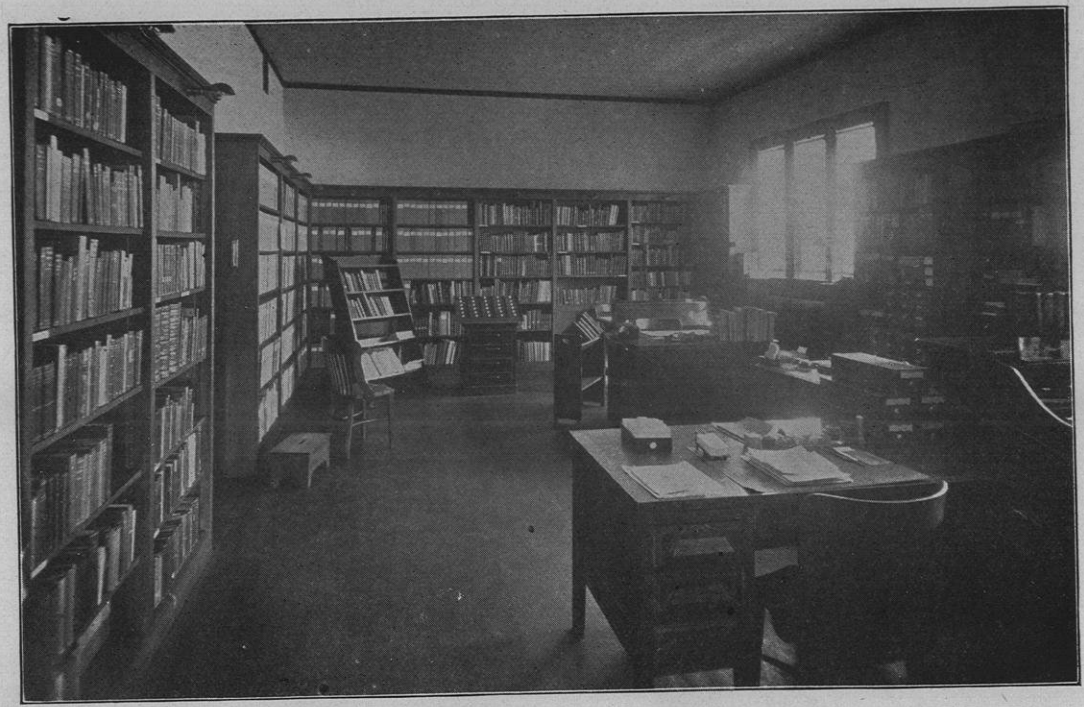
LIBRARY SCHOOL—GALLERY

REEDSBURG PUBLIC LIBRARY (Cost $10,000)

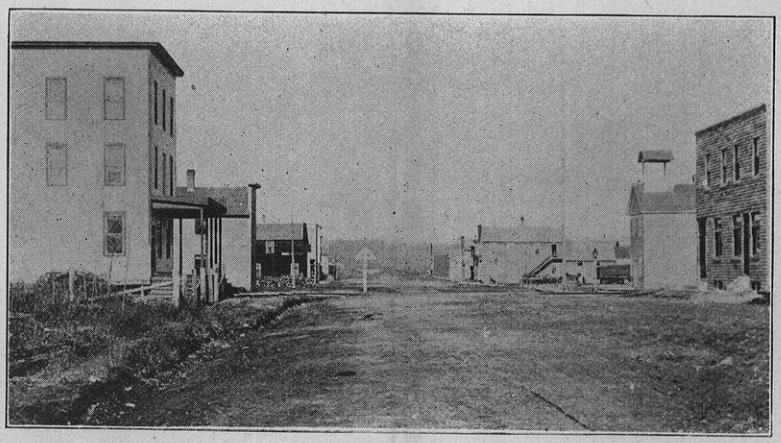
Claude & Starck, Architects, Madison, Wis.

STUDY ROOM

Library School, University of Wisconsin



LIBRARY SCHOOL—STAFF ROOM



TRAVELING LIBRARY STATION IN SCHOOLHOUSE, RADISSON, WIS.

TRAVELING LIBRARY STATION, GERMANIA, WIS.

STORY HOUR AT LINCOLN SCHOOL DISTRIBUTING BRANCH, RACINE, WIS

LIBRARY ROOM AT LINCOLN SCHOOL DISTRIBUTING BRANCH, RACINE, WIS.

CHILDREN'S ROOM, KENOSHA (WIS.) PUBLIC LIBRARY

REST ROOM AND DEPOSIT STATION HILKER-WIECHERS' FACTORY, RACINE, WIS.

Westby[2]	902	603,398													
Weyauwega[1]	967	580,940													
Whitehall	703	416,822	200 00	467 29	667 29	246 40	153 60		17 00	60 34	32 58	39 50	50 00	99 07	681 49
Whitewater	3,224	1,938,976	1,500 00	37 50	1,537 50	420 00	240 00		150 00	120 81	76 05	22 20	178 85	251 31	1,459 22
Williams Bay[4]	500	1,275,054		149 54	149 54				4 00	10 00	17 75		8 30	64 68	104 73
Wittenberg[1]	1,090	399,745													
Wonewoc	789	388,560		182 96	182 96	52 00						9 55	3 00	81 55	119 75

[1]New library.
[2]No report.
[3]Includes endowment fund.
[4]Not separately assessed.
[5]This amount includes heat.

STATISTICS OF PUBLIC LIBRARIES—Continued.

Place.	Librarian.	Population.	Volumes.	Borrowers.	Appropriation.		Total circulation.		Non-fiction circulation.		Percentage non-fiction.	Percentage non-fiction.
		1910	1912	1912	1907	1912	1907	1912	1907	1912	1907	1912
Abbotsford	Sarah Hanson	947	914	339	140	260	1,098	2,956	63	80	6—	3—
Algoma [1]		2,082										
Antigo [2]	Harriet Bixby	7,196	7,238	4,753	1,500	2,995	26,784	39,865	6,510	16,582	24+	42—
Appleton	Agnes L. Dwight	16,773	12,209	4,176	2,500	3,000	49,549	55,331	15,451	16,151	31+	29+
Arcadia	Louise Gasser	1,212	2,093	955	500	500	4,803	5,599	1,001	1,159	21—	21—
Ashland	Cecile McFennelly	11,594	6,617	2,777		500	20,303	24,918	3,161	6,069	15+	24+
Augusta [1]		1,405										
Baraboo	Kate M. Potter	6,324	8,784	1,982	1,900	2,250	32,468	29,531	10,235	8,603	31+	29+
Barron	Mrs. T. J. Powell	1,449	1,060	942		500		9,324				
Bayfield	Mrs. Winnie Robison	2,300	2,460	705	1,000	1,000	4,502	7,688	957	1,159	21+	15+
Beaver Dam	Hattie A. Doolittle	6,758	8,265	1,738	1,239	1,400	25,694	23,532	6,159	7,349	24—	31+
Belleville [2]	Bernice Oliver	422	2,571	399	198	308	2,898	4,606	388	693	13+	15+
Beloit [2]	Nellie M. Myers	15,125	14,100	7,968		4,000	46,033	58,418	8,742	17,021	19—	29+
Berlin	Margaret Biggert	4,636	4,949	1,798	1,000	1,000	13,161	19,552	3,430	3,665	26+	19—
Black Creek [1]		516										
Black Earth	Mrs. H. W. McKenzie	479	100	20		37		50				
Black River Falls	Anna C. Wylie	1,917	2,578	689	350		7,285	9,066	1,172	2,106	16+	23+
Bloomington	Mary E. McIver	620	818	400		7,366		957		101		
Boscobel	Emma Hummel	1,525	2,040	829		25		7,225		351		
Brodhead	Jessie E. Sprague	1,517	2,594	1,164	300	600	7,960	12,131	1,485	5,358	19—	44+
Burlington	Alma Neuhaus	3,212	1,372	900		500		8,040		1,763		
Cedarburg [1]	Adalia Kroehnke	1,777										
Chippewa Falls	Marion E. Bryant	8,893	9,602	3,327	2,000	2,500	35,710	43,860	11,308	16,017	32—	37—
Clintonville [2]	Mrs. F. A. Sedgwick	1,747	1,632	531	30 0	400	3,201	8,334	1,385	1,701	43+	20+
Colby	Mary E. Wicker	869	1,022	346		160		3,237		776		
Colfax	Margaret Granger	701	489	313	100	100	500	4,153	53	793	11—	19+
Columbus	Nellie A. Loomis	2,523	4,424	1,535	800	1,000	18,458	19,684	6,544	5,736	35+	29+
Cumberland	Mrs. S. B. Poukey	1,445	3,574	742	1,000	1,000	10,672	14,839	1,420	2,955	13+	20—
Darlington	Isabella J. Bird	1,808	5,187	1,148	1,000	1,000	12,950	11,129	2,097	1,934	16+	17+
Delafield	Maude Hanson	950	668	118			561	1,380				
Delavan	Laura F. Angell	2,450	4,332	1,337		1,750		18,112		5,335		
De Pere	Helen S. Mathews	4,477	5,775	1,472	1,165	1,226	16,777	19,015	2,011	4,281	13—	22+
Dodgeville	Mrs. Annie Topliff	1,791	1,611	713		200		6,563		869		
Durand	Ella M. Dunlap	1,503	2,879	761	750	750	7,141	9,780	1,383	2,200	19+	22+

East Milwaukee [1]	Hildegard Neumann	707	198									
Eau Claire	Laura M. Olsen	18,310	21,720	6,967	5,000	6,000	50,530	70,262	16,306	24,348	32+	35—
Edgerton	Mrs. Geo. Farman	2,513	4,025	1,178	1,000	1,000	9,229	15,308	1,635	7,197	18—	47+
Eleva [1]	Fay Jones	319			10		90					
Elkhart Lake	Elsie Luchterhand	499	1,352	460								
Elkhorn [2]	Edna L. Derthick	1,707	3,480	476	450	500	7,256	9,550	1,303	2,408	18—	25+
Elroy	Edna L. Roberts	1,729	2,215	1,102		1,000		14,558		3,403		
Evansville [2]	Mrs. H. J. Boyd	2,061	4,007	1,629	200	1,200	12,772	18,655	4,797	7,090	31—	38+
Fairchild	Mrs. L. W. Foster	678	388	280	50	100	1,033	1,962	89	348	9—	18—
Fennimore [1]	Mrs. S. J. Gifford	1,159										
Fond du Lac	Emma E. Rose	18,797	28,679	4,061	5,000	5,500	45,776	57,413	5,254	15,528	11+	27+
Fort Atkinson	Sue C. Nichols	3,877	4,557	1,307	200	87,972	10,191	10,230	1,828	2,907	18—	28+
Fox Lake	Mary E. Collins	851	1,423	500		200		6,542		2,369		
Galesville	Mrs. A. W. Day	973	745	532		50		5,180		907		
Genoa Junction [1]	Mrs. E. R. Manor	709					2,065					
Glen Beulah [1]	Hattie Huntley	500										
Glenwood	Marion Dean	954	1,000	450								
Grand Rapids	Edith L. Rablin	6,521	8,152	2,235	1,000	1,000	15,496	23,554	3,807	6,823	25—	29—
Green Bay	Deborah B. Martin	25,236	18,894	4,577	4,500	6,100	51,081	63,813	11,206	10,505	22—	16+
Hartford	Juno H. Goetz	2,982	1,780	1,072	150	200	8,915	14,317	909	906	10+	6+
Hartland	M. V. Hansen	728	1,304	389	24	25	2,463	1,627	145		6—	
Hayward	Clarence O. Bayo	2,869	4,571	676	1,000	1,000	10,692	16,239	1,934	3,726	18+	23—
Hillsboro	R. Lind	804	1,150									
Horicon	Frances Zedler	1,831	1,645	357		350		4,381		533		
Hortonville	Gerald Nye	863			40		2,494		107			
Hudson	Pearle G. Schoemaker	2,810	4,976	2,035	1,200	1,200	19,292	25,201	5,347	8,252	28—	33—
Independence	Edna J. Elstad	664	1,623	253		150		4,349		402		
Iron River [1]												
Ironton [1]												
Janesville [2]	Lydia E. Kinsley	13,894	21,317	2,920	4,000	4,000	60,273	59,644	12,115	9,511	20+	16—
Jefferson	Lillian E. Mundt	2,582	1,673	949		1,000		6,600		1,676		
Johnson Creek [1]												
Kaukauna	Lillian E. Bell	4,717	5,079	2,254	1,200	1,200	15,784	16,969	3,000	3,842	19+	23—
Kenosha	Cora M. Frantz	21,371	24,025	6,510	14,300	20,791 42	70,658	97,259	24,099	38,580	34+	40—
Kewaunee	Mrs. M. Brunckhorst	1,839	2,276	1,023		564 71		13,860				
Kilbourn	Lillian Ramsay	1,170	4,209	635	479	760 23	14,561	18,114	2,003	3,075	14—	17—
La Crosse	Mary A. Smith	30,417	21,059	9,573	4,000	6,000	65,021	89,286	15,826	23,335	24+	26+
Ladysmith [1]	Mabel Sinclair	2,352			792							
Lake Geneva	Gertrude J. Noyes	3,079	4,795	1,573	1,380	2,175 80	11,070	11,505	2,935	3,422	27—	30—
Lake Mills	Mrs. Katherine H. Atwood	1,672	3,345	1,090	500	600	7,825	12,581	2,817	4,631	36	37—
Lancaster	Bessie McNair	2,329	3,174	1,054	600	750	11,203	11,172	2,375	1,942	21+	17+
La Valle	Mrs. Etta Godden	421	1,058	151	200	125	2,013	3,733	55	50	3—	1+
Lodi [1]		1,044										
Madison	Mary A .Smith	25,531	27,006	14,405	7,500	11,500	73,295	144,762	32,625	55,322	35—	38+

STATISTICS OF PUBLIC LIBRARIES—Continued.

Place.	Librarian.	Population.	Volumes.	Borrowers.	Appropriation.		Total circulation.		Non-fiction circulation.		Percentage non-fiction.	Percentage non-fiction
		1910	1912	1912	1907	1912	1907	1912	1907	1912	1907	1912
Manitowoc	Martha E. Pond	13,027	10,430	4,799	.....	3,500	41,918	38,329	14,552	14,354	35—	37+
Marinette	Ada J. McCarthy	14,610	12,877	5,301	4,000	4,500	45,168	49,165	10,964	13,981	24+	28+
Marshfield	Blanch L. Unterkircher	5,783	6,569	4,020	1,486	2,090	20,939	32,298	8,809	13,144	42+	41—
Mayville	Etta Barott	2,282	1,737	601	.....	450	6,525	6,897	1,041	1,045	16—	15+
Mazomanie	N. Blanche Smith	917	891	705	50	135	3,347	4,845	.....	.....	.....	.....
Medford	S. W. Ingham	1,846	.....	.....	500	.....	10,183	.....	4,982	.....	.....	.....
Menasha	Lucy L. Pleasants	6,081	8,966	2,088	2,378	2,890	24,717	30,000	9,402	14,830	38+	49+
Menomonee Falls	Maude B. Schlafer	919	521	588	298	.....	.....	2,878	.....	94	.....	.....
Menomonie	Mrs. E. C. Nickerson	5,036	14,536	4,300	.....	.....	47,800	52,180	16,593	14,996	35—	29—
Merrill	Katherine C. Barker	8,689	12,458	1,764	150	1,750	22,506	27,340	6,518	7,743	29—	28+
Milton Junction	Inez Brightman	.....	702	554	.....	100	.....	3,893	.....	.....	.....	.....
Milwaukee	C. E. McLenegan	373,857	254,043	58,865	64,507	108,932	697,566	1,140,803	219,119	319,425	31+	28—
Mineral Point	Margaret A. Crawford	2,925	4,933	1,030	250	750	10,426	9,987	1,253	1,478	12+	15—
Mondovi	Mabel Farrington	1,325	2,121	894	350	565	7,260	8,152	2,166	3,218	30—	39+
Monroe	Katherine Smock	4,410	8,071	2,318	1,500	1,800	25,593	27,092	9,418	10,629	37—	39+
Mosinee [2]	Fern H. Clarke	482	3,452	608	100	450	4,794	5,757	1,883	1,309	39+	23—
Mt. Horeb	Anna Helland	1,048	301	323	.....	100	.....	3,645	.....	434	.....	.....
Necedah	Rhoda Bishop	1,054	643	427	.....	300	.....	4,629	.....	.....	.....	.....
Neenah	Cora I. Lansing	5,734	12,679	2,471	2,474	2,740	30,142	34,245	9,060	10,584	30+	31—
Neillsville	Mrs. Mary U. Hoey	1,957	3,683	1,565	558	587	10,350	11,587	2,371	2,554	23—	22+
New London	Alice Millerd	3,383	2,839	1,487	300	750	6,929	13,476	747	3,204	11—	23+
New Richmond	Mrs. Anna P. Epley	1,988	2,362	381	489	515	4,240	8,859	300	3,089	7+	35—
No. Fond du Lac	Hazel Burdett	1,960	2,076	1,135	234	250	7,973	6,485	2,450	1,218	31—	19—
North Freedom	Mrs. E. J. Lawton	647	704	249	40	40	2,579	2,847	.....	135	.....	.....
No. Milwaukee	Annie G. Godfrey	1,860	1,959	512	300	500	5,485	6,912	.....	584	.....	.....
Oakfield	Helen Smith	522	1,344	212	150	170	3,633	3,638	140	61	4—	2—
Oconomowoc	Jennie C. Walther	3,054	5,458	1,193	.....	.....	10,462	7,211	836	546	8—	8—
Oconto	Genevieve Mayberry	5,629	7,813	2,220	1,500	1,500	36,866	29,882	15,851	9,145	43—	31—
Oconto Falls	Maggie Degan	1,427	738	582	.....	.....	3,904	3,035	.....	.....	.....	.....
Oregon	Mrs. Nellie Ozbum	712	1,463	658	.....	312	.....	4,101	.....	872	.....	.....
Orfordville	Gena Stuvengen	475	.....	.....	50	75	946	.....	65	.....	.....	.....
Oshkosh	Julia Rupp	33,062	25,700	8,820	4,225	5,075	91,849	122,025	26,963	27,189	29+	22+
Park Falls	Mrs. Cecile S. Paquin	1,972	916	587	300	575	2,012	6,988	593	.....	.....	.....

Pewaukee	Jennie S. Clark	749	2,485	646	144	144	4,331	5,240				
Platteville	Mrs. Carrie Nicklas	4,452	3,118	1,553	500	1,000	16,557	19,798	2,657	3,341	16+	17—
Plymouth [2]	Grace Prescott	3,094	3,640	1,582	903	1,173	12,994	16,073	1,140	4,273	9—	27—
Portage	Mrs. N. E. Wilson	3,792	878	468		1,400	36,381	33,169	13,505	13,265	37+	40—
Port Washington	Mrs. W. G. Clough	5,440	9,685	2,389	1,400	75		6,394		123		
Prairie du Chien [1]	Hazel Savage	3,149										
Prairie du Sac	Estella M. Carpenter	699	1,256	539	250	150	2,986	5,016	212	217	7+	4+
Prescott [1]		936										
Racine	Mary J. Calkins	38,002	20,855	10,686	7,500	10,000	81,383	121,135	21,467	36,391	26+	30+
Randolph	Mrs. J. H. Davis	937	531	435	50	75						
Reedsburg	Mrs. N. A. Cushman	2,615	3,383	1,782	500	1,000	12,772	16,307	2,870	7,228	22+	44+
Rhinelander	Harriet L. Allen	5,637	5,901	2,248	1,948	1,800	20,629	23,799	6,338	7,446	31—	31+
Rib Lake [1]		1,018					403		153			
Rice Lake [2]	Mrs. James Robbins	3,968	4,760	1,877		1,000	13,811	19,412	1,335	1,708	10—	9—
Richland Center	Vera Eastland	2,652	4,043	860	1,000	1,250	13,623	15,274	2,798	3,046	21—	20—
Ripon	Blanche Thompson	3,739	6,541	1,764	1,200	1,200	14,169	17,549	5,176	5,477	37—	31+
Seymour	Mrs. R. R. Uttormark	1,109	1,244	461	50	200	1,337	5,128	162	433	12+	8+
Shawano	Lulu M. Roberts	2,923	1,710	904	300	325	5,483	11,177	840	1,352	15+	12+
Sheboygan	Bertha Marx	26,398	12,811	6,741	4,709	4,979	45,979	57,600	8,841	12,816	19+	22+
Shell Lake	Helga Agren	902	963	357		100		4,821				
Shullsburg	Mrs. S. L. Rule	1,063	750	423		100		750				
Shiocton [1]		536										
South Milwaukee [1]		6,092					2,948		1,408			
Sparta	Jennie Scouten	3,973	7,558	1,940	1,200	1,950	27,226	27,595	7,786	8,001	29—	29—
Spring Green	Nettie M. Hayes	73 0	516	278	35	75	2,210	2,153	108	1,071		
Spring Valley [1]	Mrs. Ida Davis	972										
Stanley	Martha E. Dunn	2,675	3,614	872	1,000	1,300	10,501	17,064	4,759	5,250	45+	31—
Stevens Point	Mary Dunegan	8,692	6,373	1,300	2,000	1,200	70,289	27,731	12,193	4,990	17+	18—
Stoughton	Ananda Drotning	4,761	3,507	1,530	1,049	1,300	16,500	16,065	2,675	4,676	16+	29+
Sturgeon Bay	M. Grace Lown	4,262	2,813	2,142	1,200	1,300	7,657	15,178	1,833	1,653	24—	11—
Sun Prairie	Margaret Dumphy	1,119	4,202	211	100	100	2,412	4,202	203	464	8+	11+
Superior	Flora B. Roberts	40,384	23,426	7,040	7,000	2,500	71,051	10,529	21,641	37,141	30+	34—
Thorp [1]	Mary Phillips	741			100		6,252		567			
Tigerton	Ethel M. King	728	79	140								
Tomah	C. W. D. Vowinkel	3,419	3,875	1,426	700	1,200	13,255	21,499	3,710	3,094	28—	14+
Tomahawk	Mrs. H. S. Smith	2,907	2,767	1,077		500		14,124		1,544		
Two Rivers	Lizzie G. Baetz	4,850	4,520	1,632	1,000	1,025	12,947	17,156	1,167	3,629		
Viroqua	Marion Dahl	2,059	4,135	1,198	1,000	1,000	11,821	13,142	1,788	3,250	15+	25—
Washburn	Mrs. May M. Greenwood	3,830	5,152	1,557	1,800	1,800	18,781	23,068	4,325	9,814	23+	43—
Waterloo	Mrs. H. R. Abell	1,220	1,600	464	100	150		6,390		660		
Watertown [2]	Gabriella Ackley	8,829	6,741	3,314	2,013	2,675	35,134	43,239	11,192	15,764	32—	36+
Waukesha	Fannie L. Ells	8,740	6,704	4,210	1,500	1,500	24,130	27,199	2,035	4,496	8+	17—
Waupaca	Mary Benlick	2,789	3,719	1,990	600	600	14,598	15,278	2,039	4,355	14—	28+
Waupun	Kathryn L. Bunker	3,362	7,136	2,024		1,165		17,183		2,635		

STATISTICS OF PUBLIC LIBRARIES—Continued.

Place.	Librarian.	Population.	Volumes.	Borrowers.	Appropriation.		Total circulation.		Non-fiction circulation.		Percentage non-fiction.	Percentage non-fiction.
		1910	1912	1912	1907	1912	1907	1912	1907	1912	1907	1912
Wausau	Grace M. Stevens	16,560	7,976	5,788	.....	2,900	24,225	50,427	5,935	18,342	24+	36+
Wauwatosa	Winnefred Bailey	3,346	6,172	1,116	800	1,500	10,529	17,828	2,053	4,525	20—	25+
West Allis	Edna M. Philip	6,645	1,044	1,170	.....	500	.....	5,040	.....	.....	.....	.....
West Bend	Clara E. Rolfs	2,462	2,892	540	350	400	8,771	9,516	2,252	1,658	26—	17+
Westby [1]	.....	902	.....	.....	100	.....	1,514	.....	60	.....	.....	.....
Weyauwega [1]	.....	967	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitehall	A. Francena Chaffee	703	2,474	1,207	250	200	5,106	4,740	991	624	19+	13+
Whitewater	Ella A. Hamilton	3,224	6,987	2,118	1,400	1,500	21,731	22,299	3,939	5,348	18+	24—
Williams Bay	S. B. Barrett	500	220	183	.....	.....	.....	552	.....	152	.....	.....
Windsor [1]	Mary F. Connor	90	.....	43	.....	.....	.....	.....	.....	.....	.....	.....
Wittenberg [1]	.....	1,090	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wonewoc	Ruth D. Huff	782	656	457	.....	.....	.....	656	.....	190	.....	.....

[1] No report.

[2] CHANGE IN LIBRARIAN SINCE ANNUAL REPORT WAS MADE.

Belleville ..... Mrs. F. V. Wanke
Beloit ..... Nellie B. McAlpine
Clintonville ..... Mrs. J. L. Stewart
Elkhorn ..... Linn Reynolds
Evansville ..... Maye Phillips
Janesville ..... Gertrude Cobb
Mosinee ..... Elizabeth Burke
Plymouth ..... Mrs. Harriet Corbett
Rice Lake ..... Mildred Dean
Watertown ..... Mabel Smith

STATE TRAVELING LIBRARIES

Kind	On hand July 1, 1910.				On hand July 1, 1912				Net gain			
	Libs.	Total	Vols.	Total	Libs.	Total	Vols.	Total	Libs.	Total	Vols.	Total
1. Fixed collections												
English	284		15,292		383		20,375		99		5,083	
Fiction	17		432		17		432					
Juvenile	8		343		8		343					
New book	21		1,050		29		1,450		8		400	
Town	41		4,100		54		5,400		13		1,300	
German	101		3,676		108		3,918		7		242	
Norwegian	40		1,400		43		1,505		3		105	
Polish	9		295		11		365		2		70	
Yiddish					4		102		4		102	
		521		26,588		657		33,890		136		7,302
2. Groups												
Bohemian	10		116		10		116					
Danish	3		28		3		28					
Ecclesiastical	15		212		16		400		1		188	
English					4		55		4		55	
French	1		21		2		37		1		16	
German	114		1,149		117		1,183		3		34	
Norwegian	34		365		44		472		10		107	
Polish	27		272		27		272					
Special	13		329									
Study	83		2,722		116		3,282		33		560	
Swedish	5		54		5		54					
Open shelf			1,000				2,000				1,000	
		305		6,268		344		7,899		39		1,960
Totals		826		32,856		1,001		41,789		175		9,262

[1] Contain from 35 to 100 volumes each.
[2] Contain from 10 to 25 volumes.

TRAVELING LIBRARY STATIONS

	1909—10	1910—11	1911—12
Number communities actually served	395	466	609
Number new and resumed stations	75	113	179
Number requests filled	834	948	1,001

STATISTICS INDICATING GROWTH OF LIBRARY COMMISSION WORK AND ITS RESULTS. (LEGISLATIVE REFERENCE DEPARTMENT NOT INCLUDED.)

I EXTENSION AND VISITATION							II TRAVELING LIBRARIES					III LIBRARY SCHOOL					
		Growth of Public Libraries in State													*Equipment*		
Year	Net expenditures of commission	Total appropriation	Total circulation	Number of volumes	Organization visits made	Student help in months of service	(1) Number of libraries	(2) Number of groups	Total number of libraries and groups	Total number of volumes	Number of different communities actually served	Students taking nine months course	Students taking short course	Students taking special course	Furniture, etc., value	Books—number of volumes	Pamphlets
1903-4	$13,924 51	$172,324 70	2,341,472	568,069	.....	.....	.....	.....	.....	.....	.....	.....	30	.....	$772 62	.....	.....
1904-5	15,365 33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	29	850 07	.....	.....
1905-6	20,359 57	190,227 55	2,699,269	675,743	.....	.....	.....	.....	.....	.....	.....	.....	20	.....	2,418 92	2,006	257
1906-7	19,356 60	.....	.....	.....	124	44	.....	.....	.....	.....	.....	22	31	20	2,857 22	2,722	557
1907-8	17,430 37	226,309 30	3,149,526	763,742	131	38	.....	.....	.....	.....	.....	19	18	6	,034 82	2,950	577
1908-9	20,243 48	.....	.....	.....	162	38	468	266	734	29,126	.....	19	13	3	3,436 82	3,177	591
1909-10	19,728 64	278,093 30	3,441,815	857,906	217	50	521	305	826	32,856	395	26	15	.....	3,456 12	3,471	788
1910-11	18,233 85	.....	.....	.....	159	42	570	334	904	36,474	466	24	28	.....	3,593 62	3,587	841
1911-12	23,406 61	311,472 47	3,944,223	982,254	224	57½	657	344	1,001	41,789	609	31	(3)170	.....	3,879 41	3,724	886
1912-13	.....	.....	.....	.....	.....	65½	.....	.....	.....	.....	.....	32	37	.....	.....	.....	.....

(1) Libraries are the larger collections of books usually over 50 volumes each.

(2) Groups are the smaller collections sent out, usually under 50 volumes.

(3) In 1911 a conference lasting two weeks took the place of the regular six weeks course.

Increase of number of trained librarians in libraries of the state.

	1908	1912
Librarians and assistants who are graduates of library schools	15	56
Librarians and assistants with summer school training	73	113

LIST OF PUBLICATIONS OF THE COMMISSION

The publications of the commission are sent free upon application to all persons within the state. The postpaid price to those outside the state is noted below. Where no price is given the publications will be sent free upon application.

American social questions (bibliographies) each 10c.
1 Negro problem (out of print.)
2 Immigration
3 Labor
4 Poverty
5 Wealth
6 Business morals
Anniversaries and holidays (out of print.)
Biennial report, v. 1–9
Check list of journals and public documents of Wisconsin, 1903
Circulars of information:
1 Establishing a library, first steps
2 How to secure a traveling library
3 Suggestions for library rules and regulations. 5c.
4 Magazines for the small library. 10c.
5 Campaigning for a public library. 10c.
6 Legislative reference department
7 Traveling libraries in Wisconsin
Legislative reference department bulletins: each 12c.
1 Railway co-employment (out of print)
2 Lobbying (out of print)
3 Corrupt practices at elections (see No. 23)
4 Exemption of wages (out of print)
5 Municipal electric lighting (out of print)
6 Trust company reserves (out of print)
7 Taxation of trust companies (out of print)
8 Municipal gas lighting (out of print)
9 Boycotting (out of print)
10 Blacklisting (out of print)
11 Initiative and referendum (see no. 25)
12 The recall (out of print)
13 Primary elections
14 Proportional representation
15 Juvenile courts
16 Telephones; interchange of service
17 Mortgage taxation
18 Municipal home rule charters
19 Tenement house legislation, state and local
20 Accident insurance for workingmen (out of print)
21 Initiative and referendum: state legislation (see no. 25)
22 Certified public accountants
23 Corrupt practices
24 State legislation concerning tuberculosis
25 Initiative and referendum
Instructional department pamphlets:
1 Wisconsin library school, 1909–10
2 Short course, library school, 1910

3 Picture collections in small libraries. 10c.
4 Supplementary course, library school, 1908
5 Commercial geography. 10c.
6 Books on missions. 10c.
7 How to care for books in a library. 5c.

List of books for girls and young women.

Miscellaneous pamphlets:

Laws of Wisconsin relating to libraries and the free library commission
Library extension, by E. A. Birge, 1905 (out of print)
One hundred popular German books
Some Wisconsin library buildings

Study outlines: 10c each.

1 Japan
2 Russia
3 Canada
4 Travel in England and Wales
5 Travel in Scotland and Ireland (out of print)
6 French History
7 Modern Italy—History
8 Shakespeare's King John; by Mrs. H. A. Davidson
9 Shakespeare's King Richard Second; by Mrs. H. A. Davidson
10 Shakespeare's King Henry Fourth, Part I.-II.; by Mrs. H. A. Davidson
11 Shakespeare's King Henry Fifth; by Mrs. H. A. Davidson

Nos. 8-11 not furnished outside the State. They may be procured from Mrs. H. A. Davidson, Cambridge, Mass.

12 United States History—Discovery and Exploration (out of print)
13 United States History—Colonial Period (out of print)
14 United States History—Revolution (out of print)
15 United States History—Formation Period, 1783-1817 (out of print)
16 United States History—Expansion Period, 1817-1860 (out of print)
17 United States History—Civil War and Reconstruction, 1860-1876 (out of print)
18 United States History—From Reconstruction to Date, 1876- (out of print)
19 Travel in the United States
20 French Art
21 American Literature (out of print)
22 English Literature—Early Victorian Period
23 Wisconsin History

Wisconsin library bulletin (bi-monthly) January, 1905, to date. 60c the year.

ERRATA.

Page 21. The west boundary line recommended for the permanent forest reserve should be as follows, from the northeast corner of section 13 in T. 44, R. 4 E.: "thence south on the east line of R. 4 E. to the northeast corner of T. 43, R. 4 E.; thence west to the northwest corner of T. 43, R. 4 E.; thence south to the northwest corner of T. 41, R. 4 E.; thence west to the northwest corner of T. 41, R. 2 E.; thence south to the southwest corner of T. 41, R. 2 E."

The townships excepted from the permanent forest reserve should include: T. 41, R. 10 E.

Page 76. The third paragraph should read: "As the Federal patrolmen received $4,431.25 in 1911, and $4,238.50 in 1912, the cost of protecting the 1,000,000 acres of privately owned lands has been less than ½ cent per acre per annum."

Page 100. Last paragraph, first line, should read: "The price received for all lands sold averages $3.35 per acre."

Page 102. Lines 6, 7 and 8 should read:

Total acres owned by the State, north of town 33	342,704.43
Total amount invested therein	$553,729.39
Average amount invested per acre	$1.61

CATHEDRAL POINT, TROUT LAKE, VILAS COUNTY. A PORTION OF THE FOREST RESERVE.

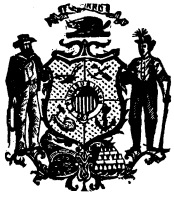
REPORT

OF THE

STATE FORESTER

OF WISCONSIN

For 1911 and 1912



MADISON
DEMOCRAT PRINTING CO., STATE PRINTER
1913

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OFFICE OF THE STATE FORESTER,

MADISON, WIS., Dec. 31, 1912.

State Board of Forestry.

GENTLEMEN: I have the honor to submit herewith my report for 1911 and 1912.

Very respectfully,

E. M. GRIFFITH,

State Forester.

REPORT OF THE STATE FORESTER.

FORESTRY PROBLEMS ON STATE LANDS.

History of Forestry Legislation.

As early as 1867 a law was passed in Wisconsin providing for the appointment of three commissioners to investigate and report upon the injurious effects of clearing the land of forests, the duty of the state in regard to the matter, and the experiments that should be made toward the growth and proper management of forest trees. An exhaustive and very valuable report was completed and published the same year by the commissioners, I. A. Lapham, J. G. Knapp and H. Croker.

In 1897 another law was passed providing for the appointment of a forestry commission of three members by the governor, who were to draw up a plan for the protection and utilization of the forest resources of the state, and for the organization of a forestry department and the creation of a forest reserve. The members appointed were George B. Burrows, H. C. Putnam, and Ernest Bruncken and their report was made and published in 1898, and it included a draft of a bill recommended for passage. However, no legislation resulted until 1903.

The first forestry commission, which was in existence before the forests of the state had been enormously depleted by lumbering, suggested the regulation of timber cutting, in order to prevent public calamity, deplored the ruthless devastation of large tracts of land by nonresident lumbermen, and advocated experiments in tree culture and investigation of the value of various species. The second commission, appointed after thirty years more of heavy lumbering operations had taken place in the state, advocated the immediate establishment of a system of

state forests, "not only for the protection of the climate and waterflow of the state, but for the purpose of providing a sufficient supply of raw material to the various lumber and wood industries" and outlined a plan for the organization of a department to carry out this work.

The forestry law that was finally passed in 1903, chapter 450, was essentially the same as the bill recommended by the forestry commission of 1897. It created an unsalaried forest commission composed of the attorney-general, secretary of state and state treasurer, ex officio, and of two others to be appointed by the governor, and provided for a superintendent of forests who was also to be state fire warden and as such to appoint town fire wardens. This law was intended to stop the sale of state lands so that they should constitute the nucleus of a state forest reserve but there were conflicting sections and the law also provided for the sale of the lands and such sales were made after the passage of the law. The attorney-general could not construe the law, it was so loosely drawn, and the state officers who then were members of the forest commission were obliged to place such high valuations upon the lands that they would not readily sell, in order to save any considerable acreage for forest reserve purposes. The law provided for the establishment of one or more forest experiment stations and a detailed inquiry into the character and condition of each parcel of land contained in the forest reserve, but it made an appropriation of only $3,000 annually besides the salary of the superintendent of forests and none of the money received from the sale of lands or dead and down timber was to go into a forest reserve fund. Under this law in February, 1904, a technically trained forester was appointed superintendent of forests, who has directed the work down to the present time. The land commissioners set aside in 1904 as the nucleus of a permanent forest reserve, 40,000 acres of state land in Oneida and Vilas counties, and again in the same year 22,000 acres in Iron county. Thus was real forestry work begun.

In 1905, a much more effective forestry law was passed, chapter 264. A state board of forestry was created in place of the former forest commission, and as it was made up of the president of the state university, the director of the state geological survey, the dean of the state agricultural college, the attorney-

general and one member appointed by the governor, the membership of the board was much less liable to change and a uniform non-political forest policy could be counted upon. The state forester was given an assistant and a clerk as well as authority to employ the necessary assistance for the improvement and protection of the forest reserve. All state lands north of town 33 except school lands were set aside for forestry purposes and those that were not suitable for permanent forest reserve lands because of their isolation or greater value for agriculture, could be sold upon the recommendation of the state board of forestry, and the funds so acquired could be used to purchase other lands suitable for the permanent forest reserve. Moreover, all money received from the sale of forest reserve lands or products from them was to constitute a forest reserve fund and the annual appropriation was increased to $9,800. The system of town fire wardens remained practically the same. Railroads and individuals operating engines of various kinds were made to take precautions against the setting of fires in forest or marsh lands and were made more specifically liable for fires caused by them.

In 1907, a law known as chapter 491 was passed, which appropriated ten thousand dollars per annum for acquiring lands as additions to the forest reserve by purchase at tax sales or by purchase from counties that had acquired lands under tax deeds. This law was amended at the following session of the legislature so that other lands than tax title lands could be purchased by the public land commissioners for the same purpose. In 1907, chapter 592, also, was passed, exempting from taxation for a period of 30 years not to exceed 40 acres of land planted to forest trees. Although this law was given publicity, no landowner has ever taken advantage of it, probably on account of the mistaken feeling that the initial cost of planting would be high. Chapter 335 authorized the Wisconsin Valley Improvement Company to build dams and create storage reservoirs along a certain portion of the Wisconsin river, so as to produce a more uniform stream flow. The creation of reservoirs is under the supervision of the State Board of Forestry and the financial operations of the company are under the supervision of the railroad rate commission, that is, the regulation of toll rates and so forth.

There are some 47,000 acres of land within five Indian reservations in Wisconsin that are claimed by the state under the Swamp Land grant. A law looking to the settlement of the State's claim, chapter 96, was passed in 1907, authorizing the State Board of Forestry in their discretion to have these lands appraised and to convey the state's interest in and title to such lands to the United States upon the payment to the state of the amount of the appraisal. A bill is now pending in Congress providing for supplementary action by the government in regard to the state's claim. The land in the Lac du Flambeau and Lac Courte Oreille reservations is not suitable for agriculture and the same is true to a considerable extent of the land in the Menominee and La Pointe reservations. The state should make an effort to have the government establish permanent forest reserves on the nonagricultural lands in the La Pointe, Lac Courte Oreille and Menominee reservations and it is particularly to be desired that there be a forest reserve on the Lac du Flambeau reservation as it is surrounded by state forest reserve lands and there should be coöperative management of the state and federal forest reserves.

In 1909, three laws were passed, worthy of note. In chapter 374, the state reserved to itself in all future sales of state lands, all mineral and water power rights; town boards were authorized to acquire tracts of land to be used and maintained as town woodlots in chapter 77; and by chapter 119 the State Board of Forestry was authorized to inspect all locomotives operated in forest or grass land to see that they were properly equipped to prevent the escape of sparks, and was also authorized to direct railway corporations to patrol their tracks during a dangerously dry time.

In 1911, several forestry laws were enacted. Chapter 601 entirely changed the organization of the town fire wardens system. Instead of the appointment of one or more fire wardens as needed, for any town, by the State Forester, every town chairman is made, ex officio, town fire warden, and the superintendents of highways are made assistant town fire wardens. Many towns have no superintendents of highways, as they prefer to have their road work done under contract. Therefore, some towns have one warden and some have as many as 24 or 25. Moreover, the towns that have the larger number of road sup-

erintendents are those that are thickly settled and therefore have little or no timber. Thus we have large numbers of fire wardens in towns where they are little needed and very few in timbered, unsettled townships where fire protection is much needed. Moreover, local fire wardens may change with every annual town election and it is a difficult matter for the State Forester, who is also State Fire Warden, to keep an accurate record of a large number of ever changing fire wardens, and to prepare them for their duties by giving them necessary information and to supply them with warning notices, report blanks and pamphlets without great waste. The State Forester may appoint needed fire wardens temporarily on recommendation of a town chairman, in cases of emergency. He is also given authority to mass such fire warden force as may be available at any special point to suppress fires but the law makes no provision for meeting the expense incident to the exercise of such authority. The expense of preventing or extinguishing running fires by town or assistant town fire wardens or those called into service by them is to be borne by the road district or districts within which the expense was incurred, and paid from the town treasury. Payment for services performed by fire wardens appointed by the State Forester is made, one-half by the county where such services are performed and one-half by the state. The town boards are given the authority to forbid the setting of fires during a dangerously dry time. Although this law may be in many respects an improvement over preceding laws, it could be very greatly improved.

Chapter 245 makes every railroad corporation owning or operating a railroad in the state responsible for all damage to property by fire communicated directly or indirectly by locomotive engines or by fire set to clear their rights of way. A property owner who suffers damage has only to give notice of his loss and proof that the fire originated from the railway, to any officer, or station agent or ticket agent, and if the loss is not made good in 60 days, the corporation is liable for double the amount of damage in an action in court. If the corporation offers a fixed sum that is refused and a court fails to sustain the property owner's claim for larger damages, the owner recovers only his damages and the railroad recovers its costs.

Chapter 494 strengthened a law already in existence in regard to locomotives, by giving any inspector designated by the State Board of Forestry the power to order out of service immediately any locomotive or engine not properly equipped with fire protective devices until such locomotive or engine has been properly equipped. In case of disagreement between any inspector and any railroad as to the adequacy of fire protective equipment of engines or locomotives, an appeal can be made to the railroad rate commission for a decision and they are to determine the matter.

Chapter 638 reënacted the general forestry law with a few changes. The State Board of Forestry was given the power to exchange lands, so as to facilitate blocking up the permanent forest reserves and the annual appropriation was increased to $35,000 as the work in the field had developed to such an extent that a much larger force of assistants was necessary.

Until 1911 there had been no appropriation for the purchase of forest reserve lands (except the $10,000 appropriation for tax title and other lands), the fund for such purpose being derived almost entirely from the sale of the state lands north of town 33 that were not suitable for forestry purposes. Chapter 639 appropriated annually for five years $50,000 to constitute a forestry investment fund, authorized the State Forester to enter into contracts for the purchase of lands and provided for the condemnation of lands needed for forestry purposes. This law also provided for a forest reserve committee of the legislature consisting of two senators and three assemblymen to be appointed during each session and to investigate and report before the end of such session upon purchases of forest reserve lands made since the preceding legislative session, and also upon prospective purchases.

Chapter 640 authorized the Chippewa and Flambeau Improvement Company to construct and operate storage reservoirs upon certain portions of the Chippewa and Flambeau rivers for the purpose of producing a uniform stream flow.

What Has Been Accomplished In Forestry.

The first work undertaken by the Forestry department was the creation of a permanent forest reserve. An investigation that had been made before any state lands were set aside had

shown that that part of the state lying in Forest, Oneida and Vilas counties, and in the eastern portion of Iron and Price counties was unquestionably the region to select, as it contains a very large number of lakes which are the headwaters of our important rivers, and as the greater part of the land is too sandy, rocky or swampy to be suitable for agriculture. It is very doubtful if there is another region in the United States where there are so many lakes within an equal area and where so many important rivers have their source.

The three main objects of forestry in this state are, first, to maintain forests on the headwaters of our important rivers, so as to keep the stream flow uniform; second, to provide raw material for our wood-using industries; and third, to make an attractive resort region. As Wisconsin has not, so far as is known, any deposits of coal, it is very important that her large number of well-distributed water powers, which are her only source of manufacturing energy, be made the most of. To this end a uniform stream flow should be secured by the use of our numerous lakes as natural storage reservoirs, the creation of artificial storage reservoirs and the maintenance of forested watersheds. The wood-using industries of Wisconsin are exceedingly important but the time has come when they are purchasing fifty per cent of their raw material outside of the state. The state should make an effort to retain these industries by providing a supply of raw material. The state has a resort region of wonderful natural attractions, the numerous lakes and streams and the forests with their fish and game bringing tourists from long distances. The proper protection and development of this lake region will bring a large income to the local residents and to the state as well. The summer resort business in northern New York state amounts to approximately $10,000,000 a year, this amount being paid by the tourists in railroad fares, to hotels and boarding houses, and for guides, teams, boats, etc. New Hampshire does nearly as well and Maine receives nearly $20,000,000 a year from her summer business.

The first land set aside for a forest reserve was 40,000 acres in Oneida and Vilas counties, in 1904. A little later 22,000 acres were added, in Iron county. The next year the Forestry department secured the law granting to it all state lands north

of town 33, which increased the acreage to 233,364. Most of the lands in the last grant were scattered over the entire northern portion of Wisconsin and it was necessary to have them examined and appraised and put upon the market, a few counties at a time, so as to obtain funds to buy other lands to block up the permanent forest reserves. This has been a work of years but it has progressed steadily, ten or twelve land cruisers having been employed at various times. Many thousand acres of scattering and agricultural lands have been sold and yet the acreage of forest reserve lands has increased through the purchases made within the permanent forest reserve area. Mr. Frederick Weyerhaeuser of the Nebagamon Lumber Company gave to the state some 4,000 acres on the Brule river in Douglas county and a small permanent reserve has been established there. The Federal government as a result of efforts on the part of Senator La Follette and the Forestry department granted 20,000 acres of government lands to the state, and many purchases of land have been made from the forestry funds, so that the present acreage of forest reserve lands is approximately 400,000 acres and purchases now pending will increase this area to about 410,000 acres.

The forest reserves have not only been increased in area and blocked up more solidly, but many improvements have been made. The headquarters for the field force has been established at Big Trout lake and a large Headquarters Camp building has been erected there, also a stable, ice house and boathouse. Five ranger cabins have been built at various points on the reserve and at least seven more will be constructed. The main forest nursery has been established near the Headquarters Camp and it now contains about 2,500,000 seedlings. Twelve forest rangers have been employed by the state and, by a coöperative arrangement with the United States Forest Service, the latter has employed twelve patrolmen within the state. As the past two seasons were rainy and the danger from fire slight, these rangers and patrolmen have been able, with the help of laborers working under them, to clear about 160 miles of old railroad grades so as to make both good roads and excellent fire lines, to cut about 118 miles of fire lines through the forests, to construct over 56 miles of telephone lines and to destroy dangerous slashings on about 1200 acres. These fire lines and roads have been made

so as to connect lake with lake and thus divide the forest reserve into compartments.

Four steel lookout towers, fifty-five feet high, have been erected on high hills within the forest reserve region. These towers are connected by telephone with the Headquarters camp, ranger cabins and nearby towns, and are furnished with good maps of the region which can be seen from the tower. Men are stationed in these towers only during dangerously dry weather, and when signs of a fire are seen they locate it on the map and notify the nearest ranger by telephone.

Besides the work accomplished in connection with the forest reserves a considerable amount of educational work has been conducted by the State Forester. Courses of general lectures on forestry have been given at the University of Wisconsin and many single lectures have been given before farmers' institutes and various clubs and organizations over the state. The Chicago and Northwestern railroad brought together many of its employes on two occasions so that the subjects of forestry and forest fire protection might be presented to them.

In addition to the biennial reports of the department, the following publications have been issued: "The Wood-Using Industries of Wisconsin," "The Taxation of Forest Lands in Wisconsin" and "A Preliminary Report on Storage Reservoirs at the Headwaters of the Wisconsin River." The material for the first two was compiled in coöperation with the U. S. Forest Service. Many educational articles on forestry have been prepared for various periodicals.

The Department has given advice and help to individuals who wished to undertake planting operations, and has coöperated with one of the railroads in testing spark arresting devices.

In connection with the University of Wisconsin, a successful effort was made to have the U. S. Forest Products Laboratory located at Madison, Wisconsin, and this has resulted in great benefit to the state, as experiments in the utilization of various woods are made here, the results of which are of great value, and the experts in charge of various divisions of the work give free instruction to students at the University of Wisconsin. The state provides a building together with heat, light and power, for the Laboratory.

The creation of artificial storage reservoirs on the important rivers of the state accomplishes to some extent one of the main purposes that forestry aims to accomplish, the production of a uniform stream flow. The constitution of Wisconsin prohibits the state from engaging in any work of internal improvement and therefore the state cannot build or operate reservoirs. The Forestry department, however, is heartily in sympathy with the construction and operation of such reservoirs by private parties, under the supervision of the state, and it aided as far as possible in securing the passage of a law that is a remarkable and unique piece of legislation and that protects the interests of both individual manufacturers and the people of the whole state. In this law, chapter 335 of the laws of 1907, the Wisconsin Valley Improvement Company is authorized to construct, acquire and maintain a system of water reservoirs on the tributaries of the Wisconsin river north of township 33 for the purpose of producing a uniform flow of water in the Wisconsin river and its tributaries and thereby improving the navigation and other uses of the said streams and diminishing the injury to property both public and private.

The State Board of Forestry supervises the construction of each dam, its location, height, the amount of land to be overflowed and the time and manner of drawing off water. The state railroad commission, acting in its capacity of public utilities commission, passes upon a fair capitalization for the company, distribution of stock and amount of tolls to be charged, the net annual return on the actual cash capital being limited to six per cent. The right is reserved to the state to take over the ownership of all reservoirs and property of the company by paying the amount of the cash capital that has been paid in as the actual value of the physical properties, in case the constitution of the state should ever be changed to permit the exercise of such ownership. The passage of this law marks a long stride in progress in the development of one of the greatest resources of the state.

At the present time the Wisconsin Valley Improvement Company controls a drainage area of 580 square miles, upon which are about 84 square miles of water surface, or 14%. Of this 84 square miles of water surface about 58 square miles, or 10% of the drainage area, is made up of lakes used for storage reser-

voirs. The total storage capacity on these lakes is about 5,000 million cubic feet, giving an average fluctuation of lake level of about three feet. Experience from similarly located lakes would indicate that in a condition of nature, without dams at their outlets, there would be a fluctuation of about 1½ feet, or about one-half that obtained by regulation. This gives a storage capacity of about 2,500 million cubic feet in excess of natural storage, and from which actual benefit is obtained. Reports show that the average yearly storage draft at certain points on the Wisconsin river for 1908–9 has been 5,840 million cubic feet. The benefit from this storage has been an increase of stream flow over that with natural storage, at and below Tomahawk of about 160 cubic feet per second, distributed over seven months. This 160 cubic feet per second would produce for each foot of head utilized, 18 water H. P. or about 13½ actual H. P. A water power plant utilizing 20′ head would then have an increase in available power of about 360 water H. P. or 270 actual H. P. for seven months of the year.

In 1911 a similar law was passed giving like authority to the Chippewa and Flambeau Improvement Company.

It is the intention of the Forestry department to carry steadily forward the work of increasing and blocking up the forest reserve area; to continue cutting roads and fire lines, and building telephone lines, and to erect a number of ranger cabins and lookout towers, so as to furnish adequate protection from forest fires; branch nurseries will be established and replanting will be done on areas that are not restocking naturally; a patrol system will be maintained on the forest reserves and an effort will soon be made to have the U. S. Forest Service coöperate more extensively in protection from forest fires by furnishing a larger number of men to patrol portions of the state during the fire season.

This department has agreed to coöperate with the state university in conducting a school for the practical training of forest rangers, the students to be employed during a portion of their course on the state forest reserves.

The Department is coöperating to some extent with the College of Agriculture in making a soil survey of the forest reserve area, as it is intended that the practice of forestry in the state shall not interfere in any way with general agricultural develop-

ment. The Department has pointed out in its published reports that there are over 13 million acres of land in northern Wisconsin awaiting development and it has been recommended that the best agricultural lands be settled rather than the poorer lands of questionable agricultural possibilities, so that settlers may not be doomed to poverty and comparative isolation and be deprived of good schools and the many advantages of a growing community.

An effort is being made also to bring about coöperative management of a large acreage of forest lands in Forest county, owned by the Chicago and Northwestern railway, the state and several companies engaged in wood-using industries.

Mention has already been made of a bill now pending in Congress to reimburse the state for the swamp lands that were included within the boundaries of the several Indian reservations.

Through the efforts of Congressman E. A. Morse, who introduced the bill in the House of Representatives, and Senator La-Follette, who secured its passage through the Senate, Congress in 1912 granted to Wisconsin as an addition to the state forest reserves, all the remaining unsurveyed and unallotted islands in inland lakes north of town 33. The forest reserves will thus be increased by about 250 islands, many of them most beautiful, and they will be leased for summer camps and cottages.

Urgent Necessity For Completing Forest Reserve.

The state forest reserves now comprise over 400,000 acres of land most of which is on the headwaters of the Wisconsin and Chippewa rivers, but in many cases the state lands are so badly scattered that it will be necessary to acquire about 1,000,000 acres more in order to block up and consolidate the reserves, which must be done in order to make forestry management, and especially fire protection, feasible. A forest reserve of 1,500,000 acres will include practically all of the nonagricultural lands in Forest, Oneida, Vilas, Iron and Price counties; protect the headwaters of our most important rivers; insure a large part of the future supply of raw material that our wood-using industries must have if they are to remain in Wisconsin; protect one of the most beautiful lake regions in the world, and through the sale of forest products, leasing of resort property, etc., bring a large and increasing revenue to the state.

The privately owned lands, which are scattered all through the state's holdings, are a constant menace to the forest reserve, as they are not settled or cared for in any way, but are very largely in the hands of nonresident owners. The truest economy on the part of the state will be to acquire these lands as soon as possible, so that the valuable young timber on them may be protected. It is a most wasteful and expensive policy for the legislature to postpone purchasing these lands until some indefinite future date, as such unprotected lands are the source from which start many of the most destructive fires, and the young timber that is destroyed has a much greater value than the cost of the land and timber at the present time.

The urgent necessity of making an appropriation sufficient to acquire the necessary lands was strongly emphasized by the special legislative committee on Water Powers, Forestry and Drainage, that was appointed at the end of the 1909 session, and which visited the reserves and made its report to the legislature of 1911. The members of this committee were divided on the subject of water power and drainage legislation, but both factions pointed out the great need of completing the reserves and recommended that for this purpose a state tax of 2/10 of a mill be levied and collected annually for a period of twenty years.

The State Conservation Commission and the State Board of Forestry made the same recommendations to the legislature of 1911, but the final result was a totally inadequate appropriation of $50,000 a year for a period of five years. The Joint Finance committee of the legislature of 1911 was opposed to granting a mill tax as they preferred to purchase lands by direct appropriations. The senate favored an appropriation of $200,000 a year for a period of ten years, but as the assembly cut down the appropriation to $50,000 a year for five years, it has been possible to purchase only some of the largest and most desirable tracts. Although the senate studied this matter carefully, the assembly did not give this question the consideration that its great importance deserves.

At each session of the legislature the cry of economy is heard, and the statement is made that taxes will have to be increased if the appropriations asked for are granted, and yet in 1911 the state remitted $940,235 in taxes and in 1912, $2,000,000. No one can justify foolish and extravagant appropriations of

state funds, but the prompt completion of the forest reserves is an absolutely necessary investment, which will yield large future returns, and when the state can remit nearly $3,000,000 in taxes in two years, the legislature must realize that funds are available to complete this important work which the state began nine years ago.

State Forest Reserve Policy.

The time has come when it is important for the legislature to clearly define the future policy of the state in regard to its forest reserves, so that all doubt on the part of settlers and land companies as to the boundaries of the permanent reserves may be set at rest. The State Board of Forestry has been criticised, because it has not announced a definite policy as to just where it was going to purchase lands for the forest reserve, but the mere statement of intention on the part of the Board is not sufficient, it should be backed up by legislative action.

In 1900 the legislature of New York, feeling that it was only fair and just that all citizens should be informed as to the location of the permanent forest reserves, passed the following act:

The Forest Preserve shall include the lands owned or hereafter acquired by the state within the county of Clinton, except the towns of Ottawa and Dannemora, and the counties of Delaware, Essex, Franklin, Fulton, Hamilton, Herkimer, Lewis, Oneida, Saratoga, St. Lawrence, Warren, Washington, Greene, Ulster and Sullivan, except:

1. Lands within the limits of any village or city, and
2. Lands not wild lands acquired by the state on foreclosure of mortgage made to loan commissioners.

New York has now acquired about 1,500,000 acres within the forest preserve, and will continue to purchase until they have secured all the forest lands that are unsuited for agriculture.

The Wisconsin state forest reserve now comprises some 400,000 acres, but it will be necessary to have a reserve of between 1,000,000 and 1,500,000 acres in order to block up and consolidate the present reserves; protect the headwaters of our most important rivers, and insure a future supply of timber for the important wood-using industries of the state.

This means that the state must purchase at least 800,000 acres of land in the permanent forest reserve area, and the lands to be purchased together with the lands already owned by the

state will probably make the acreage of the permanent forest reserve lands in the various counties approximately as follows:

	Acres
Vilas	506,000
Oneida	345,000
Forest	253,000
Iron	115,000
Price	70,000
Total	1,289,000

These lands would all be included within the boundaries of the permanent forest reserves, and it is recommended that a bill be passed by the legislature defining the boundaries of the reserve as follows: Commencing at the southwest corner of T. 38, R. 3 E., Price county, thence east along the south line of T. 38 to the eastern boundary line of Forest county, or the southeast corner of T. 38, R. 14 E.; thence north along the east line of R. 14 E., to the Wisconsin–Michigan boundary line, or the Menominee river; thence west along the Wisconsin–Michigan boundary line to the northeast corner of section 13 in T. 44, R. 4 E.; thence south on the east line of R. 4 E., to the northeast corner of T. 43, R. 4 E.; thence east to the northwest corner of T. 43, R. 4 E.; thence south to the northeast corner of T. 41, R. 4 E.; thence east to the northeast corner of T. 41, R. 2 E.; thence south to the southwest corner of T. 41, R. 2 E.; thence east to the northwest corner of T. 41, R. 3 E.; thence south to the southwest corner of T. 38, R. 3 E., or the point of beginning, excepting from the same the following:—

1. Lands within the limits of any village or city.
2. The following townships or portions of townships:
   (a) T. 39, R. 6, E.
   (b) The south half of T. 40, R. 6 E.
   (c) The east two-thirds of T. 38, R. 9 E.
   (d) The south two-thirds of T. 38, R. 10 E.
   (e) T. 38, R. 11 E.
   (f) T. 40, R. 10 E.
   (g) The north two-thirds of T. 41, R. 11 E.

The proposed act should clearly point out that it is the intention of the state to eventually acquire all the unoccupied and nonagricultural lands suitable for forestry within the boundaries of the forest reserve.

Necessary Legislation.

Completing the State Forest Reserves. The great need for the ultimate success of forestry work in this state is sufficient funds to consolidate and block up the present state forest reserves. Private holdings are scattered all through the state lands, and they are a constant menace to the forest reserves, as the state has no control over them and they are the source of most of the destructive forest fires. Adequate fire protection and systematic management will never be possible until the reserves are blocked up into a fairly solid body. The land that is needed can be acquired now at a much lower cost than later, and the initial investment will become immensely profitable to the state, as the forest reserves will in time bring in a large income from the sale of mature timber and the leasing of camp and cottage sites, besides the beneficial effect they will have on stream flow. Moreover, the state will profit greatly, though indirectly, from retaining the many wood-using industries within the state, and from the income that will go to railroads and resort owners from the summer tourist business.

This matter has been urged upon the legislature since 1907, and any further delay in providing the necessary funds will prove enormously costly to the state in the end. The Special Legislative committee on Water Powers, Forestry and Drainage, the State Conservation commission and other bodies have all recommended that an annual state tax of at least 1/10 of a mill should be levied and collected for a period of twenty years, the proceeds of the tax to be used for acquiring the necessary lands and for the improvement and protection of the forest reserve. The forestry department could then secure the lands at once, paying for them under land contracts as the funds became available. This is probably the most important and far reaching question of forestry policy that will ever come before the legislature of Wisconsin, and it is felt that they should give to it their earnest and careful attention.

Town Fire Wardens. Fire Wardens to act locally should be appointed directly by the State Board of Forestry and not be limited to short periods of service. Under the present law, which constitutes town chairmen and superintendents of highways local fire wardens, the fire wardens may change with every annual town election. It is exceedingly difficult for the State

Fire Warden to obtain accurate lists of the local fire wardens with their addresses. It is cumbersome and expensive to keep in touch with an *ever changing* force of men, to educate them in their duties and supply them with printed warning notices, report blanks and instructions.

The problem of forest fires is a serious one in the state. The enormous losses that occur periodically should be prevented. Experience has clearly demonstrated that such losses can be prevented only by *preventing* fires,—not by trying to extinguish them after they have started. The only effective system of preventing forest fires is by maintaining a patrol system during certain seasons of the year. Whether such a patrol system should be provided for by state funds or by a tax on the property protected, or by both, is a matter for the legislature to decide, but they should not neglect to provide for it in some way.

Dangerous Slashings. Another much needed measure should require owners of land on which there are dangerous slashings to clear a safe fire line between such slashings and adjoining timberland or other valuable property. Such a measure has been advocated by the lumbermen's association in this state but the legislature failed to pass it.

Taxation of timber lands. The present method of taxing forest lands is very unsatisfactory and is calculated to discourage the growing of timber. There are in the northern counties of the state large areas of essentially forest soil, land that will probably never be susceptible to any use other than the growing of timber. A law should be enacted that would encourage the owners of such land to hold it as a forest property and to apply practical forestry to the management. Such a law has been recommended by this department in detail, and should provide for the separate classification for taxation of land suitable for timber growing; that the land shall then be taxed separately from the timber, the assessed value per acre being limited to a certain amount; that whenever any timber or wood is taken from such land, the owner shall pay an amount equal to 10 per cent of its gross value on the stump; before any timber is removed from such land, the owner shall file with the state tax commission an accurate return under oath of the variety, amount and value of all material cut; that the assessment and collection of such tax on the timber be in the control of the state; that the determination of the suita-

bility of lands for timber growing rest with the State Board of Forestry and that in the event of an affirmative decision the Board submit to the owner a plan for the management of the timber and certify to the tax commission that the land has been separately classified for taxation; the management of such lands should be under the supervision of the State Board of Forestry; if an owner fails to comply with any provision of the law, his certificate classifying his land shall be canceled and he shall be required to pay an amount equal to the taxes under the general property tax for the period of time that the land was separately classified.

Soil Survey. The work on the soil survey of the state should be pushed as rapidly as possible so as to grade the soils and determine where the nonagricultural lands lie, as it is of great importance both to the forestry work and to landowners,—to say nothing of the incoming settlers—to have it finally determined just what lands are agricultural in character and what are not.

Storage Reservoirs. Mr. C. B. Stewart, the hydraulic engineer who has been retained by the State Board of Forestry to make necessary investigations in relation to proposed storage reservoirs, has reported that it is very important that the state should acquire information at an early date in regard to the storage problem on all of its main rivers. All natural basins at the headwaters of the Wisconsin river should be carefully investigated and if found more suitable for storage purposes and for benefit to the river as a whole, than local power development, the site could be reserved and developed accordingly. The U. S. Government engineers made preliminary surveys for reservoir sites at the headwaters of the Wisconsin, Chippewa and St. Croix rivers in 1880, and reported available storage capacities to the amounts of 19, 25 and 34 billion cubic feet, respectively. Conditions of development along the shores of the lakes and rivers since then, however, have probably progressed to such a point that it will be impossible to obtain one-half of what may then have been feasible.

Game Preserve. An appropriation of $20,000 is requested with which to enclose some 8,000 to 10,000 acres of forest reserve lands now owned by the state, with a game proof fence and to stock this preserve with elk, moose, deer, game birds and fur bearing animals. The federal government and sportsmen who are inter-

ested in game preservation will coöperate with the state in securing the elk, moose, pheasants, etc., and the deer and fur bearing animals can be secured within the forest region at little cost. As the game increases within the preserve, the surplus would be released and the moose and elk, at least, should be protected by law for a number of years.

The state expends annually a large amount in the propagation of fish, but so far the state has never done anything towards the propagation of game. The sportsmen of the state object to any of the funds derived from the sale of hunting or fishing licenses being turned into the general fund of the state, as they contend that all funds so derived should be used in the propagation and protection of fish and game. It is therefore suggested to the legislature that the appropriation of $20,000, which is asked for the game preserve, should be paid out of the hunting and fishing license fund.

State Lands For Sale.

As was fully explained in the report of the State Forester for 1909–10, the State Board of Forestry is authorized to sell the scattering and agricultural lands north of town 33, the proceeds of such sales to be used in blocking up and consolidating the permanent forest reserves, and in their protection and improvement.

The cruisers' reports are very complete and are on each forty separately, showing the amount of timber of each kind, and its stumpage value, the character of the land, whether rolling, hilly, or flat, and if stony; the soil is shown as loam, clay or sand, or more definitely described if necessary; if swampy, whether it can be drained; also character and amount of young growth.

During the summer of 1912 all the state lands in Oneida county, south of the north line of township 37 have been carefully examined and appraised. It was hoped that these lands could be offered for sale in the fall of 1912, but their examination and appraisal was not completed until about November first, and as all state lands must be advertised for at least six weeks before being sold, it would have resulted in obliging those interested in purchasing lands to look them over when covered with snow, and therefore it was deemed advisable not to sell the lands until the spring of 1913.

The state lands in the following counties are now on the market and can be purchased at any time, and in addition the State Board of Forestry intends to sell all the state lands in Marinette county and the lands south of the north line of township 37 in Forest county.

The following table shows approximately the amount of land on the market north of town 33, that remained unsold on January 1, 1913.

STATE LANDS ON THE MARKET.

	Acreage.		Acreage.
Ashland	4,166.20	Oneida	400.00
Bayfield	1,559.74	Polk	1,842.57
Burnett	6,217.83	Price	9,757.87
Douglas	1,276.02	Rusk	2,254.47
Florence	3,559.16	Sawyer	11,771.26
Iron	1,723.32	Washburn	3,985.09
Langlade	1,418.42		
Lincoln	1,558.10		51,490.05

The following table shows the approximate acreage of state land in eight counties that will probably be offered for sale in the spring or summer of 1913. The acreage in Forest, Marinette and Oneida includes all the land in those counties that it has been decided to eliminate from the permanent forest reserve.

STATE LANDS TO COME UPON THE MARKET.

	Approx. acreage.		Approx. Acreage.
Douglas	1,989.79	Price	3,040.00
Florence	80.00	Rusk	200.00
Forest	11,880.00	Sawyer	211.95
Marinette	4,494.21		
Oneida	19,680.00		41,575.95

Many of the above lands are suitable for agriculture, and in fixing the appraisal of each forty, the value of the land and of the timber was figured separately. Those who are desirous of purchasing lands in any of these counties can secure lists showing the appraised value of each forty of state land by applying either to the State Land Office, or State Board of Forestry.

TIMBER TRESPASS.

It is again recommended that the civil liability for timber trespass be increased from double to triple the value of the timber taken, plus all the costs of examination and survey. Nothing special can be added to the statement in regard to this matter contained in the report of this department for 1909–10, which follows.

The government and state practically encouraged timber trespass upon public lands for so many years by allowing trespassers to settle by simply paying the value of the timber taken, that it has been very difficult to stop the practice at once and to make such people understand that illegal cutting of timber is nothing more nor less than common stealing.

In 1905 the law was strengthened so that the civil liability for forest trespass is now double the amount of damages suffered and under criminal action the fine is not less than $25, nor more than $1,000, or imprisonment not less than fifteen days nor more than three years, or both fine and imprisonment. The result of this law has been to largely put a stop to all forms of trespass upon state lands, as it does not pay to cut timber illegally when one is obliged to pay double the value of the timber taken, plus all the costs of examination and survey.

Public opinion in northern Wisconsin, however, has not yet been educated to support a jail sentence for a trespasser, unless in the case of an old offender and when the trespass has been glaringly flagrant and willful. This is especially true in the case of a poor man with a family, as the jury seems to reason that if the man is sent to jail, his family will become a charge upon the county or town. After years of "rubber forties" and practical encouragement, the law cannot suddenly be made too drastic and still meet with public support.

However, the whole stumpage law has been in operation for over five years, and it is now recommended that it is time to still further strengthen this law. The law of New York state provides a penalty of $10 for every tree cut on state lands but so drastic a law in Wisconsin at the present time would probably defeat its own ends. It is recommended that the civil liability for timber trespass be increased from double to triple the value of the timber taken, plus all the costs of examination and survey. Both the state and private timberland owners have been put to considerable trouble and loss in past years by Christmas tree trespass. Large firms in Chicago, Milwaukee, St. Paul and other nearby cities make contracts with small jobbers or settlers to furnish a large number of Christmas trees. These contractors have been in the habit of going upon any land where there was a fine growth of young pine and cutting it all off in a few days' time. Many such trespassers are not resi-

dents of Wisconsin and they can cut, load and ship these small trees so rapidly that it is very difficult to detect them until the trees have been shipped and then the offenders are outside the jurisdiction of the state. However, timberland owners have dealt with such cases as severely as possible by imposing heavy fines, confiscating the trees cut and also bringing criminal action, so that this business is being largely discouraged and the dealers are compelled to buy the young trees from those who are willing to have them cut. The state has only suffered to a slight extent from such operators, as our lands are watched closely as Christmas approaches and we have been able to detect nearly all such cutting in time. The children and grown-ups need not fear that there will be any shortage of Christmas trees in the future or that foresters will discourage this old custom.

Upon lands that are protected from fire thousands of young pines will come up to the acre, and if left to themselves to follow out nature's law there will be a fierce struggle for existence, so that only a small percentage will survive. These will be the strongest and best developed but by far the greater number will gradually die and fall to the ground. Even the strongest young trees that survive are checked in their growth during the years of their fiercest struggle for existence and the forester can aid nature by cutting out the less promising trees and thereby allowing the stronger to shoot ahead free from the struggle.

Such cuttings are called "improvement thinnings" and are an important part of forestry work in all foreign countries where there is a ready market for the young trees that are thinned out.

In this country the forester as a rule has not been able to make improvement thinnings as there has been no market for such young trees, but the demand for Christmas trees promises to furnish the market to a considerable extent and therefore the forester hopes that more Christmas trees will be used and not less. However he wants such young trees cut out under a system that will hasten the rate of growth and improve the future forest and does not want to have every tree cut by a person who is politely called a trespasser while in fact he is nothing less than a common thief.

FORESTRY PROBLEMS IN GENERAL

The Town Fire Warden System.

In the report of the State Forester for 1909–1910, it was recommended as strongly as possible that the system of town fire wardens should be abolished and that in its place a well organized system of forest fire patrols should be provided. During 1908 the reports of the fire wardens showed that 1,200,000 acres were burned over, with a loss amounting to $9,000,000, and in 1910 some 892,000 acres were burned over with a loss of $5,000,000. During these same years the losses from forest fires in Minnesota and Michigan had also been enormous, and in order to work out a better system of fire prevention the Governor of Minnesota invited representatives from Michigan and Wisconsin to attend a Lake States Forest Fire conference, which was held at St. Paul on December 6th and 7th, 1910.

The conference was an unusually strong and representative one, headed by the Governors of Minnesota and Wisconsin, members of the legislative committees on forestry from the Lake states, and also lumbermen, foresters, and so forth.

The sense of the meeting was that the enormous annual forest fire losses in the Lake states were a public disgrace; that the old system of doing nothing until the fire occurred had always and everywhere proved to be little better than no system at all, and that the only sensible, practical plan was to concentrate the efforts of each state to building up the best possible system of fire prevention.

At the end of the two days' meeting the following resolutions were unanimously adopted:—

Resolved, That we recommend to the legislatures of our States:

First. That the forest fire protection of each State and such other branches of state work as may be deemed best to combine with it, be placed under the control of a non-partisan Commission empowered, as fully as possible under the Constitutions of the different States, to carry on the work, and under civil service rules. Such Commission should represent all the interests involved as far as possible, and we recommend that such Commission place the work in charge of a Chief Forester who should be a professional graduate Forester and that the Commission employ such trained Foresters and other assistants as may be necessary; define their duties and fix their salaries; said employes to

be engaged under such civil service regulations as the Commission may prescribe.

Second. Resolved, That it is the sense of this Conference that the present Forest Fire Warden Service of Michigan, Wisconsin and Minnesota, is totally inadequate to meet the existing fire hazard to both life and property, and that forest protection service, to become efficient, must be greatly extended. To this end we recommend an adequate Forest Patrol System, maintained by the State, organized and operated by the Commission referred to.

Third. We further recommend, that the Commission be authorized to coöperate with the National Government, the several adjoining States, and such associations and organizations as the Commission may find necessary to best protect the timber resources of the State.

Fourth. Resolved, That this Conference is opposed to a general slash burning law, as experience has proven it unsatisfactory, impractical and dangerous. We recommend, however, that the Commission should be given authority to order the disposal of dangerous slashings sufficient to establish a safe fire line around standing timber or other valuable property.

Fifth. Resolved, That this Conference advocates legislation providing strict regulation of the burning of brush and debris in clearing land during the dry season, such burning to be under the direction of the State fire patrolmen under such regulations as the Commission may prescribe.

Sixth. We further recommend, that the burning of all debris on the rights of way of the various railroads be under the control and direction of the State Forest Patrol. Further, that under special conditions as directed by the State Forest Patrol the railway companies maintain a patrol, properly equipped following their trains, also that all railroad and logging locomotives and traction engines must be equipped with the most practical spark arresting devices subject to inspection and approval of the Commission.

Seventh. Whereas, The building of fire lines around exposed property including settlements, villages and towns, has proven a most effective means for the control and extinguishment of fires, we recommend, that one of the principal duties of the patrolmen working under the direction of the Commission, should be to establish such fire lines where necessary for protection of property.

Eighth. We recommend, as the most effective measures for preventing and fighting serious fires, adequate means of transportation and communication, to include trails, telephone lines and lookout stations, and that the efforts of the Commission should be exerted toward the construction and establishment of the same as rapidly as consistent.

Ninth. The appalling sacrifice of life and the continued great loss of State and private property resulting from fires in our forested area, are a disgrace to our civilization and a most serious drain upon our natural resources, and we believe that the expenditure of such amount as may be necessary to prevent these losses is fully justified.

We therefore recommend, that the appropriation by the State Legislatures to maintain forest protection should be sufficient to provide for a Forest patrolman for each forty thousand acres requiring protection as well as for the expenses necessary to successfully carry out all of the measures suggested by these resolutions.

Tenth. We recommend, in addition to the Patrol System, an auxiliary County fire fighting force to be appointed by and under the direction of the Commission, to be paid by the State and charged back to the Counties. Such expense to be ultimately borne by the Counties or towns in which the fires occur.

Further Be It Resolved, That as it is shown by statistics that there are a large number of fires set each season through the carelessness of the general public, including campers, fishermen, hunters and others, we recommend, that a campaign of education be energetically carried on through every possible channel to the end that this hazard be reduced through a better understanding of forest conditions by all the people.

It will be noted in the second article of the above resolution the Conference stated that the town fire warden system was totally inadequate and recommended a forest patrol system maintained by the state.

A bill was introduced in the Wisconsin legislature of 1911 to provide for a state forest fire patrol, but the legislature refused to appropriate state funds for this purpose, and the legislative committee changed the bill so that all lands benefited by the patrol would pay a special tax of 2½ cents per acre, per annum. The timberland owners refused to agree to this amendment with

the result that the bill was killed. Wishing to accomplish something, the legislature passed a law providing that town chairmen should act as town fire wardens, and that road supervisors should be deputy town fire wardens. The idea of this law was to place the responsibility for and the cost of, fighting fires directly upon the local community where they occurred. It is only a makeshift, however, and is especially weak and inefficient for the following reasons:

1. Some of the best men in the towns are elected as town chairmen and road supervisors, but because they are good men it does not naturally follow that they have the strength and endurance or the knowledge of how to fight forest fires. The impression seems to prevail that anyone can fight forest fires. Almost any fairly able-bodied man can assist very materially, but the men in charge of the work must know the country thoroughly, and, more important still, must know just where and how to attack the fires. Experienced woodsmen should be in charge of the fire warden system in each town, and not simply some good man who happens to hold an office and upon whom it is easy to assign another duty by law.

2. The towns that have the most timber are always, for that very reason, either without any settlers at all, or else both settlers and roads are very few. Such towns, as a rule, have no road supervisors, and as a result, where the fire warden system should be the strongest it is in fact the weakest, and vice versa.

3. The town chairmen and road supervisors almost never take any action until the fire actually occurs. In other words, the present law makes the same old mistake of providing for fighting fires, but not preventing them. Prevention is the watchword of any successful fire warden system, and this has been proved in every state from the Atlantic to the Pacific. No city of any size would think of being without a fire department, and no town containing a large area of timberlands should be without a strong fire warden system which would devote its efforts in the first place to preventing fires.

Forest Fires in 1911 and 1912.

It is a great pleasure to be able to report that during the forest fire seasons of both 1911 and 1912 there was so much rain and the rain was so well distributed throughout the summer months

that only a few thousand acres in the entire state were burned over, and the losses were almost nothing as compared to recent years. Unfortunately, under the new law of 1911, which makes all town chairmen fire wardens, it has been found impossible to secure enough reports to compile any fairly accurate statistics for the last two years, but enough reports have been received to show that the losses have been very small.

This fine showing is due almost entirely to wet seasons, and compares as follows with the losses in the three years before:

	Acres burned	Loss
1908	1,200,000	$9,000,000
1909	166,751	104,012
1910	892,833	5,000,000

We are now apparently in a cycle of wet years and may have two or three more rainy seasons. But these cycles are not well defined, and therefore we must always be prepared for a dangerously dry season, and because we have been so fortunate in 1911 and 1912 there is the more danger in the next few years.

Some thirty small fires occurred on the state forest reserves in 1911 and 1912, but they were quickly detected and extinguished by the forest rangers and patrols before they did any considerable damage. These wet seasons were taken advantage of to the fullest by building up the permanent protective system of roads, fire lines, lookout towers and telephones on the state forest reserves, but unfortunately almost no protective work has been done on any of the privately owned timberlands of the state, and another dry season will again bring enormous forest losses unless a strong, well organized fire patrol system is built up at once.

Emergency Fund for Fire Fighting.

The state forest reserves after seven years of almost continuous selling of scattered and agricultural state lands, and purchasing non-agricultural lands in the permanent forest reserve area, are gradually being consolidated into fairly solid blocks, and it is a comparatively easy matter to prevent the spread of destructive forest fires in a solid body of timberlands.

The reserves have been divided into districts with a forest ranger in direct charge of the work in each district, and when a fire occurs in the reserves, it is quickly detected by means of the lookout towers, and help is promptly summoned by means of

the telephones, which connect the lookout towers with the Headquarters camp, ranger cabins and nearest towns. As the protective system of roads, fire lines, telephones, lookout towers, etc., is extended to cover all portions of the forest reserve, the danger of a destructive, wide-spread fire, which would get beyond control, becomes less and less, but nevertheless each season has its dangerously dry periods and therefore the Department must have available at all times sufficient funds to fight any forest fires that may occur.

The forest reserve fund into which is paid all the proceeds arising from the management of the forest reserve, is considered first of all as an emergency fire fighting fund, and after a safe reserve has been set aside the balance of the fund is used in purchasing land and for the improvement and protection of the forest reserve.

It is felt that the forest reserves are now fairly safe from destructive fires, and that they will be very well protected in a few years, and also that the forest reserve fund will be a sufficient emergency fund in most cases. Unfortunately, the situation in the northern timbered portion of the state, outside of the forest reserve, is quite different, as there is practically no protective system and the danger of forest fires is very great. The legislature of 1911 provided that all town chairmen should be town fire wardens, and superintendents of highways deputy town fire wardens, and that the expense of preventing or extinguishing forest fires should be borne by the road district within which the expense was incurred. In addition the law provided that in cases of emergency, or where a town has no highway superintendent, or is unusually large, the State Forester might appoint special fire wardens, and that the expense of preventing or extinguishing forest fires by these special fire wardens should be borne on the basis of one-half by the county in which the fire occurred, and one-half by the state. The law continues,

2. No payment shall be made to any claimant under this section until he shall have presented an itemized account, and made oath or affirmation that said account is just and correct, which account shall be approved by the county board, and audited by the county clerk. The county clerk shall thereupon issue to such claimant his warrant upon the county treasurer for the sum to which such claimant is entitled, and the county treasurer shall pay the same.

3. The county clerk shall transmit the original oath and copy of the warrant to the secretary of state, who shall audit such claim, and one-half thereof shall be paid out of the general fund of the state treasury by warrant issued by the secretary of state upon the state treasurer in favor of the county which paid such claimant, and such amount shall be forwarded to the county treasurer of such county. However, no county shall expend more than five thousand dollars under this act in any one year.

From the above it will be clearly seen that it was the intent of the legislature to create an emergency fire fighting fund of $10,000 for each county, but a very bad feature of the law is that the men who are called out to fight fire must wait for their pay until the county board can meet and approve the bills. Anyone who knows lumberjacks knows that they are a very shifting population, who are always hard up, and if they were obliged to wait several months for their pay for fighting fire, they would flee from the next summons as they would from the evil one. In order to be a practical workable law some way must be found to pay men promptly who are called out by the fire wardens to fight forest fires.

It is recommended that the bills should be promptly paid by the state treasurer when approved by the fire warden in charge of the fire and also by the State Forester, and that the state treasurer should collect from each county one-half the expense of fighting forest fires, but that in no case should any county be called upon to pay more than $5,000 in any one year.

Spark Arrester Inspection.

The passage of chapter 494, laws 1911, gave Wisconsin one of the strongest and most practical laws in the country for reducing the number of forest fires set by railway locomotives, donkey, traction and portable engines. The following provisions of the law are worthy of special note:

1. Between March 1st and December 1st all logging locomotives, donkey, traction or portable engines, which are operated in, through or near forest, brush or grass land, and which do not burn oil as fuel, must be equipped with screens or wire netting on top of the smokestack, and so constructed as to give the most practicable protection against the escape of sparks and cinders. "The term logging locomotive as used in this act shall be construed to mean any locomotive operated on a railroad, branch line or division, the chief or main business of which is the transportation of logs, lumber, or other forest products." The great value of this provision of the law will be at once apparent to any forester, as it compels every locomotive which is operated through the forests to be equipped with the oldest, simplest, and yet by far the most effective device for preventing the escape of sparks or cinders, namely, a screen or hood over the smokestack.

Locomotives that are operated on main through lines and that make long runs, could not be equipped in this way, for with the smokestack covered with a hood the front end of the engine would clog up with cinders, and then of course the engine could not steam or pull its load. Therefore the law provides that "all locomotives operated on any railroad other than a logging railroad shall be equipped with the most practicable spark arresters so constructed as to give the greatest possible protection against the escape of sparks and cinders from the smokestacks thereof, and each such engine shall be provided with the most practicable device to prevent the escape of the coals from ash pans, and fire boxes, and such devices between March 1st and December 1st shall at all times be maintained in good repair."

2. The law provides that the superintendent of motive power or equivalent officer on each railroad shall designate an employe of such railroad at each division point and roundhouse, who shall examine each locomotive each time it leaves the division point or roundhouse between March 1st and December 1st, and such employe shall be held responsible for the proper carrying out of the provisions of this section, but without relieving the company from its responsibility hereunder. This provision of the law has proved very effective in keeping the locomotives in proper condition, and also in bringing about real coöperation between the state and the railroads.

3. It will be noted that the law provides that screens or hoods on the smokestacks must give the "most practicable protection" and that spark arresters must be constructed so as to give the "greatest possible protection." The question naturally arises as to who shall decide as to the most practicable device and as will be noted, this is provided for in the following section which is the strongest part of the entire law:

3. Any locomotive inspector designated by the state board of forestry shall have the power to reject from service immediately any locomotive, donkey, traction, or portable engine which, in the opinion of the said inspector, is deficient in adequate design, construction, or maintenance of the fire protective devices designated in sections 1 and 2 of this section, and any such locomotive, donkey, traction, or portable engine so rejected from service shall not be returned to service until such defects have been remedied to the satisfaction of the state board of forestry. In case of disagreement between said inspector and the owner of the locomotive, donkey, traction, or portable engine so rejected from service as to the efficiency or proper maintenance of said protective devices, then the owner of said locomotive, donkey, traction, or portable engine may appeal to the railroad commission of Wisconsin for a decision of said matter, but pending such decision the said locomotive, donkey, traction, or portable engine shall not be returned to service.

Particular attention is called to the fact that any defective engine can be ordered out of service and that it cannot be re-

turned to service until the defects have been fully remedied. This provision of the law is extremely important and is far more effective than the usual fines, for any railroad company that was inclined to disregard the law would be quickly brought to its senses by having its locomotives ordered out of service.

4. Minor though important provisions of the law are:

a. Railroads must provide patrols for duty along their tracks in dangerously dry weather, and if any railroad company fails to provide such patrols after due notice, the State Board of Forestry may employ patrols and the cost shall be charged to the railroad company.

b. Every railroad must at least once every year cut and burn, or remove from its right of way all grass, weeds, brush, logs and refuse material.

c. No railroad company shall permit its employes to deposit fire, live coals or ashes upon their tracks outside of the yard limits, except they be immediately extinguished.

d. Engineers, conductors or trainmen who discover fires along the right of way, or on lands adjacent to the railroad, shall report the same to the agent at the nearest telegraph station. The railroads of Wisconsin have come to realize within the last few years that they are more directly interested in preventing forest fires than any other great industry in the state, and as a result of this realization they are anxious to do their full share in putting a stop to forest fires that are caused by the railroads.

The main causes of railroad fires are sparks, which escape from the smokestacks, and live coals, which are dropped by the ash pans. The Chicago & Northwestern railway has been coöperating with the state for the last three years in an endeavor to perfect a spark arrester which would prove entirely satisfactory in preventing the escape of sparks, and though great progress has been made, complete success has not been secured as yet. It is a comparatively simple matter to get an arrester that will stop a locomotive from throwing sparks, but very difficult to find one that will also allow the engine to steam freely and pull its load.

The State Board of Forestry has a locomotive inspector, who devotes his entire time from March 1st to December 1st to inspecting locomotives in the forest regions of the state, and he is constantly working with the railroad officials to perfect improved devices. Following is a brief summary of his report for 1912:

Spark Arresters.

The Chicago & Northwestern railway now uses the Slater box front end on nearly all of their engines operating in the forest reserve regions. This front end is a big improvement over the old style known as the Master Mechanic front end. Fifteen night runs were made on engines equipped with the box front end, and several on engines equipped with the old style front end. Less sparks are thown from the stack when the box front end is used, and it is estimated that less than five per cent of the sparks are alive when they strike the ground. They are nearly all self cleaners while the old style are not, but the engine crews state that they are harder to steam with than the old style and that they use considerably more fuel.

The Great Northern railway has experimented during 1912 with a new spark arrester which is known as the Cannon or Conical front end. Four night runs were made on engines equipped with this arrester and one night was also spent in the tower at Saunders, Wis., watching 25 engines which passed. Very few sparks are thrown from the stack, and only occasionally would one reach the ground alive. The engine crews do not appear to have any fault to find with this arrester.

A number of other spark arresters are being tested and the necessity for finding the best possible device is so great that the investigations will be continued along all possible lines.

Hoods and Screens.

The Chicago, Milwaukee and St. Paul railway during 1912 has used a very satisfactory hood on all its engines, operated through forest lands. The hood is fastened to the top of the smokestack with a hinge at the back, and at first engineers and firemen were inclined to tip the hood back when they thought there was not much danger from forest fires, but close supervision and the fact that one or two men were laid off by the railroad for doing this, has largely put a stop to this dangerous practice. This is considered to be the best hood in use, the only objection to it being that the cinders are apt to fly back into the engine cab, but in August a device was perfected that overcomes this trouble to a certain extent.

The Chicago & Northwestern railway, early in the summer of 1912 used a hood that did not prove a success as the engines do not steam well after they have been run 8 to 10 miles. Later in

the season another hood was tried which apparently promises to give very good satisfaction.

Some of the smaller railroads and a number of lumber companies used the old diamond stack, with a large top and cone well down in the stack. This type of stack has been found very expensive to keep in good repair, and the front ends sometimes choke up as they collect a lot of cinders. It would appear that an entirely satisfactory hood has not been worked out as yet, but the type of hood that is used by the Chicago, Milwaukee & St. Paul railway is fairly satisfactory.

Ash Pans.

Hopper bottoms. There are many of this type now in use, but frequently a hopper ash pan that is supposed to be in perfect condition is found upon close examination to still allow room for some live coals to fall through. It seems absolutely impossible to make a sliding or tilting door that will not warp or crack and that will always come up tight.

The Chicago, Milwaukee & St. Paul engines are equipped with one of the very best types of hopper ash pans now in use. They are an improved Chicago, Burlington & Quincy railway ash pan and are considered to be a great improvement over the original. The doors open at the ends and are equipped with an automatic latch which is easily opened and which cannot be jarred open. About forty of these ash pans were inspected during the season and only one defective door was found.

The hopper ash pans which were in use by the Omaha railway early in the season of 1912 were found to be a very inadequate type and in bad condition. The many forest fires that occurred along its lines in 1908 and 1910 were undoubtedly very largely caused by these ash pans. In the latter part of July, 1912, this road began to equip its engines with a new ash pan which is known as the swipe pan, and which has a sprinkler blow-out. This type of ash pan gives promise of proving very satisfactory. The following tables show the condition of the engines that were examined during 1912.

LOCOMOTIVE INSPECTION 1912.

Examination.		Condition.					
Date.	Place.	Total no. engines.	Good.	Fair.	Bad.	In shop for repairs.	Ordered out of service till repaired.
Chicago, Milwaukee & St. Paul Railway Company.							
May 23	Green Bay, Wis.	14	8	2	2	2	.....
24	Green Bay, Wis.	24	10	7	4	3	.....
28	Iron Mountain, Mich.	1	1	.....	.....	.....	.....
June 18	Wausau, Wis.	6	3	3	.....	.....	.....
19	Tomahawk, Wis.	11	8	2	.....	1	.....
Aug. 14	Green Bay, Wis.	8	7	.....	1	.....	.....
Sep. 11	Tomahawk, Wis.	10	8	2	.....	.....	.....
20	Portage, Wis.	8	5	1	2	.....	.....
21	Madison, Wis.	7	.....	1	6	.....	.....
23	Watertown Jct., Wis.	4	2	1	1	.....	.....
25	Milwaukee, Wis.	6	2	3	1	.....	.....
Oct. 1	Janesville, Wis.	7	4	2	1	.....	.....
		106	58	24	18	6	.....
Wisconsin & Michigan Railway Company.							
May 21	Peshtigo, Wis.	5	1	1	1	2	.....
21	Peshtigo, Wis. John Marsh. Eng.	5	1	1	.....	3	.....
Aug. 17	Peshtigo, Wis.	1	1		.....	.....	.....
		11	3	2	1	5	.....
Bayfield Transfer Railway Company.							
Apr. 22	Bayfield, Wis.	2	.....	1	1	.....	.....
		2	.....	1	1	.....	.....
Wisconsin Northern Railway Company.							
May 18	Crandon, Wis.	1	1	.....	.....	.....	.....
29	Shawano, Wis.	2	1	.....	.....	.....	1
		3	2	.....	.....	.....	1
Marinette, Tomahawk & Western Railway Company.							
May 1	Tomahawk, Wis.	2	2	.....	.....	.....	.....
June 19	Tomahawk, Wis.	2	1	1	.....	.....	.....
		4	3	1	.....	.....	.....
Lake Superior Terminal & Transfer Railway Company.							
June 29	Superior, Wis.	14	.....	1	10	2	1

Examination.		Condition.					
Date.	Place.	Total no. engines.	Good.	Fair.	Bad.	In shop for repairs.	Ordered out of service till repaired.
	Illinois Central Railway Company.						
Sept. 21	Madison, Wis	1	.....	1	.....	.....	.....
		1	.....	1	.....	.....	.....
	Chicago, Burlington & Quincy Railway Company.						
Oct. 3	La Crosse, Wis	7	6	1	.....	.....	.....
		7	6	1	.....	.....	.....
	Northern Pacific Railway Company.						
June 22	Ashland, Wis	2	.....	1	1	.....	.....
		2	.....	1	1	.....	.....
	Duluth, South Shore & Atlantic Railway Company.						
June 29	Superior, Wis	1	.....	1	.....	.....	.....
July 5 & 6	Thomaston, Mich	3	3	.....	.....	.....	.....
		4	3	1	.....	.....	.....
	Green Bay & Western Railway Company.						
May 24	Green Bay, Wis	16	.....	9	5	2	.....
Aug. 15	Green Bay Wis	11	3	.....	4	4	.....
26	Grand Rapids, Wis	3	.....	1	1	.....	1
		30	3	10	10	6	1
	Yawkey Bissell Lumber Company.						
May 10	Arbor Vitae, Wis	1	.....	1	.....	.....	.....
June 5	Tomahawk, Wis	1	.....	1	.....	.....	.....
July 12	Arbor Vitae, Wis	3	2	.....	1	.....	.....
Aug. 2	Arbor Vitae, Wis	3	1	2	.....	.....	.....
		8	3	4	1	.....	.....
	Omaha Railway Company.						
Apr. 19	Ashland, Wis	2	.....	1	1	.....	.....
June 22	Ashland, Wis	5	5	.....	.....	.....	.....
Apr. 19	Spooner, Wis	12	7	4	1	.....	.....
Apr. 20	Itasca, Wis	10	3	6	1	.....	.....
July 18	Itasca, Wis	5	3	2	.....	.....	.....
Apr. 22	Washburn, Wis	1	1	.....	.....	.....	.....
July 26	St. Paul, Minn. W. End Shop	4	3	1	.....	.....	.....
	St. Paul, Minn. E. End Shop	7	4	1	2	.....	.....

Examination.		Condition.					
Date.	Place.	Total No. engines.	Good.	Fair.	Bad.	In shop for repairs.	Ordered out of service till repaired.
	Omaha Railway Company—Continued.						
July 27	Altoona	17	9	3	2	1	2
Aug. 27	Marshfield, Wis	1	.....	.....	1	.....	.....
Oct. 4	Wyeville, Wis	2	1	.....	1	.....	.....
		66	36	18	9	1	2
	M. St. P. & Sault Ste. Marie Railway Company.						
June 3	Rhinelander, Wis	3	1	.....	2	.....	.....
21	Ashland, Wis	13	4	2	2	5	.....
27	Superior, Wis	15	6	4	4	.....	1
July 16	Superior, Wis	11	9	.....	2	.....	.....
13	Weyerhaeuser, Wis	6	3	1	2	.....	.....
27	Chippewa Falls, Wis	7	7	.....	.....	.....	.....
27	Shoreham, Minn	35	25	8	2	.....	.....
Aug. 23	North Fond du Lac, Wis	18	16	2	.....	.....	.....
27	Stevens Point, Wis	13	11	2	.....	.....	.....
		121	82	19	14	5	1
	Chicago & Northwestern Railway Company.						
May 18	Antigo, Wis	8	5	2	.....	1	.....
21	Marinette, Wis	2	2	.....	.....	.....	.....
25	Green Bay, Wis	40	18	12	7	2	1
28	Iron Mountain, Mich	1	1	.....	.....	.....	.....
28	Strambaugh, Mich	5	2	3	.....	.....	.....
29	Wabeno, Wis	1	.....	.....	1	.....	.....
June 10	Watersmeet, Mich	5	.....	.....	5	.....	.....
21	Ashland, Wis	10	8	1	1	.....	.....
Aug. 6	Antigo, Wis	14	10	3	1	.....	.....
7	Eland Jct., Wis	6	4	.....	2	.....	.....
16	Green Bay, Wis	17	9	2	1	5	.....
20	Marinette, Wis	1	1	.....	.....	.....	.....
21	Kaukauna, Wis	7	5	.....	.....	2	.....
24	North Fond du Lac, Wis	14	10	2	2	.....	.....
27	Marshfield, Wis	5	4	.....	1	.....	.....
Sept. 21	Madison, Wis	5	3	2	.....	.....	.....
23	Baraboo, Wis	6	4	1	1	.....	.....
23	Watertown Jct., Wis	2	2	.....	.....	.....	.....
26	New Butler, Wis	10	3	2	5	.....	.....
Oct. 1	Janesville, Wis	13	8	3	1	.....	1
2	Galena, Ill	3	1	2	.....	.....	.....
4	Wyeville, Wis	7	5	1	1	.....	.....
5	Wausau, Wis	3	2	.....	1	.....	.....
		185	107	36	30	10	2
	Great Northern Railway Company.						
July 2	Allouez, Wis	5	.....	5	2	.....	.....
3	Superior, Wis	17	6	3	6	.....	2
17	Allouez, Wis	9	2	3	4	.....	.....
18	" "	10	1	4	5	.....	.....
18	Superior, Wis	22	5	8	3	6	.....
		63	14	21	20	6	2

Logging Railways.

Examination.		Condition.					
Date.	Place.	Total No. engines.	Good.	Fair.	Bad.	In shop for Repairs.	Ordered out of service till repaired.
1912.							
Apr. 30	Buswell Lbr. Co., Buswell, Wis.	1	.....	.....	1	.....	.....
May 11	Vilas County Lbr. Co., Fosterville, Wis.	1	.....	.....	1	.....	.....
13	Brown Bros. Lbr. Co., Rhinelander, Wis.	1	.....	1	.....	.....	.....
17	Hackley-Phelps-Bonnell Lbr. Co., Hackley, Wis.	2	.....	.....	2	.....	.....
17	Keith & Hiles Lbr. Co., Crandon, Wis.	1	1	.....	.....	.....	.....
17	Forster-Mueller Co., Hiles, Wis.	1	.....	.....	1	.....	.....
28	Menomonee Bay Shore Lbr. Co., Wabeno, Wis.	1	1	.....	.....	.....	.....
June 19	Roddis Lumber Co., Park Falls, Wis.	2	1	1	.....	.....	.....
19	Mellen Lumber Co., Glidden, Wis.	1	1	.....	.....	.....	.....
20	Atwood Lumber Co., Park Falls, Wis.	7	.....	1	6	.....	.....
20	Foster-Latimer Lumber Co., Mellen, Wis.	2	1	1	.....	.....	.....
Aug. 29	Rib Lake Lumber Co.	4	2	.....	.....	.....	2
		24	7	4	11	.....	2

SUMMARY OF LOCOMOTIVE INSPECTION.

No.	locomotives examined	651	100%
"	in good condition	327	50%
"	in fair condition	145	22%
"	in bad condition	126	19%
"	in shop for repair	41	7%
"	ordered out of service	12	2%

County and Town Forests.

Chapter 77, laws of 1909, authorizes any town board to acquire by purchase or otherwise, a sufficient tract of land to use and maintain as a woodlot, and to preserve and reforest the same under regulations approved by the State Board of Forestry. It is estimated that in northern Wisconsin there are from twelve to thirteen million acres of wild and uncultivated land. Of this amount it is estimated that fully ten million acres are suitable for agriculture and will eventually be cultivated. This leaves, then, about three million acres of land in the twenty-two most northern counties of the state that are unfit for agriculture, and that must be depended upon to produce a large part of the future forest products of the state. It will probably be impossible for the state to ever acquire all of this land and place it under forestry management, and even if it could do so it would not be well for the state to attempt to own and manage many of the smaller and more isolated tracts of forest land. The state will have all it can do for many years to come to manage the large forest reserves upon the headwaters of the Wisconsin and

Chippewa rivers, and the counties and towns should acquire the smaller tracts.

This is a comparatively new idea in America, but in Germany, France, Norway, Sweden, Switzerland, and other European countries there are many communal forests and even city forests. These have almost universally proved most successful and in many instances the revenue from the communal forests has been sufficient to pay all taxes and to build splendid roads.

If the towns and counties in northern Wisconsin will gradually acquire the non-agricultural lands, at reasonable prices, and then place them under forestry management, they will find that they will secure an increasing revenue, provide work for many of their settlers during the winter months, and not only retain but add to the number of their small wood-using industries.

Closer Utilization of Forest Products.

The Forest Products Laboratory, located at Madison, Wisconsin, which is a branch of the United States Forest Service, is especially organized and equipped to study all the various problems connected with the closer utilization of forest products. The following summary of the report of Mr. H. S. Betts of the Laboratory force, illustrates only some of the chief results accomplished by the Laboratory along lines that are of especial interest to the wood users of Wisconsin.

WOOD PRESERVATION.

Conditions in Industry.

Number of railroad ties used for new track in 1910..	22,255,000	
Number of railroad ties used for replacements in old tracks	125,976,000	
Value of railroad ties used for replacements in old tracks	$64,200,000	
Proportion of ties treated in 1910	20%	
Annual saving possible by treating ties, poles, posts, piling, mine timbers, shingles, and lumber exposed to weather		
Material	6,000,000,000	bd. ft.
Value	$71,700,000	

Problems of Industry.

(1) To bring the advantages of wood preservation to the attention of wood users.

(2) To determine the best methods of treating various woods.

(3) To determine the merits of various preservatives.

(4) To determine the best methods of operating various types of plants.

(5) To determine a method of rendering wood fireproof.

Work Done by Products.

(1) Tests to determine the life of both treated and untreated material are being carried on in coöperation with railway companies, cities (paving blocks), telephone companies, and mine companies. It has been shown that the life of wood used in exposed situations or in contact with the soil or water can be increased at least three times by treatment with preservatives. Forty-two sets of test material in various parts of the country are inspected at regular intervals by Products and the results published from time to time. Information of this sort shows definitely the saving in both material and money due to preservative treatment. In one instance the installation of a small treating plant by a coal company reduced their annual consumption of timber to one-half of the amount previously required, though only part of the timber used was treated.

(2) The Service has designed some twelve wood preserving plants for wood-using companies and assisted in the design and preliminary operation of many others. The industry is now well established. A large amount of information on the best methods of treating certain woods, of operating various types of plants, and of handling certain preservatives is being constantly supplied in reply to inquiries. In 1904 there were 30 plants in operation, while in 1910 there were 84. From 1909 to 1910 there was a gain of over 45 per cent in the quantity of material treated annually.

(3) Tests have shown that many woods of comparatively little value, such as loblolly pine of the Southeast, jack pine of the Northeast, and lodgepole pine of the Rocky Mountain states, can be easily treated with preservative and are suitable for ties. The use of these pines for tie purposes has doubled in the last five years.

(4) Tests have been made on 23 preservatives, including creosotes and salt solutions, to determine their properties, such as effectiveness in checking the growth of fungus, ability to penetrate into wood, effect on the strength of wood and permanency. As from 50 to 75 per cent of the cost of treating is for the preservative, accurate data to guide a selection are important. Such tests have shown the necessity of careful analysis and grading of the creosotes used as wood preservatives, and laboratories have been established by the largest water-gas tar company in the United States and by one of the largest creosote companies for the better handling of their wood preservatives.

(5) As a result of tests to show the possibilities of treated loblolly pine for pole construction a plant has been constructed in the South and is operating on this species.

(6) Tests to show the advantages of treating silo timber have resulted in silo companies furnishing treated material.

(7) The results of investigations of the treatment of paving blocks have been utilized by the city of Chicago in drawing up specifications for city pavements.

(8) The specifications for wood preservatives adopted by the American Railway Engineering and Maintenance of Way Association and by the National Electric Light Association are based on work done by Products in analyzing and grading preservatives.

(9) The methods of treating poles by the brush and open-tank process adopted by the National Electric Light Association are based on the recommendations of Products.

MECHANICAL TESTS OF WOOD.

Conditions in Building Trades.

Amount of wood used in 1910	20,000,000,000 bd. ft.
Value of wood used in 1910	$300,000,000

Problems of Industry.

(1) To determine the strength of woods commonly used for structural purposes and the effect of defects, such as knots, checks, and shakes, on the strength.

(2) To determine for comparative purpose the mechanical properties (strength, stiffness, hardness, toughness, shrinkage, swelling, etc.) of woods grown in the United States in the form of small, clear pieces.

(3) To show the relative strength of standard woods and proposed substitutes in the form in which they are used, such as boxes, spokes, axles, poles, mine timber, etc.

Work Done by Products.

(1) The grading rules for structural timber formulated by the American Railway Engineering and Maintenance of Way Association, and also the rules formulated by the American Society for Testing Materials, are based largely on the results of tests made by Products.

(2) The National Association of Hickory Manufacturers incorporated the results of a series of tests on red and white hick-

ory wagon spokes in their grading rules, allowing red hickory to appear in higher grades than before, thus making better use of material that was formerly considered inferior.

(3) The portion of the new building laws for New York City that relates to wooden construction is based largely on the results of Products tests.

(4) Tests made by Products on telephone poles of various species have shown that woods heretofore considered unsuitable have the requisite strength for pole purposes. The tests have resulted in the increased use of lodgepole pine and Engelmann spruce in the West as substitutes for the less plentiful and higher priced cedar.

(5) Formerly timbers cut from trees tapped for turpentine were thought to be weaker than timbers from untapped trees, and only unboxed timber was accepted. This discrimination has caused a waste of about thirty-seven billion board feet of longleaf pine timber, valued at $111,000,000. Tests made by the Forest Service have shown that tapping trees for turpentine has no effect on the strength, and the use of boxed timber is becoming general.

(6) Tests on packing boxes of various types, including boxes with and without battens, dove-tailed boxes, and wire-bound boxes, have shown wire-bound boxes to be the most economical form of construction. These results effect the use of some 4,000,000,000 bd. ft. of material. The tests have resulted in the revision of the specifications of the Interstate Commerce Commission for boxes used in shipping explosives.

(7) Tests on shortleaf pine and white cedar cross-arms in standard sizes have shown these species to possess ample strength for this purpose, as well as the commonly used species, Douglas fir and long leaf pine.

(8) Tests on California tanbark oak have shown it to be entirely suitable for many purposes for which eastern oak is used. Approximately 400,000,000 bd. ft. of tanbark oak have been left in the woods to decay after the bark was removed for tanning purposes. Tanbark oak flooring was used in one of the large hotels recently rebuilt in San Francisco.

(9) The practice of steaming timber before preservative treatment has been practically abandoned as a result of tests that showed the strong possibility of weakening the timber and also that air seasoning was preferable to steaming as a means of rendering timber more easily treated.

WOOD PULP.

Conditions of Industry.

Number of paper mills in the United States in 1909..	787
Value of products	$267,869,000
Wood used for pulp	4,000,000 cords
Annual sawmill waste suitable for pulp (Slabs and edgings)	5,000,000 cords

Year.	Proportion of spruce used.	Proportion of spruce imported.	Cost of spruce per cord.		Imports of pulp.	Exports of pulp.
			Domestic.	Imported.		
	per cent	per cent			Tons.	Tons
1900..	76	23	$4 80	$6 50	82,000	14,000
1909..	60	32	9 30	11 30	307,000	10,000

Problems of Industry.

(1) To find satisfactory substitutes for spruce.

(2) To determine the paper-making possibilities of species not now used.

(3) To find methods adapted to making paper from the waste of sawmills and other wood-using industries.

(4) To find methods of raising the yield and quality of pulp obtained in average practice.

Work Done by Products.

(1) Tests have shown that pulps of commercial value suitable for use in the manufacture of news and wrapping paper can be made by the sulphite process from eight species of native woods, several of which grow in large quantities on the National Forests. Some of these woods are now used to a limited extent, others not at all. Mills have started to use red fir, white fir, and lodgepole pine. Other species are under investigation.

(2) Tests have shown that three native species, jack pine, tamarack, and hemlock, of which large quantities are available in the Lake States, can be satisfactorily substituted for spruce in the ground-wood process in making the cheaper grades of paper such as news and wrapping. Several mills have begun grinding these woods. A number of western woods are now being tested.

(3) Tests have shown that pulps suitable for book or wrapping paper can be made from 12 new species of native woods by

the soda process; several other native species show commercial possibilities as soda pulpwoods. One mill that will operate on western yellow pine is in course of construction in the Southwest.

(4) Tests have shown that the highest grades of "Kraft" paper can be made from longleaf pine by the soda and sulphate processes. Three paper mills in the Southeast are now using longleaf pine, a fourth is under construction, and plans are under way for a fifth.

(5) A number of methods of increasing the yield of pulp from the raw material without decreasing the quality of the product have been found.

(6) Tests by the sulphate process, now little used in the United States, have shown especial possibilities as a means of making paper from mill waste. A number of mills are now operating on waste.

DRYING LUMBER.

Conditions of Industry.

Amount of lumber dried or seasoned before use 1911	30,000,000,000 bd. ft.
Proportion of waste in drying conifers	3%
Proportion of waste in drying hard woods	10%
Value of material wasted in drying	$21,375,000

Problems of Industry.

(1) To find methods of drying or seasoning lumber that will reduce the present waste.

Work Done by Products.

A kiln has been designed which has shown greater efficiency than is the case in average practice. A carload of water oak wagon felloes furnished by a large vehicle manufacturing company, and claimed by them to be of little value because they could not be seasoned without checking and warping, were dried with a loss of only 2 per cent of the material. A kiln of the new type has been constructed in coöperation with a California lumber manufacturing company, and another one is being built in coöperation with a hickory manufacturing company in Illinois.

WOOD DISTILLATION.

Conditions in Industry.

Wood used in 1910	1,452,000 cords
Value of raw materials	$4,728,000
Value of products	$9,600,000
Number of distillation plants	147

Wood for distillation is used in the form of cordwood, small pieces, and to some extent as sawdust. The products are acetate of lime, wood alcohol, turpentine, pine oils, and charcoal.

Problems of Industry.

(1) To investigate the possibilities of wood not used at present.
(2) To find methods of raising the yields and quality of the products.
(3) To find methods of using the waste from wood-using industries in distillation plants.
(4) To secure information that will make possible more uniform standards in grading wood distillation products.

Work Done by Products.

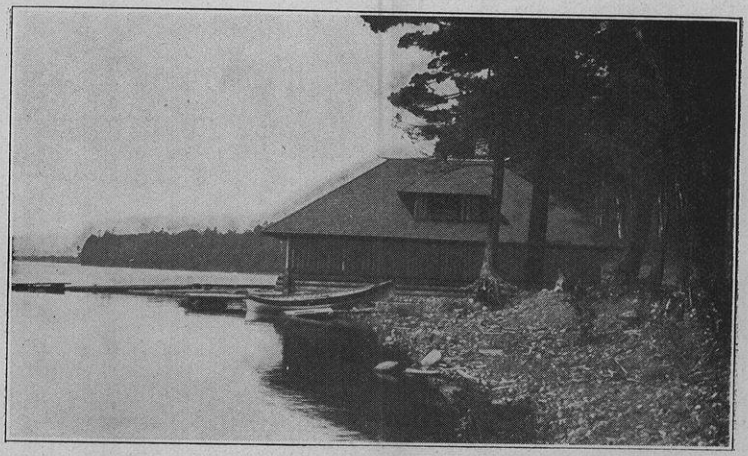
(1) In hardwood distillation over 90 per cent of the material used is beech, birch, and maple, and practically no attempt has been made to utilize other species. Tests made by Products have shown that commercial yields of acetate of lime and wood alcohol can be obtained from hickory, oak, tupelo, and red gum. Mill waste consisting of oak and red gum is now being used by at least one plant.

(2) Commercial methods used in hardwood distillation are generally crude and only part of the possible products are obtained. Tests have shown that it is possible to increase the yield of acetate of lime 50 per cent over present practice. This means a possible annual increase in the amount of acetate of lime produced from the same amount of raw material of over 38,000 tons.

(3) Steam distillation as an industry is still in an experimental stage. Methods of operation vary widely. The Service has made tests to show the effect of varying conditions in the steam distillation process on the yield and cost of operation. This information has been of service to operators in standardizing methods and raising the efficiency of their processes.

(4) The American Chemical Society, the American Society for Testing Materials, the Navy Department, and the Isthmian Canal Commission have used the results of tests made by Products in formulating specifications for wood turpentine.

HEADQUARTERS CAMP, STATE BOARD OF FORESTRY.
Headquarters of Field Instruction for Forest Ranger Students.



BOATHOUSE AT HEADQUARTERS CAMP.

STATE FOREST RESERVES.

Headquarters Camp and Ranger Cabins.

During the summer of 1911 a large Headquarters camp was built on Big Trout lake in Vilas county, and this is the headquarters of all the forestry work on the reserve, and also the location of the main forest nursery, which now contains some 2,500,000 young trees.

The main building is a large double house, made from peeled Norway pine logs cut near the site of the nursery. Norway pine logs were also used in the construction of the barn, boathouse, and the wood and ice house at the Camp. Views of all these buildings are shown in this report, and as will be noticed they are handsome, substantial buildings, which are very appropriate to their surroundings, and as the main forestry buildings on the reserve.

Four ranger cabins with barns, wood and ice houses and small bunk houses for laborers have been built at the following points:

Little Carr lake	in T. 38, R. 7 E.
Rest lake	in T. 42, R. 5 E.
Boulder Dam lake	in T. 42, R. 6 E.
Plum lake	in T. 41, R. 8 E.

During the winter of 1912–13 a ranger cabin is being built at Star lake in T. 41, R. 8 E., and one will probably be started at Carroll lake in T. 39, R. 7 E., and one will also be either built or purchased at Arbor Vitae in T. 40, R. 7 E.

It is planned to gradually furnish comfortable cabins for all the rangers, and small cabins must be built for the Federal patrolmen to occupy during dangerously dry seasons.

Mapping.

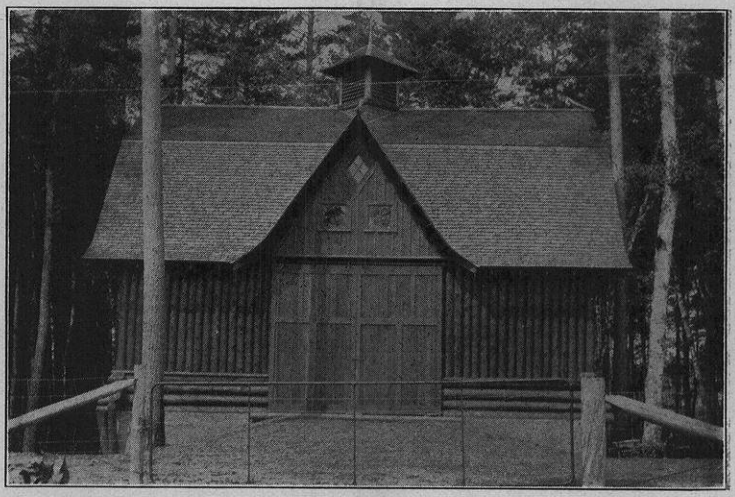
In the state forestry work and especially fire protection, the need of an approximately accurate map of the forest reserve

region was early felt and therefore during the field seasons of 1911 and 1912 the state forest rangers and cruisers, and also the Federal patrolmen, have been noting errors on the old map and also sending in to the Headquarters camp township plats upon which they have noted the location of all roads, fire lines, and telephone lines built within their districts. One of the forest rangers has used this mass of material in making a new map of the forest reserve area, and although it is not absolutely accurate in many of the minor details, still it is a great improvement over all previous maps and will be invaluable, especially to the lookout men in accurately locating forest fires. This map will be constantly corrected and added to, so that in the course of a few years we hope to have a map of the forest reserve area that will be a great aid in forestry management.

Soil Survey.

During the summer of 1910 at the request of the State Board of Forestry, the College of Agriculture of the University of Wisconsin made a careful soil survey of seven townships within the forest reserve area in Oneida and Vilas counties. The area covered included all of townships 38, 39 and 40, range 7 E., and portions of township 43, ranges 5, 6, 7 and 8 E., as it was thought that these townships were fairly typical and representative of the forest reserve area in these counties. This survey disclosed the fact that 78% of the total area examined was true forest land, more valuable for forestry than for agriculture, and that 22% was a loamy sand, which was classed as possible agricultural land. However, this 22% of possible agricultural land is not in a solid block, but is scattered through the seven townships of true forest land, and the Forestry board has felt that it would be a grave mistake to encourage settlers to locate on small tracts of doubtful agricultural value, where they would be surrounded for many miles on all sides by lands that were only suited to the growth of timber. If this were done they would be doomed to comparative isolation, and would be deprived of good schools and the many advantages of a growing community.

During the summer of 1912 the College of Agriculture continued the soil survey of the forest reserve, the following eight



BARN AT HEADQUARTERS CAMP.

townships being covered; township 41, ranges 6, 7, and 8 E., and township 42, ranges 4, 5, 6, 7 and 8 E. Following is the report of Mr. F. L. Musback, who had charge of the work under the direction of Professor A. R. Whitson, of the College of Agriculture.

Mr. E. M. GRIFFITH,
State Forester.

Dear Sir:—

I am sending you with this a brief preliminary report by Mr. F. L. Musback on the soils of a portion of Oneida and Iron counties. You understand that it is our purpose to ultimately complete the mapping of the soils of that whole region. Mr. Musback has this year finished the survey of his area of the northwestern part of the state and we are hoping, therefore, to be able to push the work in the north central section somewhat more rapidly during the next few years. In the meantime we hope this brief report on the areas in which you are now working will be of assistance to you in distinguishing between the agricultural and nonagricultural lands of that region.

While, as you know, I am in hearty sympathy with the efforts being made to develop a state forest reserve, it must be borne in mind that the mapping of the soils of this small area which have so far been covered does not form a basis for estimating the relative amounts of the different classes of soils with reference to their agricultural or nonagricultural value which will be found in other sections of that region.

Very truly yours,

A. R. WHITSON.

PRELIMINARY REPORT OF SOILS OF EIGHT TOWNSHIPS IN VILAS AND IRON COUNTIES.

These eight townships are located in Vilas and Iron counties (all but 42–4 are in Vilas county) and include a considerable portion of land within the so-called Forest Reserve. The work was begun in May, 1912, by the writer assisted by Mr. J. McDonald of the forestry department. At this time eight days were spent with horse and conveyance going over all the roads and trails that were passable. Long walking trips were taken where the trails were widely separated, or impassable. Some of these walking trips were along old railroad grades, fire lines, or trails that admitted only of travel on foot. Later in the fall another week, making a total of fifteen days actual work, was spent in the area. At this time more roads were opened so that considerable more area was accessible than earlier in the year. During the fifteen days approximately three hundred miles were covered including travel by horse, walking, and by means of launch and row boats, and an area of two hundred and seventy six (276) square miles was examined.

From the large tract covered in the short time the report is necessarily more of a general one and less specific in the matter of detail than would otherwise have been the case had more

time been spent. But with the many miles of good roads throughout the reserve and the assistance of a cruiser who was thoroughly familiar with the country, a very good general knowledge of the soil, surface features, and adaptability to agriculture of the eight townships above mentioned was obtained. It does not, however, furnish detailed information as to any particular 40 acre tract area, in this respect it differs from the work done by Mr. Bergh in 1910 who at that time spent nearly two months on an area of about equal size.

The Soil.

The soils in this section of the state are glacial in origin. This fact in itself is ground for wide variation often within short distances. In a general way the soils in the area under discussion fall under four groups which have quite marked differences both as to textural qualities and to topographic features. These four groups are as follows:

1—Sandy to sandy loam (pine land and mixed hardwood)
2—Jack pine sandy soil (Jack pine and Norway pine)
3—Sandy loam to loam (Mixed hardwood mainly)
4—Peat (Mainly open swamp land)

Sand to Sandy Loam.

This type embraces more than 50% of the area examined. The tract is practically all cut over pinery with isolated patches of hardwood, yellow birch, poplar, maple, scattered here and there throughout the area. The Norway pine, however, was the predominant species developed on this soil type.

The soil to a depth of eight (8) inches is a sandy to a sandy loam, of a brown to golden color and carrying a small amount of organic matter in surface one inch. Small fragments of stone and gravelly material are associated with this surface soil. Below eight inches the soil assumes more of a sandy texture, the color becomes lighter and more rock fragments and coarse gravel are mixed with it. These rock fragments are usually small and angular. Over surface good size boulders are frequently strewn. Occasionally boulders 10-12 feet in diameter are encountered. The surface features of this type are undulating and represent a typical morainic development. The hills for the most part are not over 40–50 feet in height,

though some are seventy-five (75) to one hundred (100) feet above the surrounding country, and extend in a succession of undulations of varying slope and shape. Lakes are common throughout the area. Along streams marsh tracts are frequently developed.

The agricultural possibilities of this soil are limited, chiefly on account of the rough topography. Tracts of one hundred (100) acres or more in extent are frequently found which are gently rolling or nearly level, and may be considered agricultural land, yet eighty-five (85) to ninety (90) per cent of this soil type cannot be considered of agricultural value.

Jack Pine Sandy Soil.

This soil is developed extensively throughout this area and embraces nearly 1/5 of the block examined. The land has a rather uniformly level topography and is often spoken of as Jack Pine Barrens or plains elsewhere. While the greater portion is generally level, more or less rolling tracts are also included in this general classification. This sandy soil area was timbered principally with Jack pine and Norway pine. In the finer textured soil poplar, white birch and some white pine developed. At present the larger portion is cut-over land, though some good stands of Norway and Jack Pines yet remain. Several areas of considerable extent were observed upon which a very sparse growth of timber developed. Sweet fern and brake are common.

In general the soil is made up principally of sand grains of varying size to a depth of 40″ and more. However, two rather distinct types may be described:—one is a fine sand carrying a small amount of gravelly material, and the other a coarser sand with which more gravel and rock fragments are associated. The fine sand has a pronounced dark brown color becoming lighter in color at lower depth. At surface a layer of gray sand one to two (1–2) inches deep is often developed. The vegetation is better developed on this soil type, for besides carrying larger proportion of fine earth, it also contains more organic material. About 1/3 of the area mapped as Jack Pine Sandy Soils is of this quality.

The coarse sand carries considerable amount of gravelly material below 12–14 inches. The surface eight to ten (8–10)

inches is also brown, with subsoil of grayish cast. Both types are generally free from stone though the finer sandy is found to be stony in small local areas.

The value of this soil type, agriculturally, depends on its proper management as well as to its physical condition and depth to ground water. Under ordinary management, much of this type, especially the coarse phase, cannot be made profitably productive. This is especially true when the depth to ground water is any considerable distance. The soil under proper management, however, produces good yields of potatoes, rye, oats, buckwheat, clover, truck crops, corn and beans.

Sandy Loam to Loam.

This type embraces about 15 per cent of the total area and is situated mainly in towns 41 and 42, R. 6 East. The type is also cut-over land. The soil to depth of eight (8) inches varies from sandy loam to loam followed by a subsoil which grades more into sandy material with some gravel. The color is grayish to a brown, becoming light colored at lower depths. Stoniness throughout soil mass is of frequent occurrence. The topographic features are rolling to slightly hilly. More nearly level tracts occur frequently.

The timber, nearly all cut now, consisted of mixed hardwoods and pines. Seventy-five to eighty per cent can be utilized for agricultural purposes. It is well suited for various grains and root crops, clover and alfalfa.

Peat.

The areas of peat in this section are either small isolated tracts that occur along stream bottoms, or tracts in one continuous body covering several thousand acres or more. The largest continuous tract is found in Townships 42, R. 4 and 5 East. These large tracts are usually open swamps with islands of wooded uplands scattered throughout. These islands are usually from a few rods to a mile or more in diameter. The smaller isolated tracts are covered with growths of spruce, tamarack and cedar.

The soil is largely composed of decomposed vegetable matter spoken of as "peat." It is of a dark brown color fairly well decomposed and underlain by a sandy subsoil at a depth ranging from 18–24 inches below the surface.

The value of this type of soil from an agricultural point of view is largely dependent upon the drainage possibilities. This phase of the problem was not studied except in a very general way. The Manitowish waters drain the greater portion of the open marshes above referred to, and include the Manitowish river, Bear creek, and their tributaries. Nearly all these have good fall, with the stream beds in many instances of sufficient depth to afford good outlets for drainage systems.

F. L. MUSBACK.

From the above report it will be noted that the land within the eight townships can be approximately classified as follows:

1. Sandy to sandy loam (forest land)	50%
2. Jack pine sandy soil (forest land)	20%
3. Sandy loam to loam (possible agricultural land)	15%
4. Peat (reservoir lands)	15%

The peat lands are in the low marshes and will be either largely overflowed by the reservoirs that are being built at the headwaters of the Wisconsin and Chippewa rivers, or used as natural reservoirs. The Federal government has reserved the right to overflow these lands and any prospective settler should look into this matter very carefully.

As will be noted from the above table the forest and reservoir lands cover about 85% of the entire area examined, and the 15% of possible agricultural lands are rather badly scattered, though not so widely as in the seven townships surveyed in 1910. Fifteen townships, or approximately 345,000 acres have been examined in 1910 and 1912 and from 78 to 85% can be classed as true forest land, which is not good agricultural soil and upon which settlers should not be encouraged to locate. Town and county officials and land companies are naturally loath to admit that any of their land is non-agricultural, and they are prone to charge foresters with discouraging settlement. But the tenets of forestry are that no land should be kept for forestry that is more valuable for agriculture, and certainly the Forestry board would be inclined to welcome settlers in the forest reserve as they would usually prove good workmen whose interests would be identical with those of the state.

But the Forestry board would be doing a great wrong to encourage any man to locate on an isolated tract of rather doubtful agricultural land in the heart of the forest reserve, for though the man might be willing, it would doom his wife and

children to a hard, lonely existence without the benefits of good schools or a growing community.

It is estimated that there are at least 13,000,000 acres of land in northern Wisconsin awaiting development, and much of it is the highest grade agricultural soil. Wisconsin is so rich in this natural resource, and the state has so much at stake in the prosperity and happiness of her settlers, that the state should direct such settlement into the proper channels. The amount of land within the state forest reserves that can possibly be classed as agricultural is a small percentage and in most cases is so badly scattered as to preclude settlement. The forest rangers will use a considerable portion of the areas that are possible agricultural land, but the state should not encourage any settlers to locate in this region.

It is an admitted fact that when the state buys large tracts for forest reserve purposes and thereby withdraws such lands from taxation, it should pay its fair share of the costs of schools and local government within the forest reserve area. But because the state should do this is no reason for condemning the Forestry board for purchasing lands to block up and consolidate the state forest reserves.

Surveying Lake Lots.

In order that the lake shores within the forest reserves should be platted to the best possible advantage for leasing as camp and cottage sites, it has been necessary to survey them, and one of the forest rangers has devoted most of his time to this work. All lots are of good size, usually with a lake frontage of from 300 to 500 feet, and containing from one acre up to five acres. The lake frontage owned by the state has been surveyed and platted on the following lakes: Tomahawk, Big Trout, Plum, Star and Palmer, and work is progressing on Rest, Clear and Carroll lakes.

Leasing Camp and Cottage Sites.

There are nearly 1200 lakes within the state forest reserve area and the fact that this wonderful lake region is being built up as a great forest reserve means not only that the beauty and attractiveness of these lakes will always be preserved, but also

A PRIVATE CAMP WITHIN THE FOREST RESERVE AREA.

that the forests will be protected and greatly improved, that hundreds of miles of roads, fire lines, trails and telephone lines will be built, and that this region will be made safe from forest fires. Already the main part of this work has been done, and the work will be continued from year to year until the reserves are placed in the best possible condition.

Hunting and fishing in this region will also constantly improve for many years to come, and for these several reasons the forest reserves are going to be very attractive for summer camps and cottages.

The reserves are of course intended for the fullest use and enjoyment of all the people, and therefore the State Board of Forestry has adopted the policy of leasing camp and cottage sites on the lakes and rivers. The following circular prepared by the Department explains the general terms under which leases are granted.

DEAR SIR:

In response to many inquiries in regard to the leasing of camp and cottage sites on lakes within the state forest reserve, the following general information is given.

The forest reserve area, especially in Vilas county and the northern portion of Oneida county, includes hundreds of beautiful lakes and the state owns many of the most desirable lots on those lakes. The state board of forestry is prepared to lease five acres or more to any individual or club for a period of from one to twenty years, with privilege of renewal, as sites for summer camps or cottages, at an annual rental of from $10 to $50, depending upon the location, area and value, upon which suitable buildings are to be erected by the lessee.

Sites can be had either near a railroad or distant from one, and applicants should state which they prefer; and whether they desire a site suitably located for a family outing or whether they simply require good hunting and fishing. These lands are wild and forest lands and not suited for agriculture. Application should be made to the State Forester, giving full and definite information as to the requirements of the applicant.

The provisions of the lease are very simple and not at all restrictive, the main points being that no green timber shall be cut for building or other purposes without the consent of the State Forester, that all reasonable care shall be taken to prevent starting forest fires and that no intoxicating liquors will be sold.

Individuals or families who would like to spend the summer in the forest reserves can secure a site for the erection of tents or temporary structures upon the payment of a yearly fee of $2.00 for an individual and $5.00 for a family. Detailed information as to any particular lake, also camp, cottage or tenting sites, will be furnished upon application.

The state forest rangers, in connection with their work, will try to protect camps and cottages on state land from being molested.

A map showing the most desirable lake lots can usually be loaned to applicants, and it should be returned as promptly as possible.

Very respectfully,

E. M. GRIFFITH,
State Forester.

Congress has now granted to Wisconsin for forestry purposes some 250 islands in the inland lakes, most of these being within the forest reserve area, and these islands will be leased exactly the same as the lake shore property.

GRANT OF ISLANDS FROM THE GOVERNMENT.

Due to the untiring efforts of Congressman E. A. Morse, in the House of Representatives, and Senator La Follette in the Senate, the U. S. Congress on August 22nd, 1912, granted to Wisconsin all the unsurveyed and unallotted islands in inland lakes, north of town 33. The islands are granted to Wisconsin as an addition to the state forest reserves, and the act provides that they must always be managed as part of the reserves, or will revert to the United States.

Before this grant a large number of islands had been acquired by private parties, and in many cases they had cut off all the timber leaving the islands eyesores, instead of the beauty spots that nature intended them to be.

The government did not have an accurate record of the number of islands in the inland lakes, but the reports of the state forest rangers show that that there are about 250 islands, and that they contain all the way from ¾ of an acre up to 40 acres each. During the winter of 1912–13 it is planned to have all these islands carefully surveyed and described, and they will then be leased for summer camps and cottages in exactly the same way that lake shore property within the forest reserves is leased by the state.

Wisconsin is extremely fortunate in securing such a large number of beautiful islands and they will greatly enhance the beauty and value of the forest reserves.

PROPOSED GAME PRESERVE.

It is proposed to fence in some 8,000 to 10,000 acres of land in 41–7 E., within the heart of the state forest reserves, as a game preserve, and to inclose within this preserve elk, moose, deer, pheasants, grouse and such fur bearing animals as beaver, mink, otter, and so forth.

The state already owns the land that it is proposed to enclose, and the government is prepared to give the state elk from the big herd that winters in Jackson's Hole, Montana, and in which many of the animals die each year on account of the lack of feed.

Some game enthusiasts have also offered to assist the state in securing some moose and a gentleman will give a large number

of Mongolian pheasants. Native deer can readily be driven into the game preserve, and the fur bearing animals can be secured within the state.

It is also proposed to use the game preserve, and possibly large marshes within the forest reserve, as a wild fowl refuge, where migratory birds will have a chance to breed without being slaughtered.

Mr. Edward A. McIlhenny, of New Orleans has established some splendid wild fowl refuges on the coast near New Orleans, and largely through his efforts, Mrs. Russell Sage of New York has recently purchased Marsh Island, near New Orleans, and has presented it to the government to be held for all time as a wild fowl refuge.

Mr. McIlhenny is a true sportsman who is working to preserve the wild bird life of America, and he is meeting with great success in his efforts to have all the states along the Mississippi river set aside wild fowl refuges so that the birds in their flights may find protective areas from New Orleans to the Canadian line.

The main idea of the proposed game preserve near Big Trout lake, in 41–7 E., is to protect the elk and moose until they increase to sufficient numbers so that some of them can be set free within the forest reserves in Vilas county and to then ask the legislature to prohibit the killing of any elk or moose for a number of years. In this way it will prove possible in a few years to again have these splendid game animals in Wisconsin, and the deer within the preserve should increase so rapidly that a number of them could be liberated each year.

The game birds will of course fly from the fenced area to other parts of the forest reserve, but they will very quickly learn where they are not shot, and will return to the preserve during the breeding season or when shot at frequently.

The fur bearing animals should gradually be distributed through all the lakes and streams of the forest reserve, and their taking carefully regulated so that they will not again be nearly totally destroyed.

Such a game preserve is the only feasible way of stocking the forest reserve with the game which it should contain, and now that the state owns the land, the chief cost will be the fencing and that can be purchased for about $100 per mile.

Forestry Work for Convalescent Consumptives.

The state forest reserves, comprising some 400,000 acres, and lying within the wonderful lake region of northern Wisconsin, should be used and enjoyed to the fullest extent by all the people of the state, and one of the best possible uses to which a portion of the reserves can be put is as a big outdoor sanatorium for convalescent consumptives and those who are threatened with the disease. The State Board of Forestry now has one large forest nursery containing some 2,500,000 tree seedlings, and within a year or two other nurseries will be built, so that probably the annual production of the nurseries will be about 2,000,000 seedlings, which will be nearly sufficient to reforest 2,000 acres a year.

Work both in a forest nursery, and in planting the seedlings, is light work which can be arranged so that it would be especially suited to the weakened condition of a convalescent consumptive patient. It is proposed to ask the legislature for an appropriation of $5,000 per year which would cover the cost of building and keeping in repair the wooden shacks in which the patients would live, and also the salaries of a doctor and nurse. The State Board of Forestry would set aside the land required for the sanatorium, forest nurseries and tracts to be reforested, and would pay the patients for the time in which they were actually employed in working for the state.

At first a patient might not be able to work more than four hours a day, but at 15c per hour, he would have earned 60c, or more than his board for one day would cost, and all that he earned over and above the cost of his board, would be credited to him, so that when cured he could leave the sanatorium with at least a small amount of money to start life anew.

This is not an absolutely untried plan, for as early as 1902, J. T. Rothrock, who for many years was commissioner of forestry in Pennsylvania, started a camp for consumptives at Mont Alto, in the forest reserve. Mr. Rothrock writes as follows in regard to the results that were accomplished in this camp:

"It was simply a camp—rough board shacks, costing from $40 to $60 apiece. The inmates provided their bedding, furniture, and prepared their own food. It continued so for nearly four years, receiving from the State $23,000, and from friends about $3,000. Meanwhile we had built some better cabins at a cost of $250 apiece, and erected an assembly hall.

"For the last few months we were able to begin feeding the patients from the state appropriation. June 1, 1907, the camp, at the request of the Forestry

Department, was transferred to the newly created State Health Department. Liberal appropriations were made for its support, and there is now on that ground a tuberculosis sanatorium, having at present 850 patients. Before we had time to work out the plan of forest planting, etc., thoroughly, the change was made, though we had tried the plan of small individual gardens for the patients, with great success. It was natural that I should try to find some avenue along which I could lead these people into light out-door work in forestry.

"You ask what obstacles were encountered during our five years of work on the camp idea. I reply none, inherent in the plan. I am anxious to impress one thing,—*It is cheaper, wiser, more humane, to prevent disease than it is to cure it,* and I think we begin our work at the wrong end. There are in Wisconsin, as in Pennsylvania, thousands of overworked, underpaid, underfed people, who are wearing out their lives in unsanitary surroundings, living to propagate a weaker generation, and then themselves die charges upon the tax or bounty of the community. Would it not be better from every point of view to get those people out camping, when just a little ailing, before they become sick? We are commencing to think so here in Pennsylvania, and are working to revive the camp idea to keep weak ones from becoming sick ones. I hope you progressive people in Wisconsin will keep everlastingly at this camp business in one form or another, or if need be, in several forms."

Mr. Rothrock does not take the credit that is due him for the really remarkable success of this camp, for in the nearly five years of its operation, over 75 per cent of those who came to the camp afflicted with tuberculosis, were discharged either cured or with the disease arrested.

As will be seen, Wisconsin is not blazing an entirely new trail, and yet the proposed plan in Wisconsin is fundamentally different from the Pennsylvania camp in the following important respects:

1. The plan in Wisconsin is to accept in the camp only convalescent patients, or those who are threatened with the disease.

2. The state will build and furnish the necessary shacks and will also feed all the patients.

3. Work will be provided for all the patients either in the forest nurseries, planting or some other form of light forestry work.

Wisconsin has a splendidly equipped sanatorium for consumptives at Wales, but Dr. Coon, the Superintendent, as well as other doctors of the state, finds that the hardest problem is to find light out-door work for the convalescent patient. Many of these are men and women from the larger cities, who on account of their very slender means are obliged to return at once to their work in the factory or store, and the long hours, combined with lack of fresh air, frequently result in a serious relapse, and sometimes death. For these reasons the doctors have welcomed enthusiastically the plan of giving these convalescents a few months at least of steady out-door life on the forest reserves, combined with light and pleasant work.

Some patients will undoubtedly find that in order to avoid a relapse they must continue to live in the cool dry climate of northern Wisconsin, and in such cases the State Board of For-

estry could lease to them at very reasonable rates, small tracts of arable land near the public resorts, hotels and private camps, and the patients would find that they would have a ready sale at good prices for all their vegetables, milk, chickens, etc. There are also thousands of men and women workers in Wisconsin, who though not consumptives, are so run down and worn out that they are an easy prey to the disease. It is a good sound policy for the state to aid such people in regaining their health, and thus avoid their becoming public charges, and the state could well afford to allow them to build camps on many portions of the forest reserves, and also to give them work in reforestation to a very considerable extent.

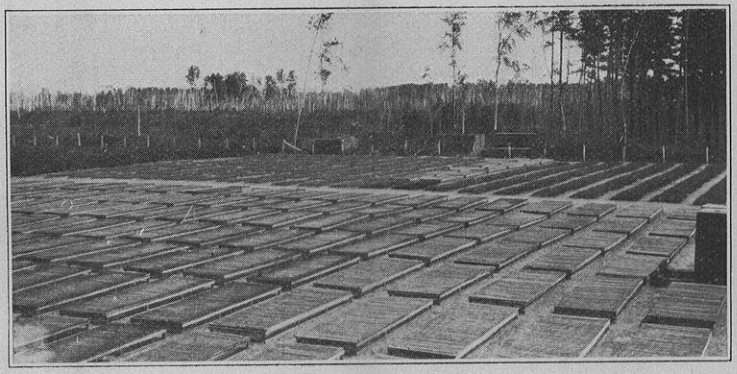
As a few months' out-door life in the bracing climate of northern Wisconsin will often make certain the complete cure of the convalescent consumptive, and also ward off possible consumption from the weak and debilitated worker, and as the state must reforest its denuded lands which are unfit for agriculture, it would seem both a sane and humane policy to give the patient a chance to do the work for which he is so suited, bringing to him health, and to the state wealth, through the forests that will be grown.

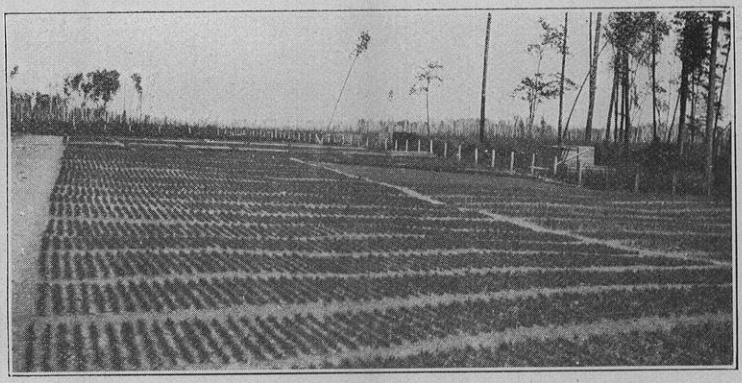
Forest Nurseries.

Where there have not been severe repeated forest fires within the forest reserve region, the second growth and natural reproduction are in most cases fairly satisfactory so that little if any planting will be necessary, but on some areas the fires were so severe that all the young growth of any real value was destroyed and of course in such cases planting is the only remedy. It would be far too expensive to purchase planting material from commercial nurseries, and therefore in the spring of 1911 a large nursery was started at the Headquarters camp at Trout lake, Vilas county, under the direct supervision of F. B. Moody, Assistant State Forester, and the results from the start have been remarkably successful, and the plants have been raised at an unusually low cost as will be noted from the following table.

1 YEAR SEEDLINGS.

	Number	Cost to raise per M.
White pine	632,000	$.46
Scotch pine	190,000	.45
Western yellow pine	60,000	.55
Norway spruce	11,000	1.06
Colorado blue spruce	40,000	.40
European larch	400	.88





VIEWS OF STATE NURSERY AT TROUT LAKE.

Young pine must be grown in the nursery for two years before being planted. About 2,500,000 seedlings are now being grown.

2 YEAR SEEDLINGS.

	Number	Cost to raise per M.
White pine	436,000	$.47
Norway pine	576,000	.47
Scotch pine	145,000	.46
Western yellow pine	13,000	.56
Norway spruce	20,000	1.07

2 YEAR TRANSPLANTS.

	Number	Cost to raise per M.
White pine	21,000	$1.25
Scotch pine	20,000	1.24
Western yellow pine	68,000	1.33

The above figures represent the actual cost of raising the plants, including all labor, but do not include the cost of land, clearing, water system, fencing, fertilizer, etc. The exact amount that must be added to cover all such expenses, depreciation, etc., cannot be determined until the plants are ready for planting but it will probably be about an annual charge of 15 cents per thousand plants. It is expected that the Trout lake nursery will raise from 1,250,000 to 1,500,000 trees each year and this number will be sufficient to reforest from 1,000 to 1,200 acres annually. So far very little trouble has been experienced in raising trees in this nursery. Damping off, a fungus disease which attacks young conifers the first season, has killed some of the seedlings, but has not been at all serious. The disease was cured by frequent watering and also scattering powdered sulphur over the seedlings. Grasshoppers killed some of the two year old white pine during the summer of 1912 by eating the bark and often girdling the young trees. There seemed to be no remedy to check this loss except screening the beds.

The ground has already been cleared for a forest nursery which will be started in the spring of 1913 at the Tomahawk lake ranger station. This nursery will contain from 3 to 3½ acres and should have an annual output of from 500,000 to 750,000 trees. In addition to these two large nurseries it is intended to establish smaller nurseries at all the other ranger stations.

It is the intention of the State Board of Forestry to sell trees, at slightly above cost, to citizens of Wisconsin who may wish to reforest their non-agricultural lands within the state.

Forest Planting.

The first plantations on the forest reserve were made in the spring of 1911 and as the state had no plant material of its own it was necessary to purchase all the stock used. As the plants were poorly packed and were ten days on the road, the losses were much greater than they would be under normal conditions.

The following species were planted in 1911 along the northeast shore of Trout lake:

White pine	181,200
Norway pine	1,000
Western yellow pine	5,000
Norway spruce	5,000

The western yellow pine were an experiment, but have done remarkably well, the plants being very strong and stocky, and it seems quite likely that this species may prove very valuable for reforesting the cut-over and burned lands within the forest reserves.

In the Trout lake forest nursery we now have over 140,000 plants of this species, so that within the next five years we can test it thoroughly.

During the spring of 1912 some 18,000 Scotch pine were planted at Trout lake, and as the plants were in good condition the losses were very small. This species has proved very successful in Michigan where it has been planted on sandy soil similar to that at Trout lake, so that it is not an experiment, but we want to compare its growth, freedom from disease, etc., in northern Wisconsin with that of white, Norway and western yellow pine, and even jack pine.

In order to have a fairly large and permanent experimental plantation it is proposed to reforest, in the spring of 1913, a long point in Star lake, Vilas county, which contains about 100 acres, and the following plants grown in the state nursery will be used:

White pine	50,000
Norway pine	50,000
Western yellow pine	10,000
Scotch pine	5,000
Norway spruce	5,000

A permanent accurate record of this plantation will be kept and it should prove a very valuable guide to all future tree planters of northern Wisconsin.

Throughout the forest reserves the first areas to be planted will be the lake shores where they have been cut over and burned, for in their present condition they are eyesores and should be reforested as soon as possible.

Natural Reproduction.

As stated in the report of the State Forester for 1907–08:

Natural reproduction, especially of pine, on the cut-over lands of northern Wisconsin is surprisingly good where forest fires have not run, but unfortunately such sections are the exception rather than the rule, and the fires of 1908 have destroyed thousands of acres of the most promising young growth. It may be said in general that over large areas natural reproduction is not complete, that is, there are blanks which have not restocked and which must be planted artificially in order to get an even stand, but every acre naturally reforested is a direct saving in time, labor, and money.

The value of such young growth together with the loss of soil fertility has led this office to repeatedly warn settlers in northern Wisconsin of the enormous annual loss caused by surface fires which they were apt to look upon as of little or no consequence. A great deal more attention is paid to such fires than in the past, but still there are even some town boards who object to fire wardens "wasting time and money" in putting out fires which are burning on cut-over lands, and such men seem to think that no damage is being done unless merchantable timber is being destroyed. Each year thousands of acres of not only pine seedlings, but also young timber which has been growing for from ten to twenty years is burned over and is a total loss, and there is nothing which can be cut and saved, as is the case with merchantable timber. The value of young growth is none the less real because it is prospective, and if Wisconsin is to have forests in the future, together with the industries dependent upon them, the forest fire problem must be solved so that the new forests with which nature is trying to reclothe the cut-over and barren lands will be carefully protected.

Since the above was written the forest fires of 1910 burned over 892,000 acres, and as a result an enormous amount of promising young timber was destroyed. Fortunately both 1911 and 1912 have been wet seasons with very little damage from forest

fires, but dry years will certainly come again, and the future wealth of the state absolutely depends on the protection of the young growing trees.

On the state forest reserves the Forestry board employs forest rangers whose duty it is to promptly detect and extinguish all forest fires and this has been made possible by a very complete fire protection system. Where severe repeated forest fires in the past have not destroyed all of the seed, the young pines are coming up, but where there is no pine or other valuable species, it will be necessary to plant.

It cannot be too strongly stated or frequently repeated that pine will always follow pine if the lands are not too severely burned over. But where all the pine seed has been killed by fires that burned deep into the soil, then Nature steps in and the light seed of the popple is carried upon the land from long distances. The popple is a fire seed, which Nature uses to quickly reclothe burned over soil, and it serves admirably as a shelterwood for more valuable species, especially pine, which is frequently found growing up under it.

The natural reproduction of the forest lands of northern Wisconsin is simply a question of adequate fire protection, and it is felt that the necessary protection can never be secured until a well organized system of forest fire patrols has been provided for each and every forest region in Wisconsin.

Fire Protective System.

In 1910 there were only a few roads within the state forest reserve and as a complete system of roads, fire lines and telephone lines was absolutely necessary in order to protect the reserve from forest fires, this work has been pushed as rapidly as the men and funds at the disposal of the forestry board would permit.

During the field seasons of 1911 and 1912 we have completed 159½ miles of road, 118 miles of fire lines and 56 miles of telephone lines, and it is believed that this is a greater amount of permanent protective work than has been accomplished by any other state in an equal length of time.

Road Building.

Within the forest reserve there were fortunately many miles of old logging railroad grades and with a comparatively small

amount of work these have been made into very fair wood roads, and they will prove excellent fire lines as well. The state will save thousands of dollars by being able to utilize these old railroad grades, and although many of them are so located that they cannot be used as roads, still most of them will be cleared of brush and other inflammable material and used as fire lines.

In 1911 approximately 108 miles of road were built, and 51 miles in 1912, at a cost of about $118 per mile.

Naturally the cost of road construction varies very greatly where in one case an old railroad grade can be utilized, while in another the road must be built through heavy brush or timber. The cost of construction under varying conditions is shown in the following typical cases:

Road and fire line built on an old railroad grade from Star lake to Camp 12. Distance 8 miles.

Character of work.	*Total Cost.*	*Cost per mile.*
Cutting brush	$56.85	$7.10
Removing ties	58.08	7.26
Removing rock and sod	9.20	1.15
Plowing and dragging	49.85	6.23
Board of men	85.90	10.73
Board of team	33.40	4.17
Total	$293.28	$36.64

On most of these old railroad grades the brush is very thick. This must first of all be cut out to make a good wide road, then piled and later on burned. The heaviest part of the work is removing the ties, which are often heavy birch trees which have become firmly imbedded in the turf. The ties are piled up along the road and when thoroughly dry are burned. After the rock and sod have been removed, the road is plowed and dragged and then with a little use the road packs firmly and becomes a very useful highway as well as an excellent fire line.

It will be noted that the cost of building the above road on an old railroad grade was $36.64 per mile, and it is interesting to compare the cost of the following road which was built through very brushy country, especially as the work was done under the same forest ranger with practically the same crew of men:

Portion of the road from Star lake to Sayner. Distance 2¾ miles.

Character of work.	*Total cost.*	*Cost per mile.*
Cutting brush	$113.95	$41.44
Removing stumps	44.85	16.31
Plowing and dragging	32.20	11.71
Scraping	70.05	25.47
Shovelling and grubbing	125.70	45.71
Dynamiting	19.00	6.91
Burning brush	26.45	9.62
Board of men	215.30	78.29
Board of team	86.95	31.62
Total	$734.45	$267.08

As a road from Star Lake to Sayner was badly needed, and as it will be very generally used by the public, more time and money was spent on it than would usually be the case.

However, probably every railroad grade which has been utilized in making a road has saved the state at least $150 per mile.

Fire Line Construction.

During 1911 and 1912 approximately 118 miles of fire lines have been constructed, of which 94 miles were built in 1911 and 24 miles in 1912, at an average cost of $87.70 per mile.

The greater part of the fire lines follow the old railroad grades and many of these are really secondary roads and can be used as such when desirable.

However in a good many places it has been found necessary to construct fire lines where there were no railroad grades, and in such cases the fire line has always been built so as to connect two lakes, or one lake with a river, road or other boundary from which the fire could be fought and checked.

The forest reserve contains several hundred lakes, besides a number of rivers and many smaller streams, which makes it a comparatively easy matter to divide the reserve by means of roads and fire lines, into a large number of blocks or districts, so that a forest fire can be held in the district in which it starts.

Telephone Construction.

In 1911 and 1912 there were constructed 56 miles of telephone line at an average cost of $36.77 per mile. The detailed cost of an average line is as follows:

Cost of telephone line from Headquarters camp, Trout lake, to Sayner. Distance 9 miles.

Character of work.	*Total cost.*	*Cost per mile.*
Cutting and skidding poles to road	$78.30	$8.70
Digging holes, hauling and setting poles	75.60	8.40
Stumpage value of poles	40.50	4.50
Stringing wire	49.12	5.46
Cost of wire	43.38	4.82
Cost of knobs	2.70	.30
Cost of nails	.54	.06
Total	$290.14	$32.24

The telephone lines extend from Headquarters camp to the ranger cabins, lookout towers, and nearest towns, and a switchboard at Headquarters camp makes it possible to connect any of the lines.

Steel Lookout Towers.

During the summer of 1912 four 55 foot steel lookout towers have been built on some of the highest hills within the forest reserve, and these towers are so located that nearly the entire area of forest reserve lands in Oneida and Vilas counties can be observed from them.

The average cost of the towers has been $136.90, the detailed cost of a typical tower being as follows:

Cost of tower	$66.32
Labor setting up tower	52.51
Cement for foundations	9.55
Lumber for platform	3.05
Total	$131.43

From all the towers the country can be seen for 10 miles in almost any direction, and during dangerously dry weather the observers report immediately, by telephone, any fire or smoke that may be seen.

Cutting Old Stubs.

Old dead stubs are one of the most prolific means of spreading forest fires, as the fire quickly runs up the dead bark to the top of the tree and a slight wind will carry the burning bark for long distances. During 1911 and 1912 old stubs, chiefly birch, were cut back for 6 rods on each side of 83 miles of roads and fire lines, at an average cost of $5.34 per mile. With these old stubs out of the way there will be little probability, in many sections of the reserve, of a forest fire jumping over the road or fire line.

Slash Burning.

Where the slash from old lumbering operations is very heavy, and especially where it adjoins timber or other valuable property, it is necessary to pile and burn it so that it shall not be a constant menace to the forest reserve. During 1911 over 1200 acres of dangerous slashings were destroyed, and 135 acres in 1912, at an average cost of $4.88 per acre. The reason the cost was so heavy was on acount of the work being done on the worst areas where the slashings were heaviest, and also because the lumbermen had made no attempt to pile the slash and therefore it all had to be rehandled.

Portable Telephones.

After two years of experimenting the Western Electric company has perfected a portable telephone for the use of forest rangers and patrols, and two of these instruments have been tested on the telephone lines of the state forest reserves. It is a beautifully made instrument, packed in a leather case, which is easily carried on the ranger's back or fastened to a saddle. A ranger will often find a fire that is near a telephone line though it may be several miles to the nearest camp where there is a telephone instrument. We will suppose that the ranger finds the fire burning in some old slashings, and that he sees that he cannot extinguish it alone, but must have three or four men with axes, shovels and collapsible canvas water buckets. If he had to go several miles to the nearest camp in order to telephone for the men, he would lose much valuable time. Equipped with a portable telephone he goes to the nearest telephone line and gets the connection by simply throwing a heavy cord, which is weighted, over the line, and by sticking a steel rod into the ground. He then rings up the nearest ranger, or the Headquarters camp, reports just where the fire is, and help is rushed to him by horses or railway speeders. The ranger then goes back to the fire and works to keep it from spreading until help arrives.

It will thus be seen that the portable telephone is another important cog in the system of forest fire prevention and control, and that it is the ranger's fire alarm box. First, prevention, and second, promptness in getting well equipped fire fighters to the fire, are the problems in the big forest just as they are in the big city.

Forest Rangers' Fire Fighting Equipment.

The state forest reserves have been divided into districts with a forest ranger in charge of the work in each district. As is fully explained in this report the fire protective system consists of roads, fire lines, trails, lookout towers and telephone lines, but occasional fires will always occur, and the rangers must be properly equipped to fight and extinguish them.

At each ranger cabin there is a supply of fire fighting tools such as axes, shovels, water pails, and so forth, and at all the chief railroad stations within the forest reserve area there are

big tool boxes, fully equipped and ready to be shipped to any point along the line at a moment's notice.

The rangers must get to a fire with the least possible delay and therefore those who are located near a railroad line have railroad speeders and the other men have horses.

Field glasses for detecting small fires at a considerable distance, and portable telephones for quickly summoning help, have both proved very useful, and the men on the lookout towers will be equipped with telescopes, as they can then detect fires over a wide range of territory.

The ranger is also furnished with an ax, shovel and collapsible canvas water bucket, which he can carry on his railroad speeder or pack on his horse.

Federal and State Fire Protective Work.

Congress under the provisions of the Weeks law authorized the U. S. Department of Agriculture to coöperate with the various states in protecting timberlands upon the headquarters of navigable streams from forest fires. The act provides however that no part of the appropriation shall be used in any state that has not established a forest fire patrol system of its own and therefore only a few states were able to qualify.

Wisconsin's application for assistance in protecting the headwaters of the Wisconsin and Chippewa rivers was approved by the U. S. Forest Service and during the fire seasons of both 1911 and 1912 the Wisconsin State Board of Forestry has been allowed $5,000 with which to employ Federal patrolmen.

Each year from about May 1st to December 1st twelve Federal patrolmen are employed to assist an equal number of forest rangers who are in the permanent employ of the state.

During the fire season of 1911 there was so much rain that it was not necessary for the men to devote much of their time to patrol work, and therefore it was possible to make a great deal of headway in starting the fire protective system. Following is a somewhat detailed report of the results of the work in 1912:

Fortunately, during the summer of 1912, there was plenty of rain in Wisconsin, and it was so well distributed that there was very little danger from forest fires, except during June, and the first part of July. During those six weeks there were from ten to twelve small fires on the protective area, but they were quickly found and extinguished. The well distributed rains made it possible for the forest rangers and patrolmen to devote a large

share of their time to building up the protective system with the result that the following work was accomplished:

Miles new road built	49½
Miles new fire lines built	31
Miles old roads dragged or plowed	41
Miles old fire lines widened or cleaned	21
Miles new telephone lines constructed	16½
Miles old telephone lines repaired	15
Miles new trails made	11
Acres of slashings burned	615
Acres of clearing done	18
Lookout towers constructed	4
Bridges built	5

We now have 159½ miles of road completed, 118 miles of fire lines, 56 miles telephone lines, with connections from Headquarters camp to rangers' cabins, lookout towers and nearest towns. We have completed four ranger cabins, and have two more under construction.

Patrol Work.

Twelve state forest rangers, twelve federal patrolmen, and one private patrolman have been engaged in the patrol work during 1912. When not engaged in patrol work the men were employed in building up the protective system as outlined above.

The few settlers within the protective area, as well as the large number of summer visitors, have come to realize quite clearly the value of the patrol system, and are much more careful in burning brush and about leaving their camp fires burning.

There has been a marked improvement in this respect since 1911, and those living in, or using the protective area for camping, hunting, or fishing have been requested by means of notices, to help in preventing forest fires. Each ranger and patrolman has made it a point to call on each settler or camper in his district to inform him as to the law in regard to forest fires, and to enlist his support.

Lookout Work.

No lookout towers were built in 1911, but during 1912 four have been constructed. They are all 55 foot steel towers, which are connected by telephone with the Headquarters camp, ranger cabins and nearest towns, and which are so located that nearly all of the protective area can be observed from some one of the four towers. During June and the first part of July, patrolmen were assigned to duty in these towers from time to time, but during the remainder of the season there has been so much rain that lookout duty has not been necessary.

Fire Fighting.

During June and July there were only from ten to twelve fires on the protective area, and none after that until two fires occurred in November. All of these were small fires, which were quickly extinguished by the rangers and patrolmen, without the necessity of hiring any extra help. The expenditures in 1912 for the patrol and protective work during the time that the Federal patrolmen were employed was as follows:

State expenditures, approximately	$16,326.00
Federal expenditures, approximately	4,422.00
Total	$20,748.00

The Federal expenditures were only for the salaries of the Federal patrolmen, while the state expenditures covered the salaries of the forest rangers together with the cost of building roads, fire lines, trails, telephone lines and lookout towers. One private owner paid the salary of a patrolman throughout the entire fire season, and it is expected that by 1913 a number of other private owners and large timberland owners will coöperate in this way.

There are no rural mail carriers within the protective area, but in other parts of the state the carriers should be a great assistance in promptly noting and reporting fires.

The railroads of Wisconsin, particularly within the protective area, have shown a keen interest in coöperating in fire prevention, and after several years' efforts, and the expenditure of thousands of dollars, they have developed spark arresters, which although not perfect are a long step in advance and have reduced the number of forest fires set by railroad locomotives to a very marked degree. The law now provides that all locomotives on main lines must be equipped with the most efficient spark arresters, and that locomotives on branch lines or spurs in the forest region must have screens over the smoke stacks, so as absolutely to prevent the escape of all sparks. This last provision of the law has worked particularly well, and during 1911 and 1912 the railroads did not cause a single bad forest fire in the protective area. The railroads have also appointed inspectors at each division point and roundhouse, whose duty it is to examine each locomotive each day during the fire season, in order to see that all spark arresters and screens are in good condition.

Men in each section crew have been designated to act as fire patrols along the railroad lines in case of dangerously dry

weather, but during both 1911 and 1912, it was not deemed necessary to call on the railroads for such service.

The Federal fire coöperation has been extremely valuable to Wisconsin, especially for the following reason: The protective area at the headwaters of the Wisconsin and Chippewa rivers comprises some 1,260,000 acres, and as the state only has 12 forest rangers it would have been impossible for them to adequately patrol this large area, and their work would have been confined to approximately 260,000 acres of state lands, leaving 1,000,000 acres of privately owned lands unprotected. With the assistance of the 12 Federal patrolmen, it has been found possible to divide the entire area of 1,260,000 acres into districts, so that all portions, including both state and privately owned lands, have received equal protection.

The 1,000,000 acres of privately owned lands, many of which are heavily timbered, are worth on a conservative basis at least $5.00 per acre, and therefore it can be stated that the Federal coöperation has enabled Wisconsin to protect 1,000,000 acres of timberland upon the headwaters of the Wisconsin and Chippewa rivers, both of which are important tributaries of the Mississippi river, and worth at least $5,000,000, which would have been impossible without this coöperation.

As the Federal patrolmen received $4,431.25 in 1911, and $4,238.50 in 1912, the cost of protecting the 1,000,000 acres of privately owned lands has been less than 1½ cent per acre per annum.

In 1913 the same protective area of 1,260,000 acres must be patrolled, and it is hoped that we may have another season of well distributed rainfall, so that the fire protective system of roads, fire lines, telephone lines and lookout towers may be extended. It is extremely important that the fire protection system should be completed as rapidly as possible, and therefore it is hoped that the Forest Service will be able to increase the allotment of Wisconsin for 1913 to at least $8,000, as this would permit the employment of 15 Federal patrolmen for 7 months, or from about April 15th to November 15th. The state would then increase its forest ranger force to at least 15, and would continue as in the past, to give most of the rangers and patrolmen crews of from four to seven men apiece, so that the building of the protective system of roads, fire lines, etc., should be pushed as rapidly as the state forestry funds will allow.

During 1913 Wisconsin will have available for all of its for-

estry work, outside of the funds appropriated for the purchase of lands, about $75,000, and of this amount it is expected that at least $25,000 will be available for the fire protective work.

Summary of Summer Resort Business.

The forest reserve region should become in time a great summer resort for people throughout the entire Mississippi valley, as it has a fine, bracing, dry climate, pine forests and sandy soil, and is blessed with many of the finest chains of lakes in the entire country. Vilas county in particular has a greater area of water than land, and long trips can be made by launch or canoe. There is plenty of sport both for hunters and fishermen, and the resorts furnish good beds and excellent board at reasonable prices.

The summer resort business in northern New York state, which is largely within their forest reserves, amounts to approximately $10,000,000 a year, this amount being paid by the tourists, as they are called, in railroad fares, to hotels, boarding houses, etc. New Hampshire does about as well and the summer business gives the old state of Maine nearly $20,000,000 a year.

The summer resort business within the forest reserve area of Wisconsin is in its infancy but should grow very rapidly now that the state is building up a permanent forest reserve, which will be protected from the forest fires that were rapidly ruining that beautiful region.

In order to get at least an approximate idea of the summer resort business within the forest reserve area one of the cruisers employed by the State Board of Forestry in connection with his other work has either personally visited or corresponded with every resort owner in this region. Blanks were prepared which have been filled out by 91 of the resorts, and this opportunity is taken to thank the resort owners for their hearty coöperation in making the investigation a success. As the blanks have just been received it is only possible to include in this report a brief summary of the investigation. Later on it is hoped to publish a report that will include the name and location of each resort, number of guests that can be accommodated, and other information that will be useful to summer tourists visiting the forest reserve.

The following table shows the average annual summer resort business within the forest reserve region:

Number of resorts	91
Number of buildings	639
Number of guests that can be accommodated at one time	4,372
Number of guests accommodated in year	13,131
Gross receipts in year	$356,025

Following are the rates that are charged:

Board and room.	
Per day, $1.25 to $3.00, average	$2.00
Per week, $8.50 to $14.00, average	12.00
Guides	
Per day, $2.50 to $3.00, Average	$2.50
Boats.	
Per day, 50c to 75c, Average	$.50
Per week. $2.50 to $3.50. Average	3.00

The hotels in the small towns within the forest reserve area, which get a large share of their business from the summer tourists, together with the livery stables and boat liveries, report a gross annual business of $59,075. It is probably safe to estimate that 50%of this amount or $29,537, is paid by summer tourists.

It is also estimated that on an average each guest at a resort spends $12.00 for railroad tickets and berths, and $10.00 for hunting and fishing licenses, hire of guides and incidentals. Based on these estimates the annual summer tourist business within the forest reserve area amounts to about the following:

Railroad and Pullman fares	$157,572
Board and room at resorts	356,025
Hotels, liveries, and boat liveries	29,537
Hunting and fishing licenses, guides, etc	131,310
Total amount of business	$674,444

It should be clearly understood that the figures in the above table, except the $356,025 for board and room, are simply estimates, but it is believed that they are fairly close to the truth, and certainly the annual business must amount to somewhere between $600,000 and $700,000.

There are hundreds of lakes within the forest reserve area, and when these are protected, together with the forests, and as the hunting and fishing constantly improves, the resort business should increase to a very large figure.

State Aid for Schools and Local Government.

The state has been purchasing large tracts of land in northern Oneida and Vilas counties for the state forest reserves, and in order to consolidate and block up the reserves the state

should own about the following acreage of land in the counties which are within the boundaries of the reserve:

Vilas	506,000 acres
Oneida	345,000 acres
Forest	253,000 acres
Iron	115,000 acres
Price	70,000 acres
Total	1,289,000 acres

A few small communities within the forest reserves, notably Woodruff, Sayner, Star Lake, Manitowish and Mercer, are going to find it very difficult to raise sufficient funds to provide good schools and to pay the expenses of local government on account of the state's owning so much land upon which no taxes can be paid. During 1911 and 1912 the State Board of Forestry has built 159½ miles of roads within the forest reserve area at a cost of approximately $18,821. This region was very badly in need of roads and those that have been constructed by the state have not only opened up the country for the few settlers, but have been of great assistance to the resort owners and the thousands of summer visitors. In building these roads the state has relieved the towns of a very heavy expense, and it is felt that this work of development, which was so badly needed, is fully appreciated by the settlers and other resident owners, but as they very justly say, there still remains the cost of schools and local government, in which the State Board of Forestry has had no authority to assist.

There are only a few children of school age in any of the small towns within the forest reserve, and therefore the fair share which the state should pay towards the schools, and the cost of local government should not be large. Upon just what basis the state's share should be fixed seems to be rather difficult to determine, for while in some large towns there are few children and low costs of government, in other small towns there are a good many more children and as heavy, if not heavier, costs of government. It would seem as if a just way to determine the state's share would be to take the total cost of schools and local government in any town, and the state's proportion would be determined by the percentage of land which it owned in that town. However, such a rule as this would not be just to the state in every case, and the correct solution of this problem will demand the best efforts of the legislature.

EDUCATIONAL.

Forest Ranger School.

The Regents of the University have established a department of Forestry in the College of Agriculture for the purpose of organizing courses of study for the training of Forest Rangers, and also to give instruction to both long and short course students in agriculture, in the care of woodlands, especially the management of farm woodlots.

The practice of forestry by the owners of timber land, the organization and rapid development of definite forest policies by the states, and the organization of forest fire protective associations, are bringing about a demand for young men who have had practical training in Forestry. It will be the aim of the Ranger School to meet this demand by preparing men for such secondary positions as rangers, guards, tree planting experts, nursery foremen, and other positions with lumber companies, commercial nurserymen, and the owners of timber estates. Young men who have already gained some experience in woodcraft and in practical lumbering operations will find this course of especial value, as they will receive training which will fit them for the more expert quality of service which is demanded by modern methods of handling timber holdings.

This two year course is not offered as a complete education in Forestry. On satisfactorily completing the course, the student will be a trained ranger or guard, or an expert in tree planting and forest nursery practice, but he will not be a professional forest engineer.

The life of a ranger is a life in the woods, and no one should enter the school with any misunderstanding in this respect. Students who are not physically able to do hard woods work and who do not care for the rough outdoor life, are advised not to enter the course.

Facilities for the Course.

The Ranger Course will be offered in coöperation with the State Board of Forestry, field instruction being given on the state forest reserves. It is not expected, however, that the men trained in this work will be used exclusively in the State Forest Service.

By this coöperation with the State Board of Forestry, special facilities are offered for the student to gain practical training in forestry. A term of instruction will also be given each year at the College of Agriculture, thus providing facilities for instruction not only in Forestry, but also in the other closely allied subjects.

The state forest reserves now comprise about 400,000 acres, principally located at the headwaters of the Menominee, Wisconsin, and Chippewa rivers, in the counties of Forest, Oneida, Vilas, Iron, and Price. The reserves are divided into districts with a forest ranger or patrolman in direct charge of the field work in each district.

A large forestry headquarters building with boathouse, barn, storehouse, wood and ice house, etc., has been erected at Trout lake, in Vilas county. Here is located the main forest nursery which contains some 2,500,000 young trees that will be planted on lands denuded through lumbering, followed by forest fires. Another forest nursery will be started at the Carr lake ranger station in the spring of 1913, and it is planned to have eventually at least, a small forest nursery at each ranger station.

Comfortable houses for the rangers, with barns, wood and ice houses, etc., have already been built at the following ranger stations: Little Carr lake, Plum lake, Oxley and Rest lake; and during the winter of 1912–13, houses will be built at Star lake and Carroll lake. All ranger stations are connected by telephone with the nearest towns and with the forestry headquarters building.

General Plan of Course.

The Forest Rangers' Course includes work during two years, arranged each year according to the following plan:

(1) Work at the University from January 7, 1913, to April 15.

(2) Work on the state forests under the direction of the Professor of Forestry and in coöperation with the State Board of Forestry, from April 16 to July 31.

During the field instruction period, the student will receive board and lodging, but will be expected to devote practically one-half of such period to practical work in connection with the instruction work.

(3) From August 1 to November 30 the student may continue his work on the forest wholly under the direction of the State Board of Forestry. For this period he will receive, in addition to maintenance, $40.00 per month.

During the season of 1913, from August 1 to November 30, the State Board of Forestry cannot take over ten or twelve students; and this number will be selected at the end of the field instruction period, depending upon progress made and standing during the course.

Location of Field Work.

The field instruction will be conducted for the most part at the field Headquarters Camp of the State Board of Forestry, which will be placed at the disposal of the school. This camp is in the center of the state forest reserve region, and is located on Trout lake, which is some twelve miles north of Woodruff, Wisconsin, a station on the Chicago and North Western Railroad. The region offers an exceptional opportunity for the student to study all phases of forestry, especially from the standpoint of fire protection, which is the greatest problem confronting lumbermen and foresters. Side trips will be taken to all points of the reserve and much of the time will be spent in tents during the summer months.

After the close of the field instruction period selected students will be assigned work under the direction of the State Forest Rangers during August, September, October, and November. Exceptional opportunities will be given the student to gain practical field experience in the various lines of forestry management, such as making roads, trails and fire lines, building bridges, telephone lines, and lookout towers; establishing section lines and corners, fighting fires and patrolling, burning slash, and studying the tree growth and logging methods.

The nursery work will be carried on at Trout lake and Toma-

hawk lake throughout the season, and practical work in cone collecting, seeding, care and protection of seedlings, planting, transplanting, and field planting will be an important feature of the work of the student.

Tuition and Fees.

Tuition for residents of Wisconsin	Free
Tuition for nonresidents	
First term (at University)	$7.50
Second term (in field)	7.50
Incidental fee (for all students)	
First term (at University) (including medical and gymnasium fees)	4.00
Second term (in field)	2.50
Laboratory fees (for all students)	
First term (at University)	5.00
Second term (in field)	7.50
Key and breakage deposit (balance refundable)	2.00
Other expenses	
Books, approximately	15.00
Board and room (at Madison) approximately, per month	25.00
Board and room (in field) furnished free at headquarters camp by State Board of Forestry as compensation for practical work done.	

A list of rooms and boarding places, to aid students in securing desirable accommodations at the University, will be furnished upon application. All students live in private homes, as the University has no dormitories.

Mail should be addressed to the College of Agriculture, Madison, Wisconsin, and marked "Ranger Course."

Courses of Study.

First Year.

Dendrology and Silviculture	Woodcraft.
Soils	Meteorology.
Land Surveying and Mapping	Fish and Game.
Introduction to Forestry	First Aid to Injured.
Physics	Mechanical Drawing.

Second Year.

Forest Measurements (Cruising)	Silviculture.
Utilization (Lumbering)	Forest protection.
Tree diseases	Forest Law.
Forest Entomology	Forest Administration Policy.

Every student will be given a thorough physical examination by the medical examiner, and will be required during the Uni-

versity term to take two half-hour periods per week of development exercises and athletic drill. These activities are carried on in the stock pavilion which has been equipped with facilities for this purpose, including gymnastic and athletic apparatus, lockers, and shower baths. Lectures on hygiene and the laws of efficient living will be given by members of the department of Physical Education.

The Ranger Course will be in charge of Assistant Professor F. B. Moody, formerly Assistant State Forester of Wisconsin. The courses in Soils, Land Surveying and Mapping, Mechanical Drawing, Entomology, Tree Diseases, and Physics will be given in various departments of the College of Agriculture, and all other courses in the department of Forestry.

Description of Courses.

First Year.

Dendrology (In department of Forestry). Characteristics of the important timber trees of the lake states. Forest regions of the U. S., their commercial importance and distribution in Wisconsin. Detailed study of the species of trees native to Wisconsin. Field practice.

Silviculture (In department of Forestry). Relation of forests to factors of soil and climate. Factors influencing growth and distribution of trees. Seed production, time of seeding, cost of gathering seed, raising of seedlings, transplanting, field planting. Methods of handling species especially adapted for Wisconsin conditions. Field practice.

Soils (In department of Soils). Origin, classification, physical and chemical composition. Relation between forest growth and soil condition. Effects of tillage and fertilizers. Differentiation of agricultural and forest lands. Field practice.

Land Surveying and Mapping (In department of Agricultural Engineering). Land survey; Scheme of U. S. public land and other surveys in the U. S. Problems involved in relocation of old land surveys. Methods of relocating adapted to forest work. Demarcation of forest boundaries. Use of surveying instruments, such as hand level, compass, transit, aneroid barometer; theory and practice of compass, and chain surveying.

Field work will include running lines, pacing, locating and establishing section corners, topographic mapping.

Mathematics (In department of Forestry). Mathematical operations of simple surveying.

Introduction to Forestry (In department of Forestry). Brief history of forestry and its development in Wisconsin.

Second Year.

Forest Measurements, Cruising (In department of Forestry). Use of various log rules. Method of measuring logs, lumber, bark, piling, etc. Determination of rate of growth in height and diameter of trees and volume of single trees and stands. Field practice.

Utilization (In department of Forestry). Logging and milling (cutting and skidding). Methods of manufacture of pulp, lumber, veneer, charcoal, woodenware, etc. Uses of the various wood produced within the state and points of production. Wood preservation. Logging tools and implements (costs).

Tree Diseases (In department of Plant Pathology). Local diseases of the more important timber trees. Life history and methods of control.

Forest Entomology (In department of Economic Entomology). Description and life history of insects injurious to forest trees of the lake states region. Methods of control.

Forest protection (In department of Forestry). From fires, wind, insects, etc. General scheme for state forest reserve. Fire lines, purpose of; how constructed, where located, costs. Source of danger from fire, campers, fishermen, hunters, settlers, locomotives, lightning.

Telephone lines. Construction. System used—ground line, pole line, tree line. Equipment used per mile and per station, costs. Maintenance. Fire tools, cost.

Roads. Laying out, grading, building, purpose of, cost per mile. General plan of roads for reserve.

Lookout towers. Location. Construction, steel and wood; specifications of; cost. Methods of locating fires, use of maps, etc. Reports.

Ranger cabins and barns. Requirements for ranger. Methods of construction and costs.

Physics (In department of Forestry). Lectures on the elementary principles of solids, related to the subject of forestry. Pulleys, lever, resultant of forces, friction, jack screws, humidity. (For students who have not had high school physics.)

Meteorology (Special lectures). Weather forecasting and observation. Storms, winds, humidity.

Fish and Game (In department of economic Entomology). Care and propagation. Habits, usefulness and protection.

Forest Law (Special lectures). Leases, titles, conveyances, abstracts. Federal laws and laws of states regarding fires, trespass and taxation.

Forest Administration and Policy (In department of Forestry). Organization of state service. Qualifications. General plan of development of the Forestry Board.

First Aid to the Injured (Special lectures).

Woodcraft (In department of Forestry). Camp practice and cookery, packing, care of horses. Supplies for field trips and costs of supplies and camp outfits. (Given in the field.)

Lectures on Forestry.

During 1911 and 1912 a number of lectures on forestry were given throughout the state to various clubs and associations, and in nearly every case lantern slides were used to illustrate the difference between ordinary lumbering operations and forestry methods. The public as a whole know very much more about the general principles of forestry than they did a few years ago, as so much has been written about the conservation of natural resources, but there is still a rather general impression among many people that forestry is horticulture or landscape gardening. Of course this is an absolutely wrong impression, as forestry is the management of timberlands so as to insure successive crops of timber, and a continual campaign of education is necessary in order that the people of the state may appreciate the great economical questions that are involved in the conservation and systematic management of the forest resources of Wisconsin.

The staff of the Forest Products laboratory, which is located at Madison, during the winters of 1910–1911 and 1911–1912, gave some sixty lectures on the general principles of forestry, the course being open to all students of the University, and they

also gave a technical course, of about the same number of lectures, on the utilization of forest products and wood preservation, to the junior and senior students, in the College of Engineering.

Study of Farm Woodlots.

During the summer of 1912 Professor O. L. Sponsler, of the Department of Forestry, University of Michigan, made a preliminary study of the condition and present management of farm woodlots in three typical counties of Wisconsin, namely, Sauk, Lincoln and Manitowoc. A large amount of data was secured which shows quite clearly what must be done to improve the condition of the farm woodlots in each of these counties. It is intended to publish this information in the form of bulletins, one for each county, and to send them to the farmers. Following is Professor Sponsler's general report with his conclusions and recommendations:

Typical Woodlots of Wisconsin.

During the summer of 1912 a study was made of the farmers' woodlots and of the economic or other factors relating to their development or lack of development. The work was done under the supervision of the State Forester.

Three counties were covered,—Sauk, Lincoln and Manitowoc, chosen because they represent more or less typical regions of the state. Sauk county is representative of a considerable area of hilly country, part of which is more suitable for growing timber than agricultural crops; Lincoln county, of a region on the frontier of farming, where timber interests and farm interests meet; Manitowoc county is representative of a hardwood pine country after it has been under cultivation for a generation or more.

The work was of a general nature leading to a more detailed study of the individual woodlot and of the influences acting upon its development. Data was collected in each county to show the present condition of the wooded areas, and their treatment; the attitude of the farmer toward his woodlot; locations were noted for later detailed work, which will determine the value of the different methods of treatment of woodlots and the kind of woodlot best suited to the locality.

This report is in the nature of a summary of the data collected and the conclusions drawn from them. It should be understood that before recommendations other than of a most general and approximate nature can be made, sufficient data from specific detailed field studies must be collected.

Improvement of the woodlots throughout the state might then be obtained by a persistent diffusion of the recommendations and conclusions. Model or demonstration woodlots would be of great value to show the woodlot owner in his own locality what could be done with a little proper care.

Sauk County.

Sauk county, situated in the south central part of the state, contains about 24 full townships. The Wisconsin river forms its southern boundary. The rainfall averages 30 inches, of which half comes during the 21 weeks of growing season between May 10 and October 1. Corn yields well and quite a little tobacco is grown in this county.

About half of the county is rather steep slope land, one-fourth quite level table lands, and the remaining fourth is level river bottoms and prairie. The table lands are from 200 to 400 feet above the valleys and prairies.

Practically all of the land that is fit for the plow is now under cultivation. The land can be roughly classified as follows:

Total area of county	532,000 acres	100%
Cities and villages	6,000 acres	1%
Cultivated	180,000 acres	35%
Woodland	88,000 acres	17%
Brush and pasture lands	220,000 acres	40%
Swamp, sand barrens, rock	38,000 acres	7%

In the western part of the county the farms average about 120 acres, the table-lands and valleys are cultivated and the slopes left are covered or partially covered with woods. This part is essentially a dairy country and all land available is used for pasture.

In the eastern part the farms are generally smaller. The method of farming is rapidly changing over to dairy farming although very large areas here are without water.

This brings up the problem of the value of combined woodlot and pasture. It is generally held among foresters and by a large percentage of the farmers that the greatest income from the land is not derived when woodlots are pastured. This should be determined by experimental areas.

The woods are mainly hardwoods with a little jack pine on the north side and south side of the county. The amount of woods distributed over the county varies with the distance from the railroads. The amount of land cleared seems to be governed by the distance from a shipping point for wood products. In this county the townships within a five mile haul of railroads contain less than 15 per cent of wooded land, while those farther away run from 20 to 30 per cent wooded. From the agriculturists' viewpoint, the country as a whole has almost the ideal proportion of woodland, i. e., nearly 20 per cent.

By far the greater area of timberland is under oak. The ridges and hills, generally nonagricultural lands, are covered with young stands of oak, 30 to 50 years old, much of it will yield 25 to 30 cords per acre or more. The ridges in the vicinity of Baraboo are covered for many square miles with this kind of growth in almost unbroken stands. The land is divided into small plots of 10 to 90 acres and owned by farmers who live often several miles away.

This type of woods has reached a stage at 30 to 50 years old, where the advice of the well trained forester is needed in its treatment. At present it is in excellent condition, but unless proper care is taken the stand will rapidly deteriorate, and the result will be a large area of "oak openings" such as are now common in the older settlements of Ohio and southern Michigan, non-productive and undesirable.

The four or five townships on the north side of the Baraboo river are rather sandy and have scattered woodlots of scrubby oaks and in places considerable jack pine. About one-tenth of this poor area is covered with woods.

There is another long, narrow, sandy area of less extent in the southern part of the county along the bluffs of the Wisconsin river. A great deal of this sandy country is not fit for agriculture, although attempts are made and failures noted. It does, however, grow pine at a fair rate. At present the woods are in an open and altogether unprofitable condition and no attempt is made to improve them.

In a few valleys and on richer slopes there are still left small areas of maple-basswood or elm-ash woods, which have not been cleared for the plow. Some of them are in excellent condition, but most of them are culled or too open. In some places white pine has formed an important part of the woods.

Although several thousand cords of fuel wood are shipped out of the county each winter, the cities and villages report a scarcity of firewood. A few portable saw mills and several stationary mills take care of the local work. Generally throughout the county the wood is used up to the best advantage. Very little dead stuff is left in the woods and cordwood is cut down to two inch sticks. Often the tree is cut to produce the best in logs, then ties, then fuel wood. The latter, however, is the chief product.

There will be very little land cleared in the future. The farmers want to keep the woodlots they now own to raise wood; and many realize that they must have young trees, middle-aged and old ones, if they expect to cut year after year. Many realize, too, that in order to have small trees start, they must keep the cattle out of the woodlot. Only a few stop to consider the effect of grass in the woodlot, or the benefit of a dense fringe of limby trees or brush on the border of the woods. A number of farmers cut only the large trees and allow the small ones to grow. A few cut clean and allow the sprouts to form the next generation of woods.

The woodlots in Sauk county are not in a deplorable condition, by any means. It is true however that most of them could easily be made to yield more than they do at present. Very few farmers have any definite idea of the amount of wood they take from the woodlot year after year, and still less of the amount of wood their woodlot is growing every year.

Work on typical areas of woods on the Baraboo ridge in the eastern part of the county, in the sandy regions, and on the slopes of the western ridges, should be carried on to show in dollars and cents how much the woodlots are now earning and how much they could earn under proper treatment.

Further, a careful study of the coppicing power of the oak in various parts of the county should be made. This is extremely important to the future of the oak woods now existing. When this information is once gathered it should be persistently distributed to woodlot owners. A few demonstration areas, state owned, on which typical methods of care of the woodlot are shown, would pay the state well. A rather radical suggestion for this county, but not at all impractical, is that the county own a good share of the sandy lands especially, and perhaps some of the oak ridges, and take care of them on good forestry princi-

ples, either through a county forester or through the State Board of Forestry.

The care of woodlots in Sauk county could not be improved to any appreciable extent by legislation, that is, through partial or complete exemption of taxes. A man on the ground with figures showing what woodlots are earning and what they can earn will accomplish much and cost little.

Lincoln County.

Lincoln county, situated in the north central part of the state, contains 30 full townships. The rainfall averages 32½ inches, annually, of which 15½ inches fall during the 15 weeks growing season between June 1 and September 20.

The surface of the county is rolling with generally low hills. The northern half of the county is fully 20 per cent swamp, the southern half a trifle more than 5 per cent; some of these may be drained. A rough classification of the land follows:

Area of county	564,000 acres	100%
Swamp, rough, rocky	113,000 acres	20%
Cultivated	20,000 acres	4%
Timber and brush land	423,000 acres	76%

About 80 per cent of the county is agricultural land and only 20 per cent is owned as farms, and only four per cent is broken by the plow. Lumber companies, land companies, speculators and large interests hold over 425,000 acres, while farmers hold 125,000 acres as farms. The farms are naturally more or less segregated.

From the viewpoint of development there are three classes of land, distributed in fairly well defined regions.

1. Unimproved, mostly timberland, some brush land.
2. Partially improved, now undergoing development.
3. Old, well developed farms.

The partially improved farms are scattered throughout the region, and occupy only about one-third of it.

The farms are generally large, 120 to 160 acres, although there are some less than 80 acres. Dairy farming seems to be the future method.

The forests in the county are four-fifths hardwood, or hardwood and hemlock, the remaining one-fifth is a strip on the north side of the county of jack pine and Norway pine stands. The swamps of spruce and tamarack would reduce both the hardwood and pine areas by about proportional amounts.

Very little of the sandy pine lands are improved, although a considerable amount is cut-over.

The hardwood and hemlock lands in the western half of the county are covered with a stand of timber that will take the lumbermen owners about twenty years to cut; in the eastern half the lands are mostly cut-over and settled, with scattered farms. A few townships in the south and southeast have been quite densely settled for a generation, and here although there are not as many woodlots as is desirable, they are generally in good condition.

In the area partially developed the land is in several stages of improvement from forest and brush land to stump pasture and tilled land. The forest is a necessity here to provide an income while part of the land is being cleared. A great deal of the woods left for the farmer has been exploited, leaving culled or young stands.

The woodlots in the southern area of improved lands are generally older with good stands of hard maple, yellow birch, basswood and hemlock. There are large areas of aspen scattered through the farm areas, and in many places the aspen is the only wood growing on the farm.

The woodlots in the hardwood area are found to be in the following conditions:

1. Burned-over lands now grow up to aspen of various ages.
2. Cut-over clean and now grown up to young yellow birch, basswood, hard maple, and some hemlock, often spots of aspen.
3. Cut-over for logs only, leaving culls which will make bolt wood and fuel.
4. Cut-over for white pine only, leaving a hardwood-hemlock stand of log timber and small stuff.

Ash, elm and soft maple enter into the composition, especially of the third class mentioned, that in which only logs have been removed.

Little thought is given to the woodlots, except as to how they can be exploited. Very few are suffering from grazing, because there is a large area of woods and few cattle. On the new farms the tendency is to clear the land as rapidly as it can be afforded, and generally the land that is not cleared is covered with brush and young stuff that would not pay immediately for its own clearing.

The wood that is cut is used up fairly well, for there is a market for everything, even to shaky, punky stuff, which can be sold for lime-kiln fuel wood. A local market is created for bolt wood by the manufacture of boxes, handles, hubs, excelsior, woodenware, etc., while the tannery takes the hemlock bark.

There is too much wood all around the people here in Lincoln county, and too great a desire to get the land cleared, to get them to consider with much seriousness the necessity of looking forward to a future supply. On almost every farm there will be an area left for woodlot, much of it will be young, because that is the only timber it would not pay to cut now. There is little that can be done now in this type of partially developed country for the betterment of woodlot conditions, unless it is a material aid in fire protection and a persistent system of warnings against killing out the young growth by grazing. If this is carried out, the forest growth will take care of itself, for it has several species prominent throughout (hard maple, yellow birch, basswood and hemlock) that, by their development of crown, keep the woods in prime condition with almost no help from man.

Exemption from taxes of a limited area for each farm might be a stimulus to the preservation of woodlands. Definite knowledge should be obtained in this county concerning the growth of the four or five important species, so that when the demand comes for the application of this knowledge the state will be in a position to aid immediately.

Manitowoc County.

Manitowoc is situated on Lake Michigan, about midway between the north and the south ends of the state. It contains about 16 full townships, with over 30 miles of lake front, and extends inland on an average about 20 miles. The rainfall averages 30 inches, of which 15 inches comes during the 22 weeks of growing season between May 9 and October 10. Small grains, oats, barley and rye are the chief crops.

The surface of the county is level, or rolling with low hills, the slopes of which are rarely too steep for agriculture. The waste lands, mostly swamps, some rough, broad river valleys, and some sandy areas make up about 10 per cent of the county.

A rough classification follows:

Total area of county	370,000 acres	100%
Waste land, swamps, etc.	37,000 acres	10%
Cities and villages	5,000 acres	2%
Woodlots	43,000 acres	12%
Cultivated (1911 crop report)	162,000 acres	44%
Pasture land mostly, with little brush land	123,000 acres	32%

The farms average from 80 to 100 acres in size. Dairying is the main method of farming, and all are old farms.

The county was originally covered with a good forest of hardwoods, hemlock and white pine. In the development of the country, the composition of the remaining woods was changed by various conditions, so that now on the sandy lands of the northeast townships, white pine is very common in mixture, and there are a few woodlots of pure white pine. The north third of the county has a considerable amount of hemlock and white pine mixed with the hardwoods. In the remaining two-thirds the hardwoods make up the woodlots.

Taking the county as a whole not more than 12 per cent of the area is covered with woodlots, just a trifle more than one-half as much as there should be for the best agricultural conditions. The center tier of townships is almost bare of woodlots, scarcely five per cent is covered. The part of the county north of this strip is better supplied (about 16 per cent covered) than that south (about 10 per cent in woods).

The composition of the woodlots varies considerably, due to the culling out of the different species. There are, for example, small woodlots of pure white cedar, pure hemlock, pure black ash, pure tamarack and stands of almost any combination of these four species; then there are pure maple, pure beech, and pure white pine, and also mixtures of these three; very often hemlock is in mixture with the three last mentioned. There are also a few woodlots of oak, especially in the west and south part. Occasionally small areas of birch and aspen are kept for woodlots.

Most of the woodlots are made up of old culled stuff which has been pastured until entirely free of young growth. There are, however, a few that are in excellent condition in that they have a good distribution of good species of all ages and form dense woods.

Comparatively little thought is put on the woodlot. A few farmers keep the cattle out in order to allow young trees to grow. A few use a little selection in cutting in so far as choosing large trees instead of small. Occasional patches of cedar are trimmed up to post height in order to get cleaner post material.

Almost one-half of the farmers in the county use coal for heating purposes. Very few places in the county are more than five or six miles from the railroad. The cities and villages fur-

nish good local markets, with their various wood-using industries, for bolt wood, fuel wood and logs.

Before very much improvement will be made on the woodlots of this county, it will be necessary to obtain definite figures on what woodlots of certain types are now earning and on what they can be made to earn. It will be necessary to show how much in dollars and cents is lost by the present method of management, or rather mismanagement, and how this method can be changed to one that will turn the loss to a profit. At the present time the farmers in a large part of the county are at the mercy of the coal market and this condition is on the increase. The acreage of woodlands is insufficient, even if growing at their best, to supply the population outside of the cities and villages with fuel alone, to say nothing of the wood for other uses on the farm.

The matter of cedar for fence posts should be investigated for it seems to be a promising source of profit.

A total exemption of taxes on woodlots with limitation would probably help as a stimulus to bring about better management of existing woodlots, and help to increase the acreage of woodlands.

At least five or six of the common types of woods mentioned above, that is, pure maple, pure hemlock, pure pine, pure cedar, and representative mixtures, should be thoroughly studied for the amount of wood produced annually per acre in their present condition, and in typical excellent conditions.

Summary.

1. The woodlots are for the greater part in poor condition. They are growing half a cord of wood or less per acre each year, when they should grow about a whole cord or more.

2. Many counties represent a distinct region in which the kind of woods and the condition of woodlots differ greatly.

3. Each kind or condition of woodlot needs a different method of treatment in order to make it serve its best use.

4. There is a general lack of knowledge among the owners of woodlots concerning the amount of wood in cords, or other unit of measure, that will grow each year on an acre.

5. There is also a lack of knowledge concerning the simple means of keeping a woodlot in its best growing condition.

6. There is a marked neglect of keeping account of the amount of material taken from the woods.

7. Some method of exemption from taxes of woodlots may help to improve the conditions, but there does not seem to be demand for it among the owners of woodlots.

Recommendations.

I. (a) Collect data on the amount of wood grown annually per acre in woodlots representing the most common condition in each region. Express this amount both in cords and in dollars and cents.

(b) Collect similar data in woodlots that are now in the best growing condition.

(c) Determine the species which will produce the greatest profits in each region.

(d) Determine the best method of improving the poorer woodlots.

II. (a) Persistently distribute this information among woodlot owners in small but frequent doses.

(b) Start model or demonstration woodlots in every county if possible, at least in every region of different forest types, and show by actual management of the woodlot the practical value of the information that has been distributed.

(c) To owners who ask for it, give advice and instruction, preferably directly to the owner while on the woodlot.

Experimental State Woodlots.

The best utilization of the thousands of farm woodlots in Wisconsin is not only extremely important to the owners themselves, but to the whole state as well, for if these woodlots are well managed they are going to furnish a very considerable part of the future timber supply of the state. In many of the northern counties the state owns a few scattered forties, some of which are timbered, and it is proposed that from forty to eighty acres of such land should be used by the state as demonstration woodlots to be operated in coöperation with the state or County Agricultural Experiment stations. It is rather difficult to explain to any farmer, by means of a report or bulletin just how he should manage his woodlot, but it becomes a simple matter when you can take him upon timberland that is being properly man-

aged, and let him see good and bad methods, and in addition give him all the costs of operation, net profits, and so forth.

The State and County Agricultural Experiment stations should give a short field course on woodlot management, using the state demonstration areas for nearly all of their work.

The farmer's woodlot, especially in the northern part of the state, should not only supply him with all the saw logs, timbers, fence posts, cordwood, etc., that he will ordinarily use, but he should also have considerable material to sell and will find that his woodlot is his bank upon which he can draw in time of necessity.

STATISTICS.

FINANCIAL STATEMENT.

Table 1. *Receipts.*

	Fiscal Year. 1910-1911	Fiscal Year. 1911-1912
Fines and Penalties (For Trespass)	$19.02	$1,835.33
Departmental Sales:		
Sales of products:		
Timber	7,728 50	12,532 31
Burned timber	.....	4,673 06
Hay	406 95	111 26
Fuel	.....	163 50
Land:		
Sales	109.462 54	32,813 32
Contract payments	.....	7,092 33
Right of way	.....	19 37
Rents	95 00	166 00
Interest on bank deposits	1,390 33	1,308 29
Dues on land certificates	.....	1,297 00
Miscellaneous:		
Refund on supplies	.....	83 35
Refund on freight	.....	.71
Credit for empty bags	.....	95 30
Payment for lost badge	.....	3 00
Telephone	.....	10 10
Sale of supplies	.....	33 02
Total	$119,102 34	$62,237 25

Note. Tables 1, 2 and 3 are for fiscal years, in accordance with the method adopted by the State Board of Public Affairs in preparing a State budget, whereas all following tables are for the calendar years for which this biennial report is made.

Table 2. *Expenditures* (Capital).

	Fiscal year 1910-1911	Fiscal year 1911-1912
Land and Land Improvements:		
Land	$89,485 81	$79,433 84
Land improvements		
Reforestation		
Roads, trails and fire lines		
Bridges		
Water supply system		
Structures and (Attached) Fixtures:	2,822 19	12,826 48
Headquarters' camp		
Men's house		
Rangers' cabins		
Cabins on purchased land		
Barns and sheds		
Barn		
Woodhouse		
Ice house		
Boathouse		
Lookout towers		201 60
Machinery and Equipment (Permanent):		
Telephone system		181 51
Constructed		
Acquired through gift		
Laboratory Apparatus:		421 57
Furniture and furnishings		
Office at Madison		
Headquarters camp		
Office		
Household		
Land, Tools, and Equipment:	1,261 13	979 57
Headquarters camp		
Barns and sheds		
Wagons, sleds, etc		
Harness		
Total	$93,569 23	$94,184 57

Table 3. *Expenditures.* (Operation).

	Fiscal Year 1910-1911	Fiscal Year 1911-1912
General Administration:		
Salaries of officers	$4,000 00	$6,416 43
Salaries and wages of office employes	2,140 00	2,631 51
Traveling expense	1,245 37	3,149 21
Stationery and office supplies	150 85	230 81
Postage	375 76	284 13
Telephone and telegraph	68 49	27 15
Express, freight and drayage	212 14	593 54
Printing (other than stationery)	540 52	817 91
Sundry supplies and expenditures	1,317 53	1,749 45
Field Work.		
Salaries and Wages:		
Salaries of rangers	1,340 70	10,947 05
Salaries of forest assistants		848 00
Salaries of cruisers	5,419 57	6,356 37
Wages of laborers	128 33	13,773 80
Salaries for miscellaneous services	2,823 75	291 73
Compassmen	546 54	
Traveling expenses:		
Expenses of rangers	48 93	981 07
Expenses of assistants		169 29
Supplies and Expenses:		
Subsistence		8,507 47
Feed		491 14
Trees and seeds	1,354 34	217 07
Advertising	57 85	44 05
Total	$21,770 07	$58,627 18

LANDS

Table 4. LANDS PURCHASED AND SOLD, 1911-12.

	Acreage Jan. 1, 1911.	Acreage sold.	Acreage acquired.	Acreage Jan. 1, 1913.
Ashland	$5,401.20	1,235.00		4,166.20
Bayfield	3,161.21	1,601.47		1,559.74
Burnett	19,073.96	12,776.13		6,297.83
Douglas	9,475.66	1,368.78	80.00	8,186.88
Florence	3,559.16		80.00	3,639.16
Forest	35,427.34		1,919.29	37,346.63
Iron	29,910.06	479.61	924.00	30,354.45
Langlade	2,299.40	880.98		1,418.42
Lincoln	2,477.86	920.66		1,557.20
Marinette	4,494.21			4,494.21
Oneida	53,310.63	374.80	20,418.81	73,354.64
Polk	1,960.74	118.17		1,842.57
Price	27,474.45	9,152.58	320.00	18,641.87
Rusk	2,894.47	440.00		2,454.47
Sawyer	13,519.14	1,707.88	171.95	11,983.21
Vilas	59,956.05		71,602.08	131,558.13
Washburn	8,988.30	5,139.48		3,848.82
Total	283,383.84	36,195.54	95,516.13	342,704.43

Note.—The above table does not include the state lands within the Indian Reservations, which total 47,003 acres.

Table 5. AMOUNT RECEIVED OR DUE FROM LAND SALES, 1911-12.

	1911	1912
Ashland	$ 1,852.00	$ 2,146.00
Bayfield	2,113.00	1,842.00
Burnett	32,653.00	13,731.00
Douglas	2,965.00	2,330.00
Florence		
Forest		
Iron	1,197.00	1,762.00
Langlade	1,579.00	1,524.00
Lincoln	937.00	1,644.00
Marinette		
Oneida	2,371.25	
Polk	130.00	484.00
Price	10,115.00	13,869.00
Rusk		2,322.00
Sawyer	5,528.00	2,785.00
Vilas		
Washburn	8,369.00	7,089.00
	$69,809.25	$51,528.00
Total		$121,337.25

Of the above amount of $121,337.25, only a portion has been actually received, as a law went into effect June 28, 1911, by which certain state lands could be sold on 20 years' time, and as a matter of fact only $71,564.54 has been paid into the Forest Reserve fund, and $17,138 of the balance will not become a part of the Forest Reserve fund, as it was received for school lands or other lands than forest reserve, that lie north of town 33.

The price received for all lands sold averages $3,357 per acre. (54.80 acres of the land disposed of was given in exchange for other lands.)

Only three descriptions of purchased land have ever been sold by the state. The cost of these descriptions in 1908, was $352.11; the price received in 1910 was $408.

Table 6. SUMMARY OF ACQUISITIONS OF LAND, 1911 AND 1912.

	Acres.
Land purchased in 1911	49,882.92
Land purchased in 1912	44,529.93
Land acquired by Federal grant (The acquisition of this land practically completes the grant of 20,000 acres to the state made by Act of Congress approved June 27, 1906)	852.78
Land acquired by Federal grant (All unsurveyed and unallotted islands in inland lakes north of town 33. Acreage not yet determined)	.....
Land acquired by exchange	130.50
Land transmitted from Land Office records	120.00
	95,516.13
Amount of land held under option	None
Amount of land held under contract	(See Tables 8 and 9)

Table 7.

NAMES OF PERSONS FROM WHOM LAND WAS PURCHASED IN 1911 AND 1912.

	No. of acres.	Price per acre.	Price
Matt Plunkett	80	$2.50	
Buswell Lumber & Manufacturing Company	600	2.50	
†Ross Lumber Company	10		$30.
Alexander Stewart Lumber Company	640	3.00	
Yawkey-Bissell Lumber Company	8,550.54	2.50	
Land, Log and Lumber Company	15,893.95	3.75	
Robert Stamp	400	2.50	
G. F. Sanborn	102.30	3.00	
B. F. Wilson	2,194.30	6.50	
Yawkey Lumber Company	2,317.76	3.75	
Turtle Lake Lumber Company	80	3.50	
Turtle Lake Lumber Company	284	3.00	
A. E. Doolittle	85.25	3.50	
C. H. & W. L. Houlton	440.72	4.00	
Blue Grass Land Company	3,678.09	2.50	
Blue Grass Land Company	35.75	3.00	
Blue Grass Land Company	402.92	3.50	
*N. A. Colman	Island		$1,000.

Table 8.

NAMES OF PERSONS FROM WHOM LANDS ARE BEING PURCHASED UNDER LAND CONTRACTS.

	No. of acres.	Price per acre.	Amount paid Principal.	Interest.	Amount Due.
G. F. Sanborn Company	27,655.32	$3.50	$70,076.11	$3,853.34	$20,000.00
Land, Log & Lumber Co.	19,679.52	4.60	10,000.00		80,525.79
H. W. Wright Lumber Co.	11,241.66	3.50	10,000.00		39,345.81

Table 9.

NAMES OF PERSONS FROM WHOM LANDS ARE BEING PURCHASED UNDER LAND CONTRACTS, NO PART OF THE PURCHASE PRICE HAVING BEEN PAID.

	No. of acres.	Price per acre.	Amount Due.
Yawkey-Bissell Lumber Company	139.02	$2.50	$347.55
Goodyear Lumber Company	230.10	2.60	598.20

† This government description is platted as 40 acres but there is actually only 10 acres of high land.

* This purchase was an island in Star lake and included all the timber on the island except the pine. The pine timber, also, was purchased from the A. H. Stange company and partly paid for by an exchange of timber on another description of state land.

Table 10.

NAMES OF PERSONS FROM WHOM LAND WAS RECEIVED IN EXCHANGE.

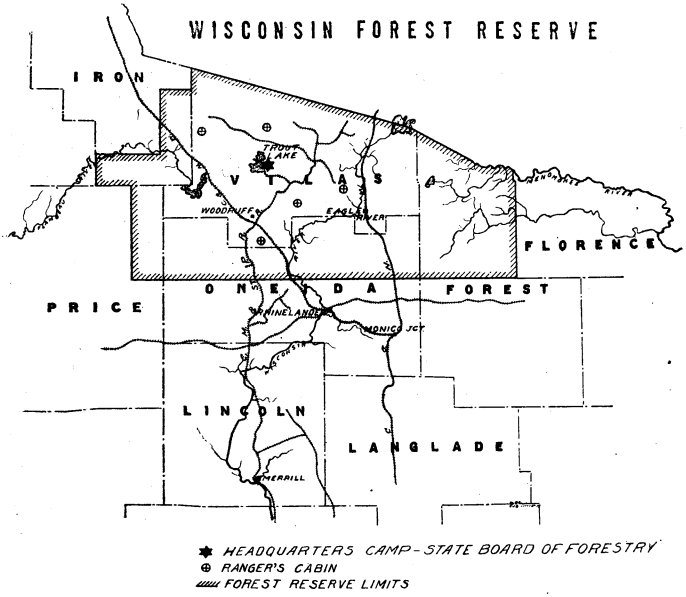
	No. of acres.
Turtle Lake Lumber Company	80.00
Ella L. Woodzicka	50.50
Commissions paid in connection with land purchases	None.
Total acres owned by the State, north of town 33	342,746.49 acres
Total amount invested therein	$421,857.79
Average amount invested per acre	1.637
Average cost per acre of lands purchased 1911–12	3.828
Average cost per acre of all lands purchased (exclusive of 3 purchases of heavy standing timber)	$3.32
Average cost per acre of all lands purchased (inclusive of 3 purchases of heavy standing timber)	3.45

The lands purchased within the last two years include a large acreage covered with good second growth timber, and include also hundreds of miles of lake shore frontage.

Table 11. LOCATION OF LANDS PURCHASED.

	Acres.
Iron county.	
T. R.	
42–4 E.	480.00
43–4 E.	444.00[1]
Forest county.	
T. R.	
36–12 E.	81.65
36–13 E.	480.00
37–13 E.	200.00
39–12 E.	40.00
39–13 E.	80.00
40–12 E.	1,517.64
Oneida county.	
T. R.	
36– 4 E.	40.00
36– 8 E.	80.00
36– 9 E.	40.00
37– 7 E.	40.00
37– 8 E.	75.61
37– 9 E.	320.00
38– 5 E.	80.00
38– 6 E.	935.36
38– 7 E.	2,582.66[2]
38– 8 E.	939.15
39– 4 E.	120.00
39– 6 E.	2,554.20
39– 7 E.	2,580.20
39– 8 E.	1,059.73
39– 9 E.	505.00
39–11 E.	1,348.30
Vilas county.	
T. R.	
39–10 E.	355.45
40– 4 E.	1,604.13
40– 6 E.	3,564.19
40– 7 E.	12,591.70
40– 8 E.	2,718.93
40– 9 E.	1,455.60
40–10 E.	167.70
40–11 E.	1,408.76
41– 6 E.	8,004.25
41– 7 E.	12,626.13
41– 8 E.	10,179.94
41– 9 E.	1,388.17
41–10 E.	240.00
41–11 E.	1,040.00
42– 5 E.	80.00
42– 6 E.	160.00
42– 7 E.	986.75
42– 8 E.	5,168.44
42– 9 E.	134.70
42–10 E.	760.00
42–11 E.	2,418.51
42–12 E.	160.00
43– 5 E.	640.00
43– 6 E.	635.00
43– 7 E.	3,096.19
43– 8 E.	168.45

[1] 80 acres acquired by exchange.
[2] 50.50 acres acquired by exchange.



MAP OF WISCONSIN FOREST RESERVE.

SIXTH BIENNIAL REPORT

OF THE

WISCONSIN TAX COMMISSION

TO THE

GOVERNOR AND LEGISLATURE

NILS P. HAUGEN,
THOS. E. LYONS, } Commissioners
T. S. ADAMS,
A. J. MYRLAND, Secretary.

MADISON, WISCONSIN
1912

LETTER OF TRANSMITTAL

LETTER OF TRANSMITTAL

WISCONSIN TAX COMMISSION,
MADISON, December 3, 1912.

To the Honorable, the Governor,
and the Legislature of the State of Wisconsin:

In compliance with the provisions of chapter 380, laws of 1905, the sixth biennial report of the Wisconsin Tax Commission is respectfully submitted. The statistical data required by section 1087m—20.2 of the statutes are not now available. As soon as this information is obtained it will be submitted.

NILS P. HAUGEN,
THOS. E. LYONS,
T. S. ADAMS,
Commissioners.

A. J. MYRLAND,
Secretary.

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CHAPTER I

THE TAX COMMISSION; ITS GROWTH AND ADMINISTRATIVE WORK

The general property system of taxation common to nearly all the American states has existed in this state from the earliest period, having been derived from Michigan when Wisconsin was organized as a territory. It was retained on the admission of the state into the Union, and still constitutes the most important part of our tax system. During the early years of our history the laws relating to taxation were meager and disconnected and it was not until 1868 that an attempt was made to combine them into a systematic code. The statutory law on the subject was further enlarged and systematized in the 1878 revision of the statutes and again in the revision of 1898, but, with minor exceptions, the characteristics of the general property tax were preserved throughout.

The rapid industrial development of the state and especially the introduction of railroads, emphasized the necessity of differentiating between different classes of property for the purposes of taxation. This condition resulted in the enactment of special statutes for the taxation of particular classes of property, mainly those of public service corporations. These laws generally took the form of a license tax, measured by gross income and payable directly to the state. The first and most important of these special acts related to the taxation of railroad companies by the payment of license fees on their gross earnings. The principle was later extended to street railway, telegraph, telephone and other public service companies. This combined system of general property and license fee taxes continued until the beginning of the present century. During all this time the general property tax was administered by local officers without aid or direction from any centralized or state authority. The state treasurer, secretary of state, and attorney general con-

stituted a state board of assessment for the equalization of state taxes between the different counties.

Development of the Tax Commission.

The first systematic step in the direction of state supervision of taxation was made by the legislature of 1897 in providing for the appointment of a temporary commission to study the subject of taxation in general and the tax system of this and other states in particular, and recommend such changes as in their judgment might seem advisable. A commission of three members was appointed under this act in April, 1897, to serve without pay and their term of office was limited to December 1, 1898. This commission made a careful study of the subject and accumulated a great volume of important information as to the operation of the property tax in this and other countries, which was carefully analyzed and embodied in an exhaustive report to the legislature of 1899.

Among other things the commission recommended "that express companies be taxed either on the basis of the value of their property in the state, including the franchise, to be assessed by the state board, or on the basis of their gross earnings." This recommendation marked the first step in the return to the ad valorem system for the assessment of the property of public utilities and was followed by the enactment of a law for the assessment and taxation of express, sleeping car, freight line and equipment companies by a state board on that basis. A more important recommendation was as follows:

"That the entire administration of the tax laws be placed in the hands, or at least under rigid supervision of capable and disinterested agents of the state, to be so chosen and to have such tenure of office and compensation as to make them virtually free from the influences of political or popular favor or displeasure and enable them to give their entire time to official duty; such agents to consist of a state board or officer and such subordinate or district officers as may be necessary."

In compliance with the above recommendation the legislature of 1899 created the offices of state tax commissioner and two assistant commissioners, and defined their powers and duties. The tax commissioner was made ex officio a member of the state board of assessment as it then existed. This commission was organized in June, 1899, and immediately began a careful investigation of

the Wisconsin tax system as well as the tax systems in operation in other states, and accumulated a large amount of data which was submitted to the legislature of 1901.

In the same year the commission as a whole was made a state board of assessment to assess the general property of the state in lieu of the three state officers who previously constituted that body. At the same session an act was passed providing for the appointment of county supervisors of assessment to act under the direction of the Tax Commission, with authority to exercise general supervision over the local assessors in their respective counties and assist the county board in equalizing state and county taxes. Through these officers the Tax Commission was enabled to keep in closer touch with local assessors and their direction and advice had a wholesome influence in unifying and improving the assessment of the general property of the state.

The Commission made an exhaustive report to the legislature of 1903 recommending numerous changes in the tax laws, the most important of which was the assessment of railroad property on the ad valorem basis. In compliance with this recommendation chapter 315 of the laws of that year was enacted, providing for the assessment and taxation of railroad property by the Tax Commission at the average rate of the general property of the state. The first assessment under this act required a physical valuation of railroad property and an exhaustive study of other elements entering into its value. The labors of the Commission were largely directed to that end during that and the succeeding year. The first assessment of railroad property under this law was made in the year 1903 and stood as the assessment of 1904, as the law directs. The property of all railroad companies has been assessed by the Tax Commission under this law every year since that time.

In 1905 the ad valorem system of taxation was extended to the property of a street railway and telegraph companies. At the same session of the legislature a law was passed authorizing the commission to order a reassessment in any assessment district where it appeared on complaint of a taxpayer that the original assessment had not been made according to law and that public interest required a reassessment. By the enactment of chapter 474 of the laws of that year the Tax Commission was further authorized to review equalizations made by county boards. At the same session the form of the Tax Commission was changed by

substituting for the commissioner of taxation and two assistants a permanent commission consisting of three members of equal rank and salary, which constitutes the board as it now exists. A comprehensive report was submitted to the legislature of 1907.

Several minor amendments were made to the laws relating to the assessment and collection of taxes by the legislation of 1907 and 1909 but no radical change in the system was effected. In 1907 an act was passed authorizing the Tax Commission to collect statistics of recorded sales of real estate and the assessed value of the same lands in each county for the use of the Commission in the performance of its duties. An abstract of these statistics for each county was required to be furnished to the county clerk for the use of the county board in equalizing taxes. In 1909 the legislature by joint resolution directed the Tax Commission to collect statistics of income and expenditure for state, county and municipal purposes and to classify the same so as to afford comparisons between the revenue and expenses of different municipalities.

Legislation of 1911.

The legislative session of 1911 was prolific in tax legislation. The law relating to the taxation of gas, electric light, water, power and heat companies was amended so as to bring the assessment of the property of these companies within the jurisdiction and under the direction of the Tax Commission. The preparation of forms for local taxing officers was transferred from the office of the secretary of state to this department. Section 12 of the act creating a permanent Tax Commission was amended so as to provide for auditing accounts of towns, counties, cities and villages and installing a uniform system of public accounting. Supervision of inheritance taxes was transferred to the Tax Commission, a general Income Tax Law was enacted, and material additions were made to the classes of personal property exempt from taxation. Soon after the passage of these laws Mr. John Harrington of Oshkosh was appointed inheritance tax investigator, and Mr. K. K. Kennan of Milwaukee was appointed supervisor of income tax. Both of these men are careful and thorough students of the subject of taxation and have had wide experience in tax matters.

The Wisconsin Income Tax Law is the first of its kind in the Central Western states and perhaps the most comprehensive state

income tax law ever enacted in this country. As might be expected, the introduction of so radical a change in our tax system presented a multitude of new and difficult questions and called for a great deal of labor and attention from the members of the commission and their assistants. Mr. Kennan has given his entire time and attention to the subject during the year. As the administration of the inheritance and income tax laws and the results derived therefrom, the progress in preparing and installing a system of public accounting and other activities of the Commission are separately treated elsewhere in this report, they require no further discussion at this point.

A mere recital of the several statutes relating to the powers and duties of the Tax Commission shows how greatly the field of its activity has been extended. The administrative duties of the first commission were limited to making the state assessment, assessing the properties of express, sleeping car, freight line and equipment companies and directing supervisors of assessment. The assessment of the property of steam railroad companies was added in 1903. In addition to the foregoing the Commission is now required to assess the property of street railway companies, including electric light and power plants operated in connection therewith; supervise the assessment of the property of utilities furnishing water, light, heat and power; order and direct reassessments of towns, cities and villages on proper showing; entertain and determine appeals from equalizations made by county boards; collect statistics and prescribe forms for local taxing officers; audit the accounts of towns, cities and villages and install a system of public accounting on request of the proper authorities; supervise the administration of the income tax, and assess the income of corporations and joint stock companies.

Departmental Expense.

These increased duties naturally called for an increased force and resulted in increased expense. The total cost of the department for the fiscal year ending June 30, 1911, was $56,764.76 and the cost for the year ending June 30, 1912, exclusive of the income tax, was $70,366.73. Administration of the Income Tax Law did not begin until January, 1912, and the exact annual cost cannot be stated at this writing. The total expense of this department for the first six months of its operation, including sal-

aries and expenses of assessors of incomes and their assistants, was $49,095.73. The expense of the following quarter covering the months of July, August, and September, was $24,500.08, making a total expense of $73,595.21 for the first nine months of administration. As the cost of printing, stationery and stamps came largely at the beginning of the year, it is believed that the total annual cost of administering the law will be proportionately less than these figures indicate.

Prior to the enactment of the Income Tax Law each county maintained a supervisor of assessment at an aggregate cost of about $54,000 for all the counties of the state. The duties which devolved upon these officers are now performed by assessors of incomes, and if the amount paid to supervisors of assessment be credited to the administration of the Income Tax Law the net expense required for the administration of that act will be materially less than $50,000 for the year. The law permits an expenditure for salaries of assessors of incomes and their assistants of "five cents for every thousand dollars of the valuation of all property in the state as fixed by the tax commission." The maximum authorized for this purpose under the act is $147,070.60.

The following tables show the expense of the Tax Commission for the years 1911 and 1912, classified by departments and by purposes for which the expense was incurred.

TABLE I.

COST OF TAX COMMISSION FOR FISCAL YEARS 1911 AND 1912.
CLASSIFIED BY PURPOSES OF EXPENDITURE.

	1912.	1911.
TOTALS:		
Salaries	$123,517 96	$56,764 76
Employes' expenses	93,164 25	48,514 02
Printing, postage and other office expenses except supplies	9,613 79	4,065 91
Paper for printing	14,929 36	2,272 32
Supplies for offices	3,103 61	389 94
Equipment repairs	1,469 44	675 66
New equipment	260 88	
	976 63	846 91

CLASSIFIED BY DEPARTMENTS.

	1912	1911
TOTALS:		
General office	$123,517 96	$56,764 76
Engineering	29,046 22	27,515 07
Statistics and accounts	13,358 48	12,314 03
Inheritance tax	23,241 23	15,795 89
Income tax, main office	4,518 52	
Income tax assessors	10,427 50	
Review of assessments	38,668 23	
Tax statements	4,257 78	875 82
		263 95

The Commission published and submitted biennial reports to the legislature in each odd numbered year since its organization in 1900, except for the year 1905. The five reports so published contain full explanation of the methods of administration, exhaustive discussions of several important tax problems, and numerous recommendations for improvements in the law. No purpose would be served by repeating here the discussion contained in these reports. Accordingly this report is confined to a discussion of changes in our tax laws and a statement of the work accomplished during the year, with recommendations for such amendments as experience has shown to be urgent and necessary.

Statutes Affecting the Tax Commission.

A new edition of the tax laws of the state with explanatory notes and court decisions was prepared by the Tax Commission in April, 1912. The publication was designed to present the law relating to the assessment and collection of taxes of the general property of the state by local officers, as it now exists. As copies of this publication have been distributed to all local taxing officers and are available to members of the legislature it is deemed unnecessary to include the text of the law in this report. For convenient reference, however, it seemed advisable to present a list of the statutes relating to the organization and duties of this Commission in chronological order with the corresponding section numbers of those which have been incorporated into the general statutes. They are as follows:

Chapter 340, laws of 1897, creating a temporary tax commission; expired by limitation December 1, 1898.

Chapter 111, laws of 1899, relating to the taxation of express companies. Sections 1222—51—6 of the statutes.

Chapter 112, laws of 1899, relating to the taxation of sleeping car companies. Sections 1222b to 1222be.

Chapter 113, laws of 1899, relating to the taxation of freight line companies. Sections 1222—61—5.

Chapter 114, laws of 1899, relating to the taxation of equipment companies. Sections 1222—71—5.

The four acts last above mentioned were all amended by chapter 447, laws of 1905, sections 1222—81—6.

Chapter 206, laws of 1899, creating the offices of commissioner of taxation and first and second assistant commissioners of taxation; superseded by chapter 380, laws of 1905, creating present Tax Commission, sections 1087—31—43.

Chapter 237, laws of 1901, making the Tax Commission a state board of assessment to assess the general property of the state for

state and county taxes. Superseded by permanent Tax Commission. Section 1087—42.

Chapter 445, laws of 1901, amended by chapter 316, laws of 1903, and chapter 523, laws of 1905, providing for the appointment of county supervisors of assessment and placing such officers under the supervision of the Tax Commission. Sections 772a—772j.

Chapter 44, laws of 1903, amended by chapter 96, laws of 1905; chapter 500, 1907; chapters 38 and 504, 1909; chapters 450 and 530, 1911, relating to taxation of inheritances, bequests, legacies, devises and successions in certain cases. Sections 1087—1 to 1087—24 inclusive; 1087—37, 1087—40, 162, 3818, 3813a and 3871a.

Chapter 315, laws of 1903, amended by chapter 216, laws of 1905, relating to the assessment and taxation of railroads by the Tax Commission. Sections 1212 to 1215—30.

Chapter 259, laws of 1905, amended by chapter 263, laws of 1911, authorizing the Commission to order reassessments in certain cases. Sections 1087—45 to 1087—57.

Chapter 474, laws of 1905, authorizing the Tax Commission to review equalizations made by county boards. Sections 1077a to 1077l.

Chapter 493, laws of 1905, providing for the taxation of street railway companies by the Tax Commission. Sections 1222—1 to 1222—32.

Chapter 494, laws of 1905, providing for the taxation of telegraph companies by the Tax Commission. Sections 1216 to 1218—29.

Chapter 380, laws of 1905, creating a permanent Tax Commission and defining its powers and duties. Sections 1087—31 to 1087—44.

Chapter 522, laws of 1907, providing for the collection of statistics of sales and the assessed values of lands included therein by the Tax Commission and furnishing an abstract thereof to county clerks. Sections 1007 to 1009.

Joint resolution No. 16, laws of 1909, directing the Tax Commission to compile statistics of income and expenditures of the state and its towns, cities, villages and counties, and publish the same.

Chapter 262, laws of 1911, requiring the Tax Commission to prepare and furnish forms to town, city and village officers for the purpose of taxation. Sections 1004a, 1005, 1009, 1032, 1067, 1068.

Chapter 523, laws of 1911, amending subdivisions 5 and 12 of section 1087—39 of the statutes relating to public accounts and authorizing the Tax Commission to prescribe a uniform system of accounting and audit the accounts of towns, villages, cities and counties and install such system. Sections 1087—39, pp. 5 and 12.

Chapter 658, laws of 1911, providing for the taxation of in-

comes and vesting the administration thereof in the Tax Commission. Sections 1087m—1 to 1087m—30.

In compliance with the foregoing laws the Tax Commission made the state assessment, assessed the property of steam and street railway, express, telegraph, sleeping car, freight line and equipment companies, directed local assessors in the assessment of the general property of the state and assisted them in assessing the property of public utilities in each of the years 1911 and 1912. During this period three appeals from equalizations made by county board were entertained and determined; eighteen applications for reassessment were considered and disposed of and the property of ten assessment districts was reassessed, including the cities of Janesville and Racine; a system of public accounting was completed and installed in three counties, four cities and villages and nine towns, and accounts audited in three of these cases.

Applications are now pending for the installation of a system of accounting in ten additional municipalities, two of which have requested an audit. During the year 1912 the state was divided into districts and the necessary force selected and organized for the assessment of the incomes of individuals and firms under the Income Tax Act. The income of all corporations was assessed by the Commission direct. While it is not claimed that the maximum of efficiency has been attained in any of the matters mentioned, it is believed that the biennium covered by the report has been one of progress in the field of taxation and public finance.

CHAPTER II

GENERAL PROPERTY TAX; SUBSTITUTION OF INCOME TAX FOR PERSONAL PROPERTY TAX

As was pointed out in the preceding chapter, the duties of the Tax Commission were much enlarged by legislation of 1911.

Assessors of Incomes.

By the terms of the Income Tax Law the office of supervisor of assessment was abolished and the duties imposed upon the assessors of incomes.

In making its selections of assessors of incomes, the Tax Commission had in view the general intelligence of the candidates, their familiarity with the conditions and industries of their districts, independence of character, and general aptitude to meet with and assist the taxpayer. Experience in tax matters was not lost sight of and of the thirty-nine appointees nineteen had formerly served as supervisors of assessment. Both efficiency and economy were sought.

The duties of the supervisors were principally to guide and direct the work of the local assessors and to assist the county board in equalizing values among the different assessment districts within the county. The assessors of incomes besides these duties assess the incomes of individuals, firms, partnerships, and persons acting in representative capacities, such as executors and administrators, guardians, trustees, etc. Their duties under the Income Tax Law are by far the most important and occupy the greater part of their time. But they have given intelligent and material aid to local assessors and it is believed that the assessment of 1912 comes nearer to compliance with the law than that of any former year. The complete statistics of the local assessments of 1912 are, however, not yet available.

State Assessments.

Real Estate.—In the state assessments the Tax Commission has pursued in the main the method for ascertaining values described in previous reports. As to real estate the agents of the Commission have examined the records of sales in each county, eliminating such as bore evidence of being or were ascertained to be not *bona fide.*

Conveyances between relatives, trades, and conveyances including personal property as part of the consideration, or where the lands conveyed were in more than one assessment district, have been omitted. When the true consideration paid has been ascertained it is compared with the local assessment of the same property and a ratio of assessed value to selling value of all property sold in the district is thus found. Such ratio is then applied to the assessed value of all the real property in the district. Experience with this method has substantiated its approximate accuracy, and it has now the approval of other state tax commissions that have followed Wisconsin in this respect. For the purpose of more steadiness in valuations and to overcome erratic data that may not be discovered and which may materially affect value where there are few sales during the year, the Commission has taken the average of five years as being more reliable than the single year. Such valuations form the basis for the value of the real estate of the county.

An examination of the tables following is strikingly illustrative of the regularity of the values thus found. There is a general upward movement as would naturally be expected, but no violent fluctuations. The state assessment of 1911 shows an increase of the value of real estate for the year of 4.44 per cent and that of 1912 a similar increase of 4.83 per cent.

It is believed that the assessors of incomes will in the future be of valuable service in criticising and editing the sales statistics, something they were unable to do in 1912 owing to the large amount of labor imposed upon them in the initiatory stages of the income tax. Their familiarity with local conditions gives them advantages in ascertaining the truth in reference to considerations actually paid and their aid will lessen the expense to the state.

Of Personal Property.—In reference to personal property the state assessment is not so satisfactory. The Commission has endeavored as far as possible to act independently of local assessors. As to farm animals the general market trend has been consulted; also the federal census report; the reports of supervisors of assessment, reports to the commissioner of banking, and such other official documents and publications as have a bearing upon the amount and value of property. Reassessments of a few assessment districts also point to the differences that exist in the local assessors' treatment of the different classes of personal property. The Commission cannot, however, lay claim to that degree of accuracy in the valuation of personal property that it claims for its state assessment of real estate. In valuing personal property in the state assessment a single year has been used and not the average of five years as in the case of real estate.

The exemptions of personal property under the income tax law resulted in a very material reduction of that class in the state assessment of 1912. The state assessments of 1911 and 1912 compare as follows:

	All property.	Real estate.	Personal property.
1911	$2,941,412,842	$2,202,225,226	$739,187,616
1912	2,841,630,416	2,308,301,611	533,328,805

Reassessments.

In 1911 reassessments were made by the Commission of the cities of Janesville and New London and of the town of King in Lincoln county. Comparisons of such reassessments with the valuations found by the local assessor in the previous year are as follows:

	Local assessment 1910.	Reassessment 1911.
Janesville	$10,505,527	$15,969,085
New London	1,851,573	2,414,697

As to the town of King the data have not been received. Reassessments have been made in 1912 in the towns of Glen-

wood, St. Croix county; Winfield, Sauk county; Texas and Harrison, Marathon county, and the cities of Racine and Stoughton, while further applications are pending and undetermined at the time of this writing. The assessments appealed from invariably show disregard of law by great undervaluation, discrimination as between different classes of property, and it often appears that the assessor wholly, or nearly so, fails to assess, either copying the earlier assessment roll or copying the descriptions, leaving the valuations to be inserted by the board of review.

A reassessment is made at the expense of the district, and this power of the Commission has, it is believed, had a wholesome influence not only upon the districts assessed but upon adjoining districts.

For further study of valuations in the aggregate and by counties, reference is made to the tables of state and local assessments and the average tax rate based on each in the chapters devoted to that subject.

Railroad Assessment.

The work of assessing steam and street railways has been continued substantially as heretofore, and statistics covering a period of five years have as a rule been used as the basis of valuations. This is in harmony with the method pursued in the state assessment with reference to real estate and obviates those violent changes which would result, especially in the case of railroads, if a single year were made the basis. The gross and net earnings of the larger systems operating in the state show a large falling off for the single fiscal year ending June 30, 1912, while the five year average is fairly steady. For information as to assessment and taxes paid reference is made to chapter VII of this report.

Railway Terminals.

By chapter 540, laws of 1911, grain elevators used in transferring grain between cars and vessels, ore docks and merchandise docks, were made subject to local assessment, although owned and operated by a railroad company as such. Coal docks had been treated in the same manner by earlier legislation. Valuable dock properties exist in Milwaukee, Superior and Ash-

land, and of relatively minor importance in other lake cities. The law of 1911 did not take effect until after the assessment season of that year had closed. The railroad and local assessments of that year were therefore made on the old basis. In the railroad assessment now pending, the value of such properties will be deducted. This will materially reduce the valuation of the Great Northern and the tax to be paid by it into the state treasury. It will, on the other hand, add in like measure to the local valuation in the city of Superior. In the same manner but in less degree the Chicago & Northwestern; the Minneapolis, St. Paul & Sault Ste. Marie; the Chicago, Milwaukee & St. Paul; the Chicago, St. Paul, Minneapolis & Omaha, and the lake cities which they enter will be affected. If any decrease appears in the assessment of 1913 in the value of any of the larger railroads, it may be accounted for in part by the local assessment of a portion of their property.

Miscellaneous Public Utilities.

By chapter 611, laws of 1911, public utilities extending into more than one assessment district, but locally taxable, were placed directly under the supervision of the Tax Commission. In accordance with this chapter the Commission has collected information bearing upon the value of the properties and the value within each assessment district, called meetings of the assessors of all the districts interested, submitted to them the data collected, and generally assisted in making and distributing the assessment. The law provides that if any district, or the party assessed, be dissatisfied with the assessment made by the meeting of assessors, the matter may be brought before the Tax Commission as a board of review. The local boards of review have no authority in the matter. The Tax Commission, besides statistics as to results of operation, also has the aid of its engineers as to the cost of the physical property.

It may be suggested that such assessment becomes almost necessarily that of the Tax Commission. A dozen or more assessors who personally know nothing of the property, except such transmission line as may run through their respective districts, must necessarily abide by the report and suggestions of the Tax Commission. They have only such knowledge as to value as is furnished them. If any material departure be made

from the recommendation of the Commission, some party adversely affected is pretty sure to carry the matter before the Commission. Street railways, and lighting properties operated in connection with them, are assessed directly by the Commission and the tax distributed to the different assessment districts, under the provisions of law similar to those prescribed in chapter 611. The meeting of the assessors under that act serves no good purpose; it is connected with more or less expense, and this part of the assessment work should be in harmony with the assessments now being made of street railways by the Tax Commission. Attending the meetings involves expense on the part of the assessors that is not provided for, and the entire proceeding answers no purpose that cannot be reached as well and with less expense by having the Tax Commission make the assessment directly.

One difficulty which presents itself in having such assessments made by the Tax Commission is that of the tax rate. Under the present law values are assigned to the different districts and the local rate of each district applies to the part assigned to it. The law is specific that property shall be assessed at its full or true value. The Tax Commission attempts to comply with the law in that respect. It cannot be said that the local assessors have as yet approached full value assessments, and their valuations vary largely as between districts and vary in their ratios to true value within the district. If, then, the public utility is assessed at its full value while other property on the same assessment roll is assessed at only 50 per cent of true value, the former will in effect pay twice the tax rate of the latter upon the same amount of property.

There is, under the present law, only one remedy for such injustice—the Tax Commission may upon proper application order a reassessment of all the taxable property in the district in order that all taxpayers within its borders be placed on an equality. Such reassessments are made at the expense of the district whose officers fail to comply with the law. If personal property were all exempt from local taxation the full value of real estate in the districts interested could be easily ascertained and an average tax rate based upon such value in each district. This rate could then be applied to the valuation of the public utility in the district in an assessment by the Tax Commission. An effort to ascertain the true value of personal property in

each district presents difficulties that, it is feared, would make such plan under present conditions well nigh impracticable.

Street Railway Taxes.—The law prescribing the distribution of 85 per cent of the tax levied against street railways (15 per cent being retained in the state treasury) was changed by chapter 612, laws of 1911. The tax was formerly distributed in proportion to the gross receipts of the company in each district. Now it is distributed in proportion to the property located and business transacted in each district. Some country districts receive sufficient revenue from this source to meet all ordinary town expenses. The law is silent as to whether the valuation of these properties is to be taken into consideration by the county board in its county assessment. The Commission has considered it a proper matter to be taken into account and has during the last two years so advised the income tax assessors.

The question has, however, been raised in one case as to the correctness of such construction by the Commission. The local district has the benefit of the property located within it as much as though it were upon the local assessment and tax rolls. The people of the district frequently contribute little or nothing to the business. One town in Waukesha county received in 1911 from the street railway tax $3,915.40. It raised only $678.31 cash from taxes upon property. Another town received $1,401.43 street railway tax and raised $896.46 from property taxation. This does not, in either case, include highway taxes paid in labor.

The railroad or transmission line may skirt another district for miles of its route, and may receive material revenue from such district, but if it does not enter within its borders such district receives no benefit from the tax. It should at least have the benefit in the county apportionment. There is no reason for excluding this property from consideration in the county equalization that does not with equal force apply to any class of property on the local assessment rolls. In order to remove possible controversy and litigation the statute should provide specifically that property of the character mentioned shall be considered in the valuation of assessment districts by the county board.

The assessment of street railways is made in the same manner and taken up at the same time as that of steam railroads.

The tax roll is to be completed by May 1. In the case of steam railroads the tax roll is to be completed by February 1, and one-half of the tax is made payable on or before the fifteenth day of February, and one-half on or before the tenth day of August. The street railway companies are not required to pay any part of the tax until the following December. A street railway thus escapes any tax during the first year of its existence. Where some other public utility, such as a lighting plant or hydro-electric power plant, is taken over by a street railway company during the early part of the year and thus made subject to assessment as a part of the entirety by the Tax Commission, the question arises whether such part of the whole may be locally assessed or whether its absorption by the street railway company absolves it from taxation for the year. On the theory that the law does not favor exemptions, the Commission has advised local assessment in such cases. It is desirable, however, that the law be made clear, and it is suggested that street railways be brought under the same rule that applies to steam roads, and that one-half of their tax be made payable on or before March 1 and one-half on or before September 1. The time of payment should be placed later than in the case of steam roads in order to give the Commission time to make the proper distribution to the local districts, a matter that in some instances presents considerable difficulty.

Possibility of Substituting Income Tax and Exempting All Personal Property.

In former reports, and especially those of 1909 and 1910, much space was devoted to discussing the general property tax and its failure equitably to reach property in general and more particularly some classes of personal property. Such failure was one of the principal reasons that led the legislature of 1911 to enact the Income Tax Law. When the bill was first reported from the committee on April 28, 1911, it was found that it made no exemption of personal property and failed entirely to recognize the evils in the personal property assessments which had been the main reason given in the advocacy of an income tax. After open hearing before the two houses the bill was promptly re-referred to the committee, where many very material changes were made, especially in the way

of exemptions from the property tax of certain classes of personal property. The legislature thus avowedly made the income tax a substitute, in part at least, for the personal property tax. In his opinion in the *Income Tax Cases,* CHIEF JUSTICE WINSLOW, speaking for the court, used the following language:

"By the present law it is quite clear that personal property taxation for all practical purposes becomes a thing of the past. The specific exemptions of all money and credits and the great bulk of stocks and bonds, as well as of all farm machinery, tools, wearing apparel, and household furniture in actual use, regardless of value, goes far to eliminate taxation of personal property; while the provision that he who pays personal property taxes may have the amount so paid credited on his income tax for the year seems to put an end to any effective taxation of personal property. That taxation of such property has proven a practical failure will be admitted by all who have given any attention to the subject. Doubtless this was one of the main arguments in the legislative mind for the passage of the present act. By this act the legislature has, in substance, declared that the state's system of taxation shall be changed from a system of uniform taxation of property (which so far as personal property is concerned has proven a failure) to a system which shall be a combination of two ideas, namely, taxation of persons progressively, according to ability to pay, and taxation of real property uniformly, according to value."

The classes of personal property exempted by the Income Tax Law are as follows:

Moneys and credits of all kinds, including stocks and bonds;

Household goods and furnishings;

Farm, orchard and garden machinery, implements and tools.

Some other exemptions were made of minor importance. Exemptions under former laws remain undisturbed.

The most difficult property to assess, moneys and credits, will, therefore, no longer prove a stumbling block to assessors. This class was assessed by the local assessors in 1910 at $22,349,805 for the entire state, while the Tax Commission in the corresponding state assessment of 1911 found the true value of such property to be $150,930,603, showing the local assessment to have been only 14.81 per cent of true value. The tax which should properly have been carried by this property was necessarily borne by taxpayers whose property was placed upon the assessment rolls.

In 1911 the local assessors assessed moneys and credits to the amount of $25,791,947, the exemption not taking effect until after the assessments of that year were completed.

The next highest group affected by the exemptions is farm, orchard and garden machinery, implements and tools. Household goods and furnishings, to which a partial exemption formerly applied, may be added. These properties were not in the enumerated classes, but included under the general designation "All other personal property." Under this head the local assessors in 1910 assessed $38,124,094; the state assessment in 1911 making the amount $96,137,571. In 1912 the state assessment under the head "All other personal property" amounts to $22,628,157, the exemptions thus reducing the amount by $73,509,414. As this classification includes all those odds and ends of personal property that is not expressly exempted and does not come within any of the enumerated classes, it is impossible at this time to say what the effect of the exemption of farm, orchard and garden machinery, implements and tools and household goods and furnishings was in the local assessment of 1912, the statistical returns of that assessment at the time of this writing not having been received. They are not as yet due.

Watches, pianos, organs, melodeons and other musical instruments and bicycles were also exempted by the terms of the income tax law. Their total local assessment in 1910 was $5,244,467 and in 1911, $5,601,986. The state assessment in 1911 was $9,537,227.

By the terms of the Income Tax Law there was therefore exempted from taxation entirely property which in 1910 was locally assessed at $27,594,272, and which in the state assessment of 1911 was found to have a true value of $160,468,035, the local assessment being made at only 17.2 per cent of true value as found by the Tax Commission. There should be added to the local assessment of $27,594,272 at least $25,000,000 under the head of "All other, etc." which would make the total assessed valuation of the property exempted $52,594,272.

The average of the tax rate for the state in 1910 based upon local valuation was 1.824 per cent, which would make the total of the tax paid by such property $959,319. The total income tax levy for the entire state is approximately $3,500,000. Some estimates of the probable personal property tax offsets have

been made based upon the personal property taxes paid in 1911 by parties liable to an income tax, and a net income tax of about $2,300,000 is the result. It is believed that this is a conservative estimate as the personal property tax paid in 1911 represented much property exempted by the Income Tax Law. The net yield of the income tax is therefore considerably more than twice the amount of taxes raised on the property which, by the terms of that law, is exempted. The exact net amount of the income tax cannot be given until it has been paid and the personal property tax offsets applied.

Taxable Personal Property.

The principal items of personal property still subject to local assessment and the local assessment of each class, together with the tax levied thereon, are the following:

	Local Assessments.	
	1910	1911
Farm animals and wagons, carriages and sleighs	$99,039,307	$98,715,305
Merchants and Manufacturers' stock and leaf tobacco	86,178,242	105,537,926
Logs and lumber	11,376,133	11,517,395
Total	$196,593,682	$215,770,626
Average local tax rate	1.824%	1.739%
Tax yielded by these classes	$3,585,868	$3,752,250

The income tax aggregating for the entire state in 1912 $3,500,000 comes within approximately $250,000 of the tax raised in 1911 from the three classes of property above described.

The drouth in 1910 and the general depression in business caused by it during that year and 1911 placed the latter year below the normal both in agriculture and lumbering. This is strikingly evident from the falling off in number of farm animals, especially in the western part of the state, in 1911. It also appears to be quite universal from the income tax returns of lumbering corporations, most of them reporting no profit in 1911. Railroad earnings show a marked falling off throughout the Northwest during the year ending June 30, 1912. It is logical to infer that a depression so universal must have affected the industries of the state to such an extent as to place

the income tax based upon the year 1911 below the normal level, and that the amount of $250,000 will easily be made up under normal industrial conditions.

It is true, as stated in former reports, that farm animals are far better assessed than personal property generally, and that, on the other hand, merchants and manufacturers' stock is about the worst assessed. Lumber comes nearer to the enumerated classes and the local assessor shows more ability to cope with it and more knowledge as to value than he does in the case of merchandise and manufacturers' stock. It seems highly desirable to relieve the assessor of further attempting to perform a duty which has proven itself almost impossible of legal performance.

It is believed that this can safely be done by exempting from local assessment all personal property, with the exceptions noted below. Such exemption would make it possible to abandon annual assessments and assess real estate once in four years, letting the board of review with the aid of the local assessor, or assessor of incomes, adjust the valuation in case of either creation or destruction of properties during the year. The local assessments cost the municipalities in the aggregate upwards of $300,000 a year. This is an expense that can well be saved three years out of every four.

It is evident that such exemption will not have the same effect upon the taxation of real estate in the various districts. But no change in taxation will have such effect. It is well known that in some of our larger cities the income tax will produce more revenue than has been raised from all personal property. In many country districts little or no revenue will be collected from the income tax. But that tax will throughout the state pay its full share towards state and county expenses.

On the average farm personal property, now mainly farm animals, bears some relation to the value of the farm, and it can make very little difference to such farmer whether his assessment is based on his real estate only or whether it includes his farm animals. If land is cultivated by tenants an additional burden may fall upon the owner—the landlord. If in such case the somewhat doubtful theory that all taxes are shifted be assumed to be true the landlord would have no occasion for complaint. If the tax is not shifted to the tenant, then the

system should be invoked as encouraging self-ownership of farms by the men cultivating them.

In the northern and more sparsely settled portions of the state placing the tax upon the land would have the distinct advantage of discouraging speculative holdings and by lowering values, hasten settlement.

Special Classes of Personal Property.

If personal property be in general terms exempted from local assessment and taxation, there are some classes that should be reserved for special consideration. Among these may be suggested bank stock, public utilities, automobiles and perhaps some other minor classes.

Bank Stock.—The federal law limits the right of states to tax national banks to a taxation of the stock in the district where the bank is located. The state has wisely extended this method to all banks. Such taxation should not at present be disturbed. While bank stock has not been assessed at full value it has been much better assessed than any other class of personal property except farm animals. It is fairly easy of assessment as bank officials are required to make a sworn return to the assessor, and the "book value," so-called, is always known or readily ascertainable, and for want of actual selling price is some guide to value. Bank stock can be assessed by the board of review at its annual meeting with the assistance of the assessor of incomes or the local assessor.

Water and Light and other Public Utility Companies.—The property of these companies, including their franchises, is declared by statute to be personal property for taxation purposes. They should not be included in the general exemption of personal property but should continue to be assessed in the same manner as heretofore, but under the supervision of the assessor of incomes by the board of review. Such properties are not common to the districts, their value frequently depends upon earning capacity rather than cost of construction, and presents difficulties which the local assessor is not equipped to meet.

The aggregate value of such properties was placed by the local assessors in 1911 at $26,441,262. Where the property is located in more than one district it is, as stated on a pre-

ceding page, assessed under the immediate supervision of the Tax Commission. All properties of this character might well be assessed directly by the Tax Commission as there suggested.

Automobiles.—Automobiles form a distinct class, the number of which is constantly increasing. They are evidence of either actual or pretended opulence. They are the direct cause of public expense in the construction and maintenance of highways. They depreciate in value rapidly and are for that reason difficult to assess. They should be taxed in a manner corresponding as nearly as may be to the injury they cause to the highways. They should be exempted from the property tax, and should in lieu thereof pay an annual license fee based upon weight or horsepower. As suggested by a tax commission in Hawaii in 1908, the most equitable method might be a "tax of a cent a pound based on the weight of the car as that car is usually used by the taxpayer." The local assessors assessed in 1911 11,600 automobiles and motorcycles at an aggregate valuation of $6,098,818.

By thus relieving the local assessor of his duties with regard to personal property, his efforts would be concentrated on a more accurate assessment of real property. He would be held to a stricter accountability by the taxpayers when the valuation would remain fixed for four years, and would himself, no doubt, feel such increased responsibility.

CHAPTER III

THE INCOME TAX

History of the Law.

The movement which culminated in the adoption of a state income tax in Wisconsin received its first impulse from the widespread dissatisfaction aroused by the operation of the general property tax as applied to personal property. There were grave doubts whether a graduated income tax could be sustained under the uniformity clause of the state constitution and a joint resolution for a constitutional amendment authorizing such a tax was proposed to the legislature of 1903 and passed both houses with but one dissenting vote. Through an oversight this amendment was not advertised as required by law and in 1905 the resolution was again introduced though in somewhat different form. Section I, article VIII, of the state constitution was amended to read as follows:

"The rules of taxation shall be uniform and taxes shall be levied upon such property as the legislature shall prescribe. *Taxes may also be imposed on incomes, privileges and occupations, which taxes may be graduated and progressive, and reasonable exemptions may be provided.*"

The second sentence constituted the amendment which was passed without much debate and by large majorities. At the legislative session of 1907 the amendment was ratified unanimously by the senate and with but one dissenting vote in the house. In 1908 the amendment was submitted to the people at the general election and was adopted by the decisive vote of 85,696 to 37,729.

In 1909 a tentative bill providing for an income tax was introduced and a "recess committee" of seven—four from the assembly and three from the senate—was appointed to investi-

gate the subject and report to the next legislature. At the legislative session of 1911 a great number of amendments were offered to the bill proposed by the committee and after very exhaustive discussion and debate it was finally passed by the assembly, June 23, 1911, concurred in by the senate June 28, and became a law by publication on the fifteenth of July.

It will thus be seen that the law was not passed hastily but received an amount of preliminary consideration and discussion such as has seldom been accorded to an American fiscal measure of this character.

Constitutionality of the Law.

Soon after the publication of the law an action in equity was begun for the purpose of enjoining the secretary of state and other state officers, including the Tax Commission, from paying out any state moneys or performing any other administrative acts in connection with the law on the ground that the law was unconstitutional. The attorney general having declined to bring the suit, the original jurisdiction of the supreme court was invoked and, in the case of *State ex rel Bolens v. Frear, Secretary of State,* (See *Income Tax Cases,* 148 Wis. 456) leave to bring a suit was granted. The decision in that case fully sustained the constitutionality of the law.

In answering the claim that the law violated the Fourteenth amendment, the court held that such amendment

* * * "never was intended to lay upon the states an unbending rule of equal taxation; the states may make exemptions, levy different rates upon different classes, tax such property as they choose, and make such deductions as they choose and so long as they obey their own constitutions and proceed within reasonable limits and general usage there is no power to say them nay."

The progressive feature of the law in the graduation of the tax was sustained and it was further held that exemptions might be allowed to individuals which were denied to firms; that there was not necessarily any injustice in permitting such persons as had paid personal property taxes to offset the amount of such taxes against their income tax; that the rental value of a residence occupied by the owner might be treated as income; that the income of wife and children might properly be taxed to the husband; that the law was not retroactive in that it taxed in-

comes received prior to its passage; and that corporations enjoyed privileges which would justify difference of treatment in respect to rates, exemptions, and the like.

Salient Features of the Income Tax.

The Wisconsin Income tax differs in several important particulars from any other income tax ever adopted in this country. In the following discussion, therefore, the following distinctive features of the Wisconsin income tax should be constantly kept in mind:

First. It is not an additional tax, but a substitute for the tax on certain classes of personal property, particularly moneys and credits. Moreover, any personal property tax which a person pays is subtracted from his income tax. Thus, if John Smith is assessed for an income tax of $25 and for a personal property tax of $15, he pays as *income tax* only the difference of $10. This is popularly referred to as the "personal tax offset."

Second. It does not tax the whole income of persons engaged in business within and without the state, but is confined practically to the income derived from property located and business transacted within the state.

Third. It is not a state tax. Seventy per cent of the tax goes to the town, city or village in which it is collected, 20 per cent to the county and 10 per cent to the state. The state pays out of this 10 per cent practically all of the expenses of administration.

Fourth. The tariff of rates imposed upon corporations differs materially from that applicable to copartnerships and individuals. The rate upon individuals and copartnerships is one per cent on the first thousand dollars of taxable income; one and one-quarter per cent upon the second thousand dollars, and rises gradually to six per cent, where it stops. The rate applicable to corporations, however, is determined by the relation between the taxable income and the assessed value of the property used and employed in the acquisition of such income. The rate of taxation is practically one-half of the earnings as calculated upon the assessed value of the property, but in no case exceeds six per cent. Thus, if the taxable income of a corporation is one per cent or less of the assessed value of the prop-

erty employed in its acquisition, the rate of taxation is one-half of one per cent; if the taxable income is more than three but does not exceed four per cent of the assessed value of the property used in its acquisition, the rate of taxation is two per cent; and so on until six per cent is reached. In other words, the rate of taxation varies with the rate of earnings calculated upon the assessed value of the property employed in its acquisition.

Fifth. The principle of *collection at source* has been extensively applied. Thus, the corporation pays on its total profits and the individual stockholder is not taxed upon his dividend. So also the interest paid upon bonds of corporations subject to the Wisconsin income tax is, for practical purposes, taxed directly to the corporation and exempted to the individual bond holder.

Sixth. The administration of the law is centralized in the Tax Commission and is not left to local officials. The assessors of income are appointed after civil service examinations and are entirely independent of local influences.

I. The First Assessment.

Owing to the impossibility of securing certain necessary data at this time, the complete study of the operation of the income tax is necessarily deferred. However, it is possible at the present time to present totals for the entire state and a more or less complete study of the operation of the law in twelve typical counties, together with recommendations for certain amendments which it would be desirable to adopt immediately in order that they may be applied in the 1913 assessment.

General Results.—The most important results of the income tax are shown in table II, pages 28–29. The total income tax assessed amounts to $3,501,161.46, of which $2,392,454.44, or 68.3 per cent, is assessed against corporations and $1,108,707.02, or 31.7 per cent, is assessed against firms and individuals. The average rate of taxation upon firms and individuals is 1.96 per cent and upon corporations 5.4 per cent. The number of taxpayers, excluding corporations, per 1,000 of population is 19.96, and varies from 40.27 in Milwaukee county to 2.55 in Burnett county.

TABLE II.

PRINCIPAL RESULTS OF THE INCOME ASSESSMENT OF 1912 (INCOME OF 1911

County.	Total Corporations, Firms and Individuals.		Corporations.		Firms and Individuals.					Population 1910.
	Taxable income.	Tax.	Taxable income.	Tax.	Number.	No. per 1000 population.	Taxable income.	Tax.	Average rate.	
Adams	$49,150.76	$1,688.91	$23,439.00	$1,404.26	36	4.18	$25,711.76	$284.65	0.0111	8,604
Ashland	1,193,515.25	34,390.96	704,805.92	25,181.71	491	22.35	488,709.33	9,209.25	.0188	21,965
Barron	245,271.94	7,005.07	96,678.94	5,314.68	152	5.22	148,593.00	1,690.39	.0114	29,114
Bayfield	628,589.81	26,112.61	406,845.20	22,823.63	227	14.20	221,744.61	3,288.98	.0148	15,987
Brown	1,861,117.17	62,127.52	931,402.18	49,536.29	877	16.21	879,714.99	12,542.23	.0143	54,038
Buffalo	112,885.58	2,732.24	33,976.11	1,785.21	90	5.62	78,909.47	947.03	.0120	16,006
Burnett	41,542.00	1,100.07	12,981.00	774.00	23	2.55	28,561.00	326.07	.0114	9,026
Calumet	307,273.01	12,847.59	199,954.10	11,660.29	153	9.16	107,318.91	1,187.30	.0111	16,701
Chippewa	904,509.63	38,172.94	539,915.63	31,730.40	341	10.15	364,664.00	6,442.54	.0177	32,103
Clark	235,912.73	7,408.34	89,051.76	5,708.61	152	5.05	136,830.97	1,699.73	.0124	30,074
Columbia	908,790.06	29,664.11	482,735.05	22,849.83	510	16.38	426,055.01	6,814.28	.0160	31,129
Crawford	132,866.35	3,610.74	45,526.96	2,667.34	157	9.64	87,339.39	943.40	.0108	16,288
Dane	4,099,657.78	111,189.18	1,152,753.32	66,569.60	2,822	36.45	2,946,904.46	44,619.58	.0151	77,435
Dodge	1,450,163.43	52,900.36	601,008.43	34,042.47	647	13.64	849,155.00	18,857.89	.0222	47,436
Door	152,438.74	3,640.11	44,599.90	2,403.73	143	7.64	107,838.84	1,236.38	.0115	18,711
Douglas	3,990,763.05	177,638.92	2,772,680.56	159,902.80	1,298	27.37	1,218,082.49	17,736.12	.0146	47,422
Dunn	331,890.67	9,879.23	142,650.68	7,606.45	269	10.65	189,239.99	2,272.78	.0120	25,260
Eau Claire	1,381,278.69	44,904.71	556,480.69	30,071.41	747	22.83	824,798.00	14,833.30	.0180	32,721
Florence	124,310.11	5,795.27	95,034.50	5,393.15	30	8.87	29,275.61	402.12	.0137	3,381
Fond du Lac	1,622,138.60	48,400.72	373,920.85	19,526.36	970	18.80	1,248,217.75	28,874.36	.0231	51,610
Forest	147,893.59	5,908.93	100,125.07	5,412.43	79	11.65	47,768.52	496.50	.0104	6,782
Grant	956,801.66	26,195.21	288,563.19	17,024.49	787	20.18	668,238.47	9,170.72	.0137	39,007
Green	570,381.90	15,516.72	144,401.31	7,980.36	340	15.71	425,980.59	7,536.36	.0177	21,641
Green Lake	400,589.27	11,525.41	139,724.55	7,875.03	144	9.29	260,864.72	3,650.38	.0140	15,491
Iowa	627,986.29	16,867.19	150,680.15	8,895.72	498	21.91	477,306.14	7,971.47	.0167	22,467
Iron	336,418.72	13,978.84	202,195.62	11,983.77	124	14.93	134,223.10	1,995.07	.0149	8,306
Jackson	103,015.73	3,101.63	40,567.34	2,337.27	72	4.22	67,448.39	764.36	.0113	17,075
Jefferson	1,252,863.71	45,014.86	616,458.39	36,279.98	653	19.03	636,405.32	8,734.88	.0137	34,306
Juneau	180,649.67	5,888.39	80,465.03	4,827.28	147	7.51	100,184.64	1,061.11	.0106	19,561
Kenosha	2,990,616.86	124,262.27	1,423,177.38	78,957.75	1,089	33.07	1,567,439.48	45,304.52	.0289	32,929

Kewaunee	230,402.45	6,960.23	89,028.47	5,252.78	129	7.69	141,373.98	1,707.45	.0121	16,784
La Crosse	2,375,197.92	81,991.40	1,011,513.42	52,897.99	1,015	23.08	1,363,684.50	29,093.41	.0213	43,996
Lafayette	406,766.68	10,609.99	103,232.60	6,349.60	335	16.69	298,534.08	4,260.39	.0143	20,075
Langlade	221,768.41	6,187.37	104,313.40	5,053.73	179	10.49	117,455.01	1,133.64	.0097	17,062
Lincoln	446,580.82	15,968.62	227,030.27	12,147.07	200	10.49	219,550.55	3,821.55	.0174	19,064
Manitowoc	1,158,861.61	45,680.34	716,249.72	39,985.35	442	9.83	442,611.29	5,694.99	.0129	44,978
Marathon	1,162,497.56	39,907.97	562,302.56	28,460.67	683	12.41	600,195.00	11,447.30	.0191	55,054
Marinette	963,031.73	38,180.56	481,596.36	25,236.79	325	9.61	481,435.37	12,943.77	.0269	33,812
Marquette	121,301.58	5,214.35	78,377.00	4,663.56	40	3.72	42,924.58	550.79	.0128	10,741
Milwaukee	42,637,243.27	1,481,499.92	18,029,243.74	947,103.01	17,444	40.27	24,607,999.53	534,396.91	.0217	433,187
Monroe	300,785.13	10,248.63	140,559.27	8,244.08	170	5.89	160,225.86	2,004.55	.0125	28,881
Oconto	183,436.91	3,777.81	56,851.00	2,375.38	192	7.48	126,585.91	1,402.43	.0111	25,657
Oneida	427,935.88	16,308.61	266,206.15	14,208.65	180	15.74	161,729.73	2,099.96	.0130	11,433
Outagamie	1,956,716.37	71,378.45	1,011,557.32	54,178.76	767	15.62	945,159.05	17,199.69	.0182	49,102
Ozaukee	363,840.60	12,043.83	170,197.00	9,828.08	287	16.76	193,643.60	2,215.75	.0114	17,123
Pepin	56,527.95	1,970.41	26,529.00	1,517.26	31	4.09	29,998.95	453.15	.0151	7,577
Pierce	272,118.41	7,040.29	89,080.00	4,963.30	239	10.83	183,038.41	2,076.99	.0113	22,079
Polk	329,430.89	13,319.10	229,517.89	12,177.58	94	4.40	99,913.00	1,141.52	.0114	21,367
Portage	400,041.00	10,142.02	126,998.00	6,666.58	280	9.05	273,043.00	3,455.44	.0127	30,945
Price	179,436.35	3,793.68	110,306.00	3,059.32	98	7.10	69,130.35	734.36	.0106	13,795
Racine	3,795,282.59	164,782.08	1,815,487.15	107,912.99	1,075	18.72	1,979,795.44	56,869.04	.0287	57,424
Richland	216,082.43	5,149.16	44,204.00	2,423.81	196	10.42	171,878.43	2,725.35	.0159	18,809
Rock	3,167,750.66	97,775.61	1,198,421.81	70,046.78	1,674	30.14	1,969,328.85	27,728.83	.0141	55,538
Rusk	141,107.58	8,384.34	96,999.00	7,931.56	92	8.24	44,108.58	452.78	.0103	11,160
St. Croix	471,118.94	16,284.60	220,480.23	12,811.86	275	10.61	250,638.71	3,472.74	.0139	25,910
Sauk	862,524.98	27,590.38	189,398.00	10,576.85	479	14.57	673,126.98	17,013.53	.0253	32,86
Sawyer	49,523.53	1,298.90	14,049.00	831.51	37	5.94	35,474.53	467.39	.0132	6,227
Shawano	199,536.82	6,275.52	109,500.00	5,206.37	130	4.08	90,036.82	1,069.15	.0119	31,884
Sheboygan	1,977,222.92	70,221.40	1,023,944.01	56,811.84	944	17.20	953,278.91	13,409.56	.0141	54,888
Taylor	159,402.00	5,103.26	86,970.00	4,378.94	90	6.60	72,432.00	724.32	.0100	13,641
Trempealeau	233,461.18	8,648.00	124,115.00	7,314.48	125	5.45	109,346.18	1,333.52	.0122	22,928
Vernon	331,193.12	10,621.78	66,430.00	3,883.38	224	7.97	264,763.12	6,738.40	.0255	28,116
Vilas	229,366.05	10,980.70	95,037.00	5,498.11	68	11.30	134,329.05	5,482.59	.0408	6,019
Walworth	936,122.04	23,536.67	232,731.00	13,517.02	874	29.51	703,391.04	10,019.65	.0142	29,614
Washburn	52,795.37	1,563.99	21,717.00	1,236.64	54	6.59	31,078.37	327.35	.0105	8,196
Washington	849,965.87	26,002.72	330,175.00	19,564.46	631	26.53	519,790.87	6,438.26	.0124	23,784
Waukesha	1,015,542.82	30,589.18	386,723.50	21,403.86	563	15.17	628,819.32	9,185.32	.0146	37,100
Waupaca	370,907.59	9,788.04	130,422.59	6,640.77	258	7.87	240,485.00	3,147.27	.0131	32,782
Waushara	185,617.62	6,220.45	90,893.00	4,849.87	93	4.92	94,724.62	1,370.58	.0145	18,886
Winnebago	3,255,876.03	114,555.05	1,398,316.06	77,748.29	1,207	19.43	1,857,559.97	36,808.76	.0198	62,116
Wood	805,189.00	24,097.05	446,784.00	18,902.21	300	9.81	358,405.00	5,194.84	.0145	30,583
Total	$100,845,862.82	$3,501,161.46	$44,311,315.33	$2,392,454.44	46,582	19.96	$56,534,547.49	$1,103,707.02	0.0196	2,333,860

These figures are noteworthy in many respects. It has repeatedly been charged by critics that although a number of American states have experimented with the income tax, in no case has it proved a success. The answer has been that the income tax was never given a fair trial by any American state. This answer now proves to be essentially correct. The Wisconsin income tax probably exceeds many times over the state income taxes of a general kind collected in all other states of the Union. The largest of these state income taxes of which we have a knowledge, except during the civil war period, was collected in Virginia in the fiscal year 1910–1911. It amounted to $129,429. This is less than the income tax assessed in Racine county alone.

The Wisconsin income tax makes a very favorable showing when compared with the federal income taxes which have been levied from time to time. The first federal income tax, imposed during the civil war, yielded in the first year, 1863, for the whole United States $2,741,858, or only 78.3 per cent of the amount raised last year in the state of Wisconsin alone. In the first year of the present federal income tax, known as the special excise tax on corporations, the whole amount assessed was $27,290,767.43, of which $592,217.42 was upon Wisconsin corporations. In the second year the amount assessed upon Wisconsin corporations was $484,563.23, or only 20.3 per cent of the amount assessed upon corporations by the *state* income tax. It should be remembered that the federal law covers the income from railroads, public utility corporations, insurance companies and national banks which are not subject to the state income tax.

Personal Tax Offset.—The preceding figures represent the amount of income tax assessed. What reduction will be caused by the personal tax offset cannot now be stated. The offset provided for by law plainly seems to be the personal taxes levied in 1912. Inasmuch as the personal taxes of 1912 had not been computed when this report went to press, it was impossible to determine exactly what per cent of the income tax assessed would be offset by personal property taxes. It seems not unreasonable, however, to assume that the personal tax of the average income taxpayer would not be larger in 1912 than in 1911. It is true that remarkable improvement in the assessment of personal property has taken place, but this is probably counterbalanced

by the exemption of those classes of personal property mentioned above. In the following figures, therefore, the personal tax of 1911 has been used as a fair measure of the personal tax offset of 1912.

On this assumption the net yield of the income tax over and above the personal tax offset will be between 60 and 65 per cent of the amount assessed, or from $2,100,000 to $2,275,000, in round figures. Careful investigation in twelve counties, excluding Milwaukee county, shows a personal tax offset in the case of corporations of 39 per cent, and in the case of individuals of 34 per cent. It is known that in Milwaukee county the offset will be less than this in the case of individuals, probably not more than 20 per cent, but more in the case of corporations, probably close to 50 per cent. All the figures agree in suggesting an offset for individuals and corporations together of from 35 to 40 per cent, say, 37 per cent. This would make the net yield of the income tax about $2,200,000. Of this amount:

The share of the state will be	$220,000
The share of the counties will be	440,000
The share of the towns, cities and villages will be	1,540,000
Total	$2,200,000

Urban and Rural Communities.—The results of the first assessment make it clear that the income tax is primarily an urban tax. Over 40 per cent of the entire tax is assessed in Milwaukee city alone and more than 80 per cent in the seventeen counties containing cities of the second, third and fourth classes. Measured by income, there are plainly more persons capable of paying taxes in the city than in the country. Excluding corporations, about 4.03 per cent of the population is assessed for income tax in Milwaukee county—about one family in every five. In the sixteen counties having second and third class cities, about 2 per cent of the population is assessed for income tax, or one family in every ten. In the fifty-four remaining counties, only 1.1 per cent of the population is subject to the income tax, or something over one family in every twenty. The typical city taxpayer also pays a larger income tax than the rural taxpayer. Thus in Milwaukee city the average income tax assessed is $30.63, while in the sixteen counties it is $23.40, and in the other counties, $14.95. Suggestive figures on this aspect of the income tax are given in table

III, page 32. In this table the results for Milwaukee county and for the sixteen counties containing cities of the second and third classes are contrasted with aggregates for the state and with totals for the other fifty-four counties.

TABLE III.

INCOME TAX ASSESSED 1912.

	The state.	Milwaukee county 1 county having city of first class.	Ashland, Brown, Dane, Douglas, Eau Claire, Fond du Lac, Kenosha, La Crosse, Manitowoc, Marathon, Marinette, Outagamie, Racine, Rock, Sheboygan, and Winnebago 16 Counties having cities of 2nd and 3rd classes.	Remaining 54 counties of the state.
TOTAL STATISTICS, CORPORATION AND INDIVIDUAL.				
1. Total income tax	$3,501,161 46	$1,481,499 92	$1,327,387 09	$692,274 45
2. Per cent total tax to state total.,	*100.00%*	*42.32%*	*37.91%*	*19.77%*
INDIVIDUAL INCOME TAXES.				
1. Number of taxpayers	46,582	17,444	16,426	12,712
2. Amount of taxes	$1,108,707 02	$534,396 91	$384,314 71	$189,995 40
3. Average tax per taxpayer	23 80	30 63	23 40	14 95
4. Per cent. of total tax in each group of counties	*100.00%*	*48.29%*	*34.66%*	*17.14%*
CORPORATION INCOME TAXES.				
1. Amount of taxes	$2,392,454 44	$947,103 01	$943,072 38	$502,279 05
2. Per cent of total tax in each group of counties	*100.00%*	*39.59%*	*39.42%*	*20.99%*
POPULATION 1910	2,333,860	433,187	775,088	1,125,585
Per cent. of taxpayers to population, excluding corporations..	*1.996%*	*4.028%*	*2.119%*	*1.129%*

This concentration of the income tax in cities emphasizes both the strength and weakness of the income tax. Its weakest feature perhaps arises from the fact that a large part of the income of the farmer is non-monetary. The typical farmer raises, even at this time, a considerable amount of the produce which he consumes; and although this is theoretically taxable, it is difficult to measure it in money and add it to his net money income. Moreover, most farmers in Wisconsin have in past years taken a large part of their compensation in the form of a general

increase in the value of their farms. A man buys 160 acres at $8,000, farms and improves it for fifteen or twenty years and then sells it for $16,000, taking a relatively small compensation in the meanwhile in order to build up his capital assets from $8,000 to $16,000. In the case of the mercantile or manufacturing concern with an accurate accounting system, the yearly improvement, if paid for from earnings, would show as net profit and be taxable as such. In the case of the farmer this annual increment escapes, because the farmer's accounts are too simple to record and measure it.

While this defect of the income tax must be acknowledged and clearly faced, it is of small importance. In the first place, with the liberal exemptions provided in the Wisconsin income tax, few farmers would be subject to any tax, even though their receipts and expenditures were recorded with absolute accuracy. In the second place, almost all the income tax goes back to the political subdivision in which it is collected. If a rural town has no income tax assessed within its borders, it gets little benefit from the income tax. Seventy per cent of the proceeds of the tax is retained in the local district in which collected; and the 20 per cent which goes to the county comes back to the local subdivisions, to a large degree, in the form of reduced county taxes. The rural district benefits slightly by the 20 per cent which goes to the county. It contributes less to this quota than it receives in the form of reduced county taxes on property. But the difference is slight and not unjust because, after all, the greater share of taxpaying ability is found in the cities. This is particularly true of that form of personal ability which the income tax is specifically designed to reach. Moreover, under the personal property tax the ratio of assessed to true value is higher in the country than the city districts; and real estate, which is relatively well taxed everywhere, constitutes a much larger share of the total wealth of the farmer than of the city man. While it is true, therefore, that the income tax works better in the city than in the country, it is also true that the defect is a small one and is counter-balanced by defects of the property tax working in the other direction. The income tax and the property tax mutually correct each other's deficiencies. The two must always be considered together.

II. Detailed Statistics for Selected Counties.

General Results.—In order to obtain a clear understanding of the details of the income tax, the twelve counties of Chippewa, Dodge, Rusk, Dane, Marathon, Winnebago, Oconto, Vernon, La Crosse, Racine, Douglas and Fond du Lac were selected for more thorough investigation. 11,935 persons were assessed for income tax in these counties, in the amount of $817,152.78[1]. The net yield of the income tax in these twelve counties is estimated at $512,563.54, or 62.72 per cent of the amount assessed. The proportionate yield in the case of corporations is 61.04 per cent, and in the case of individuals 66.34 per cent. Of the 11,935 persons assessed for income tax, 3,500 had personal taxes in 1911 which exceeded their income taxes of 1912. Omitting this group of 3,500 from consideration for a moment, the figures pertaining to the remaining "contributors" are given in table IV following. The actual contributors having taxable incomes under $5,000 constitute more than 93 per cent of the total contributors, but will pay only 20 per cent of the net tax. Contributors having taxable incomes of $5,000 or more constitute only 6.47 per cent of the number of contributors but will pay practically 80 per cent of the net tax.

TABLE IV.

CONTRIBUTORS TO THE INCOME TAX AND THE AMOUNTS AND PROPORTIONS PAID BY EACH CLASS.

CHIPPEWA, DODGE, RUSK, DANE, MARATHON, WINNEBAGO, OCONTO, VERNON, LA CROSSE, RACINE, DOUGLAS AND FOND DU LAC COUNTIES.

	No.	Income tax assessed.	Personal property tax 1911.	Net increased tax 1912.	Per cent of total.
Total	8,435	$625,452 08	$112,888.54	$512,563 54	100.00
Corporations	1,055	$411,611 61	$71,473 35	$340,138 26	66.36
Farmers	199	2,405 88	779 61	1,626 27	.32
Merchants and jobbers	934	17,477 23	5,397 53	12,079 70	2.36
Manufacturers	569	66,709 40	10,876 56	55,832 84	10.89
Professors and other acad. pursuits	559	8,692 75	722 39	5,970 36	1.16
Lawyers	214	9,624 31	1,581 49	8,042 82	1.57
All other professions	835	34,375 89	8,607 82	25,768 07	5.03
All other occupations	4,070	76,555 01	13,449 79	63,105 22	12.31
Persons with taxable incomes:					
Under $5,000	7,889	137,313 50	33,765 16	103,548 34	20.20
$5,000 and over	546	488,138 58	79,123 38	409,015 20	79.80

[1] This figure will be found to differ slightly from the aggregate for the twelve counties as taken from table II. In order to be ready for this report the analysis of the twelve counties had to be made before the final revision of the figures. The statistics from this point on in the report are essentially correct in every particular but differ slightly from the revised totals given in table II.

Results by Occupations.—Table IV shows how the various occupations will contribute to the net tax. Corporations will pay something over 66 per cent; farmers less than one-third of 1 per cent; manufacturers—not classed as corporations—nearly 11 per cent, and professional classes nearly 8 per cent.

The impression has become general that public officials are not subject to the income tax. This is a mistake. Public officials form an important group of taxpayers, particularly in Dane county, and statistics indicating their contribution to the net yield of the income tax are given in table IV, following. In this table it appears that the income tax on firms and individuals in Dane county will yield net after the personalty offset about $32,510.74. Of this amount public officials and employes will pay nearly 7 per cent and professors or educators nearly 16 per cent. The average taxpayer in the county will pay $14.53 tax; the average public official $25.34, and the average public employe $5.68; the average professor or educator $14.21. These figures are net after the offset has been deducted.

According to the state census of 1905, the farmers of Dane county outnumbered the public employes, professors and teachers combined more than six to one. However, only 68 farmers in Dane county, as contrasted with 624 public employes and professors, will pay an income tax; and the farmers will pay only $877.35, while the public officials, employes, professors and teachers will pay $7,224.44, more than eight times as much. Only a trifle more than 1 per cent of the farmers will pay any income tax after their personal property is deducted, but more than 57 per cent of the public employes noted will pay an income tax.

TABLE V.

DANE COUNTY INCOME TAX ON FIRMS AND INDIVIDUALS.

Occupation.	Number.	Income tax assessed.	Personalty offset.	Net income tax.	Per cent of each group to total.	Average tax per individual.
Total, All Occupations.....	2,237	$38,534.43	$6,023.69	$32,510.74	100	$14.53
Farmers	68	$1,142.35	$265.00	$877.35	3	$12.90
Mercantile pursuits.....	274	6,656.61	1,950.18	4,706.43	14	17.18
Manufacturers.....	65	4,613.39	616.18	3,997.21	12	61.49
Public officials.....	36	1,073.35	161.18	912.17	3	25.34
State and other public employes.....	223	1,356.39	90.03	1,266.36	4	5.68
Professors and other academic pursuits.....	355	5,651.46	605.52	5,045.94	16	14.21
Capitalists and bankers....	33	1,766.88	296.81	1,370.07	4	41.52
Other professions.....	270	8,179.58	947.64	7,241.94	22	26.82
Brokers, salesmen, etc.....	207	2,139.99	258.90	1,881 09	6	9.09
Bookkeepers and other clerks.....	179	549.61	29.80	519.81	2	2.90
Mechanics and tradesmen.	262	1,145.15	152.25	992.90	3	3.79
Laborers.....	7	13.71	.....	13.71	.....	1.96
All others.....	258	4,245.96	560.20	3,685.76	11	14.29

Income Tax Contrasted with Personal Property Tax.—Another important aspect of the income tax is brought out in table VI, following, in which the entire body of income tax payers has been divided into groups and the income tax contrasted with the personal property tax assessed against the same groups in 1911. This table, it should be noted, is somewhat different from practically all the other tables given, inasmuch as the entire personal property tax is included whether it offsets the income tax completely or partially. The object of this table is not to show the net yield of the income tax but to contrast the operation of the income tax with the operation of the personal property tax. To facilitate this contrast, the taxpayers have been grouped according to the sizes of their taxable incomes.

The most striking feature of the table is the fact brought out in the figures at the bottom of the table, that the persons in these counties whose incomes were too small to bring them within the range of the income tax paid considerably more personal property tax than the entire group of persons subject to the income tax. If the income tax furnishes a fair measure of taxable capacity, these people should not have been assessed for personal taxes at all.

The main body of the table makes a similar showing. The average personal property tax of persons having taxable in-

come under $1,000 exceeded the average income tax of these persons by $4.00. The average personal property tax of taxpayers in the group $1,000 to $1,999, exceeded the average income tax by $2.00. In the larger groups, the average income tax was larger than the average personal property tax. These figures emphasize the strikingly unfair operation of the personal property tax. It falls heaviest upon the people who, measured by ability and the test of income, should pay little or nothing except upon real estate. The income tax, by imposing a heavier burden upon the richer members of the community, has obviously tended to relieve this situation.

The figures contrasting the income with the personal property tax are given in table VI. The contribution of the various classes of income tax payers to the net yield of the tax after deduction of personal property offsets is shown in table VII, together with more detailed statistics of the various occupations than were presented in table IV.

TABLE VI.

INCOME AND PERSONAL PROPERTY TAXES OF INDIVIDUALS AND CORPORATIONS ASSESSED FOR INCOME TAX CLASSIFIED BY AMOUNT GROUPS OF ASSESSED INCOME.

SUMMARY OF DODGE, CHIPPEWA, RUSK, MARATHON, DANE, RACINE, OCONTO, LA CROSSE, VERNON, DOUGLAS, FOND DU LAC AND WINNEBAGO COUNTIES.

	No.	Income tax.	Personal tax 1911	Average each.		Increase or decre'se.
		Amount.	Amount.	Income tax.	Personal tax.	
Total all groups.....	11,935	$817,152.78	$646,860.03	$68	$54	+ 14
Income under 1000.	7,890	$37,133.05	$73,427,64	$5	$9	— 4
" 1000-1999....	1,910	42,968.10	46,359.62	22	24	— 2
" 2000-2999....	786	40,343.58	39,918.42	51	50	+ 1
" 3000-3999....	406	33,683.54	31,455.51	83	77	+ 6
" 4000-4999....	234	31,524.53	29,713.46	134	127	+ 7
" 5000-9999...	411	92,937.16	84,137.60	226	204	+ 22
" 10000 and over.....	298	538,562.82	341,847.78	1,806	1,147	+659
Personal property tax paid by those not assessed for income tax.....			$791,656.93			

TABLE VII.

STATISTICS OF CORPORATION AND INDIVIDUAL INCOME TAXES.

SUMMARY OF WINNEBAGO, DODGE, RUSK, OCONTO, DOUGLAS, FOND DU LAC, LA CROSSE, DANE, RACINE, MARATHON, CHIPPEWA AND VERNON COUNTIES.

	Number where tax is entirely offset by personal tax.	Subject to an increased tax.					
		No.	Assessed income.	Income tax.	Personal prop. tax 1911.	Increase.	% each group to total.
Classified by Amount Groups of Income.							
Total.....	3,500	8,435	$17,639,596	$625,452.08	$112,888.54	$512,563.54	100.00
Under $1,000.....	2,477	5,413	$2,050,865	$26,265.86	$3,994.82	$22,271.04	4.34
$1,000— 1,999.....	525	1,385	1,933,166	31,757.73	8,065.20	23,692.53	4.62
2,000— 2,999.....	193	593	1,448,639	30,257.33	7,959.00	22,298.33	4.35
3,000— 3,999.....	91	315	1,087,469	25,964.86	7,752.54	18 212.32	3.55
4,000— 4,999.....	51	183	807,302	23,067.72	5,993.60	17,074.12	3.33
5,000— 9,999.....	96	315	2,127,043	70,163.57	17,120.97	53,042.60	10.35
10,000 and over....	67	231	8,185,112	417,975.01	62,002.41	355,972.60	69.46
Classified by Occupation.							
Total.....	3,500	8,435	$17,639,596	$625.452.08	$112.888 54	$512,563.54	100.00
Corporations.....	385	1,055	$7,520,776	$411,611.61	$71,473.35	$340,138.26	66.36
Farmers.....	512	199	189,714	2,405.88	779.61	1,626.27	.32
Merchants and jobbers.....	1,148	934	1,258,951	17,477.23	5,397.53	12,079.70	2.36
Manufacturers....	181	561	2,050,502	66,709.40	10,876.56	55,832.84	10.89
Editors and publishers.....	35	62	94,906	1,560.28	306.92	1,253.36	.24
Public officials other than judges.....	25	116	122,627	1,440.30	219.87	1,220.43	.24
Judges.....	6	23	65,439	873.12	236.93	636.19	.12
Public employment.....	13	245	142,877	1,528.60	122.15	1,406.45	.27
Professors and other academic pursuits.....	25	559	531,074	6,692.75	722.39	5,970.36	1.16
Lawyers.....	65	214	526,101	9,624.31	1,581.49	8,042.82	1.57
Capitalists and bankers.....	39	125	600,860	19,253.42	5,955.95	13,297.47	2.59
Other professions.	206	509	694,344	11,248.77	1,888.15	9,360.62	1.82
Brokers, real estate, etc.....	140	762	1,027,611	21,901.59	5,227.74	16,673.85	3.25
Bookkeepers, stenographers and other clerical pursuits.....	87	872	513,027	8,181.14	583.40	7,597.74	1.48
Mechanics and artisans.....	107	792	351,156	3,720.59	434.24	3,286.35	.64
Trades other than mechanical.....	99	300	285,382	4,789.76	535.10	4,254.66	.83
Laundries and other cleaning...	10	15	11,128	120.06	23.46	96.60	.02
Public service and carriers.....	101	130	176,423	2,559.69	486.25	2,073.44	.40
Laborers.....	10	91	24,797	248.10	18.13	229.97	.04
Estates—trustees.	18	68	141,129	2,477.03	225.66	2,251.37	.44
Retired or unoccupied.....	207	461	917,580	22,057.05	4,345.93	17,711.12	3.46
Occupations unknown.....	58	268	243,415	4,976 00	858.79	4,117.21	.80
Public amusements.....	14	21	30,230	378.54	126.18	252.36	.05
Lumbering.....	9	45	119,547	3,616.86	462.76	3,154.10	.62
Mining.....	2	.....	.....	.....	.....	.....	.....

III. Statistics of Larger Taxpayers from Every County in the State.

While time has not permitted an exhaustive study for each county of the state, it has been possible to secure a small body of statistics from each county; these figures are presented in tables VIII and IX, following. Assuming these statistics to be representative, it appears plain that the personalty offset benefits the smaller taxpayer more than the larger taxpayer. The net yield of the tax for the group with incomes under $1,000 is, for instance, only 36.3 per cent, i. e., this group receives an offset of 63.7 per cent. The net yield for the group with incomes over $10,000, however, is 78.6 per cent. Here the offset is only 21.4 per cent. The figures showing the average income tax are also significant. In the lowest group the average tax is only $2.08, in the highest group it rises to 882.50.

TABLE VIII.

STATISTICS OF LARGER TAXPAYERS SELECTED FROM EVERY COUNTY IN THE STATE.

FIRMS AND INDIVIDUALS ONLY.

	Total tax assessed.		Those Having More Income Tax Than Personal Property Tax.					
						Net Yield of Income Tax.		
	Number.	Amount.	Number.	Tax assessed.	Personalty offset.	Amount.	% of net tax to total tax ass'd.	Average tax per taxpayer.
Total.....	2,443	$430,621.86	1,695	$421,238.98	$82,622.21	$338,616.77	73.5	$138.60
Under $1,000.....	366	$2,098.07	190	$1,118 30	$356.37	$761.93	36.3	$2.08
$1,000--1,999.....	646	9,898.8	398	6,206.47	2,155.00	4,051.47	40.9	6.27
2,000—2,999.....	384	11,216.99	262	7,695.20	2.245.59	5.447.61	48.5	14.19
3,000—3,999.....	227	10,102.44	160	7,238.64	2,115.39	5,123.25	50.7	22.57
4.000—4,999.....	160	10 187.49	117	7.504 65	2,404.73	5.099.93	50 1	31.87
5,000—9,999.....	328	44 421.12	257	35.539.37	10,391.52	25,147.85	56.6	76.67
10,000 and over....	33	372,696.86	311	355,938.35	62,953.61	292,984.74	78.6	882.50

TABLE IX.

SAMPLE STUDY OF LARGER INCOMES CLASSIFIED BY OCCUPATION.

TOTAL 71 COUNTIES.

	NUMBER.				INCOME TAX		
	Assessed.	Pay tax after offset.	Per cent pay tax	Amount assessed.	Net yield after offset.	Per cent net yield.	Average net tax per taxpayer assessed.
TOTAL	2,443	1,695	69.38	$460,621 86	$338,616 77	73.52	$138 60
Farmers	273	120	43.96	$23,695 02	$18,004 90	75.98	$65 95
Merchants and jobbers	687	343	49.93	86,201 29	49,045 80	56.90	71 40
Manufacturers	275	236	85.82	101,160 36	80,198 03	79.28	291 61
Editors and publishers	19	15	78.94	2,812 12	2,147 12	76.36	113 00
Public officials other than judges	13	12	92.32	7,877 65	5,905 56	74.97	454 27
Judges	16	15	93.74	1,482 79	631 31	42.58	39 46
Public employment	6	6	100.00	993 29	954 59	96.10	159 10
Prof. and other academic pursuits	29	25	86.24	1,647 50	1,385 70	84.13	47 78
Lawyers	138	119	86.21	22,052 45	15,918 94	72.18	115 35
Capitalists and bankers	176	147	83.52	36,302 26	25,275 06	69.62	143 60
Other Professions	172	141	81.98	16,308 50	13,125 59	80.50	76 30
Brokers, salesmen and solicitors	165	147	89.12	38,547 99	30,158 48	78.25	182 76
Bookkeepers, stenographers and other clerical pursuits	52	48	92.32	1,632 32	1,335 30	81.81	25 68
Mechanics and artisans	41	38	92.70	1,293 48	1,154 91	89.31	28 17
Trades other than mechanical	48	38	79.17	5,487 28	4,644 39	84.65	96 76
Laundries and other cleaning	3	2	66.67	123 22	78 49	63.70	26 16
Public service, carriers	56	38	67.88	5,919 16	4,624 76	78.15	82 59
Laborers	7	2	28.58	167 39	9 20	5.50	1 31
Estates	11	8	72.73	3,034 90	849 17	27.98	77 19
Lumbering	30	25	83.34	2,983 12	2,177 86	73.01	72 59
Mining	14	13	92.87	2,529 86	2,272 33	89.83	162 31
Retired or unoccupied	129	98	75.96	33,259 23	24,412 47	73.40	189 22
Occupation not stated	72	49	68.06	55,389 96	46,663 21	84.25	648 10
Public amusements	11	10	90,92	9,720 72	7,643 60	78.64	694 90

In table VIII the figures are classified according to occupations. Of the 273 farmers listed, 153 escaped the income tax entirely by reason of the personal property taxes which they paid; while only one judge out of 16, one public official out of 13, 4 professors out of 29, and 19 lawyers out of 138 paid enough personal property tax to wipe out their income taxes. Only 2 of the 7 laborers listed have any income tax to pay, but it is noticeable that 5 of these laborers, who have an aggregate income tax of $158.19, paid $724.82 personal property taxes in 1911. If the income tax furnishes a proper measure of taxable capacity, farmers and those laborers subject to taxation have been greatly over-taxed in the past.

Administrative Aspects of the Income Tax.

Cost of Administration.—The cost of administering the income tax in the first and most expensive year of its administration will probably be very close to $100,000; and the net expense, over and above the former cost of the supervisors of assessment, approximately $45,000. This constitutes 1.28 per cent of the amount of tax assessed and makes the Wisconsin income tax one of the cheapest taxes known. It costs less to administer than the internal revenue taxes of the federal government, possibly the cheapest tax of a general kind collected in the United States.

The Assessors of Incomes.—The success of the income tax as applied to individuals, is ascribable principally to the work of the assessors of incomes. Selected through the civil service commission, without reference to political considerations, they were relieved of that local pressure which, in so many places, has brought about the failure of the property tax. The assessors were directed to be tactful and fair but firm. Considering the difficulties of their work, they have made an enviable record, and nowhere has the charge been made that they revealed information which the law makes confidential, or displayed in their treatment of taxpayers any evidence of partiality.

Honesty of Taxpayers.—A year's experience with the income tax serves to establish the refreshing fact that the average taxpayer is honest and will tell the truth provided assessors will take the trouble to ask him direct questions and provided the rate of taxation is reasonable. The failure of the personal property tax has been due very largely to the fact that on certain classes of personal property, particularly on securities, the tax rate was confiscatory. In a community where the tax rate is 2 per cent, a 5 per cent bond or mortgage will pay, if taxed, 40 per cent of its net income in taxes. The maximum rate under the Wisconsin income tax is 6 per cent, whereas the old property tax frequently took from 20 to 60 per cent of the net income from securities when the assessor happened to find them. As a rule the assessor did not find them and because of this fact the income tax at the lower rate will yield very much more revenue than the property tax at an exorbitantly high rate.

Collection at the Source.—Before the enactment of the Wisconsin income tax law it was frequently stated that no income tax could succeed in the United States which did not avail itself of the device of collection at the source. This criticism carried with it the implication that the state income tax could not make much use of this device. The operation of the Wisconsin law proves the contrary. About 68 per cent of the entire tax will be collected from corporations, i. e., at the source, and a considerable additional amount from unincorporated firms and business concerns. Just how much will be collected from firms and copartnerships cannot be stated, but it will certainly not be less than 7 per cent, and in that event three-quarters of the Wisconsin income tax will be collected at the source where the earnings originated.

Moreover, much use has been made of the similar device of collecting information at the source. Every business concern in Wisconsin was asked to report all the stockholders and all the officers and employes receiving as much as $700 a year, living in Wisconsin, with the dividends, salaries or wages paid to them respectively. Persons who claimed a deduction for interest paid out were required to give the name and address to whom such interest had been paid. In this way a large amount of valuable information concerning persons subject to the income tax was acquired. Finally, corporation bonds were defined as an interest in the business and the tax—in effect—assessed directly to the corporation, the corporation being authorized to deduct the tax from the interest when it had not covenanted to pay the tax itself.

State versus Federal Income Tax.—In the opinion of those who administered the Wisconsin income tax, at least, a state income tax has, as contrasted with a federal income tax, more natural advantages than disadvantages. It may command ten times the local knowledge when properly administered because it can have ten times the number of assessors by combining the machinery of the general tax system with the machinery of the income tax. In Wisconsin taxpayer A is used to check the accuracy of taxpayer B. What is outgo to B is income to A. B is asked to state with respect to certain important items of outgo the names and addresses of the recipients. There is thus a cross-check of which the federal government could probably not avail itself.

With one group of taxpayers the federal government has a great natural advantage: the large interstate corporations, only a part of whose business is transacted in Wisconsin. But the Wisconsin income tax has, on the whole, encountered very little difficulty with this class of taxpayers, and such difficulty as has been encountered can be avoided very largely in subsequent years. The large interstate corporations usually keep their books in such a way as to make it possible to apportion or allocate fairly to the state of Wisconsin its share of the earnings. Their stock is frequently listed on the exchanges and their financial operations are publicly reported. Moreover, these corporations are as a rule above petty deception. The large foreign corporations have dealt quite as fairly with the Wisconsin income tax as any other class of taxpayers. It is just as easy to assess the big interstate corporations under the income tax as it is under the property tax—a fact that will be appreciated if one stops to think how "property" gets its value, and the degree to which our state laws insist that "franchises" "corporate excess" and all "intangible properties" of corporations shall be assessed and taxed under property taxes. Yet nobody proposes to do away with the state taxation of the property of interstate corporations.

Is the Income Tax Inquisitorial?—The inquisitorial features of the Wisconsin income tax have been greatly exaggerated. Assessors and tax officials are punishable by drastic penalties for revealing information either directly or indirectly and not a single complaint of violation of confidence has been made to the Tax Commission.

Furthermore, the assessment and tax rolls, which are the only records made public in this connection, reveal nothing not already known to credit agencies and the business world generally. A man's taxable income and the tax thereon are matters of public record, but that is all. Nothing is known of his exemptions or of his nontaxable income, or of his income derived from business transacted without the state, or of his income derived from stocks and bonds taxed directly to the corporations from which received.

No tax measured by ability to pay can be administered without asking searching questions. The more thoroughly these questions are asked the more certain honest people can be that the tax dodgers are paying their fair share. If taxation is confined to visible things alone, the assessor can get along without

asking questions; but such procedure would exempt from taxation many of the wealthiest and ablest members of the community. When an assessor is trying to ascertain a man's income or the value of his personal property, he must ask either the man himself or the man's neighbors. The second method is obnoxious. The open way is to put the taxpayer himself on record. This procedure is the honest man's only protection against the tax dodger.

The old personal property tax would have been much more inquisitorial than the income tax if it had been enforced. It failed largely because questions were not asked; and its failure resulted in great financial burdens being shifted from the shoulders of certain classes of the community on to the shoulders of other classes far less able to bear them. The income tax will be a farce if searching questions are not asked and answers insisted upon; and it is earnestly hoped that no project limiting the number or kind of reasonable questions which the assessor may ask will be entertained by the legislature.

CHAPTER IV

PROPOSED AMENDMENTS TO THE INCOME TAX LAW

Considering the lack of precedents and the complexity of the subject covered, the Income Tax Act as a whole has proved an effective working measure. No radical change in the general scope of the law seems necessary or desirable. As might be expected, however, experience has disclosed a number of minor defects which slight amendments would greatly improve. Exact statistics as to the operation of the law and the amount of net revenue it will yield cannot be known until the 1912 taxes shall have been paid, and in the meantime the 1913 assessment must be undertaken. For that reason the Commission confines its recommendations to such amendments as will insure greater certainty and simplicity in the administration of the act. It is hoped that these changes may be made early in the legislative session so that taxpayers and administrative officers may have the benefit of them for the 1913 assessment. If more radical changes should prove necessary, after the complete result of the first year's administration is known, they can be considered by the legislature before final adjournment and made applicable to the assessment of the following year.

Three Year Limitation.—The three year limitation in paragraph (d) of section 1087m—2. 2 relating to "profits derived from stock or from the purchase and sale of any property or other valuables, acquired within three years previous" has proved an obstacle rather than an aid in reaching income of the character specified. As applied to real estate and land companies, the effect has been to relieve a large part of the profit derived from that class of business from the operation of the tax. The rigid three year limit prevents the application of the law as to profits derived from property held beyond that length of time, and offers an inducement to defer transactions otherwise con-

summated until the expiration of the period. It is believed that this paragraph would be materially improved by striking out the three year limitation, leaving all profit derived in this manner subject to taxation under the general principles of accounting. There is precedent for this course in the federal Corporation Tax Act and the rules of the internal revenue department relating thereto. There is no limitation of time in the clause relating to the profits derived from transactions of this character in the federal act, and the rules adopted for its administration provide for a prorating of the profits over the number of years the property has been held and assigning to the assessment year its proportionate part of such profit.

Other Income Defined.—The language of subdivision (f) of the same section is inapt to convey the meaning intended. It will be noted that the object of the section is to define income, and paragraph (f) uses the same term it is sought to define; in other words, "income" is defined as income. The language, if not the scope, of this subdivision would be improved by substituting the words "gains and profits" for "income."

Rentals—Source of.—Paragraph 3 of section 1087m—2 provides for the application of the law to the income of residents and nonresidents and income derived from sources within and without the state. The second sentence of this paragraph, following the analogy of the common law relating to the situs of certain classes of personal property, provides that "so much of the income of any person residing within the state as is derived from rentals, stocks, bonds, securities or evidences of indebtedness shall be assessed and taxed whether such income is derived from sources within or without the state." Intangible assets in the form of notes, bonds, stocks, mortgages or other like securities follow the residence of the owner at common law. The income derived from them therefore may properly be assigned to the residence of the owner of the securities. The grouping of rent of real estate with income from such securities would seem to be illogical in view of the fixed and permanent location of the source from which it is derived. The following sentence in the same paragraph limits the application of the law, in the case of persons engaged in business within and without the state, to income derived from business transacted and property located within the state. This provision seems to conflict with the sentence quoted as to rentals received by a resident of Wisconsin

from property without the state. Real estate has a fixed and definite situs. The rent received therefrom would seem to be derived from and belong to the district where such real estate is located. Assuming the intent of the law to be to tax income derived from sources within this state only, it seems inconsistent to include among income assessable in Wisconsin rent derived from real estate located without the state.

Another difficulty arises under section 1087m—22 providing for the distribution of taxes to the district from which the income is derived. Rent received by a resident of Milwaukee from real estate in Dodge county would seem to be taxable at the latter place. In case of rent derived from property without the state, obviously the tax could not be distributed to the source but would have to be collected where the landlord resided if at all. Again, if rent of land located outside the state is taxed in Wisconsin, consistency would seem to require that rent of land located in Wisconsin, paid to a nonresident, should be exempted. It is believed that this section of the law should be amended by striking out the word "rentals," where the same is used in connection with income from personal property which follows the residence of the owner.

It cannot be definitely stated what effect on the yield of the tax would result from such an amendment. It is probable that the number of nonresidents owning rented real estate in Wisconsin is greater than the number of residents of Wisconsin receiving rents from property without the state. On the other hand, a limited number of the residents of this state derive large incomes from mineral lands and improved properties outside of the state. It is believed that the net result of the change would be slight, but, however that may be, the commission is of opinion that consistency requires it to be made.

Deduction of Interest by Corporations.—Section 1087m—4 (d) authorizes persons other than corporations, joint stock companies and associations to deduct "interest paid within the year on existing indebtedness." In the case of corporations there is a provision for the assessment of interest paid on bonded indebtedness to the bondholders of the corporation. The tax on the interest so paid is declared a lien upon the property of the corporation and if the same is not paid by the bondholders it may be enforced against the corporation. There is no provision for deducting interest paid to and assessed against

the bondholders from the corporate income. Neither is there any provision allowing deduction of interest paid on general indebtedness. It was agreed by the committee engaged in framing the bill that corporations should be allowed to deduct payment on other indebtedness, but by oversight or otherwise no such provision was inserted in the act.

Experience in administering the law leads to the belief that few if any corporations will derive any benefit from the provision allowing them to deduct the amount of the tax paid for interest on bonded indebtedness from the next interest payment to the bondholders. Corporate bonds are readily transferable, few of them are registered, and most of them contain provisions requiring the company issuing them to pay all taxes chargeable thereto. If the bonds were issued before the enactment of the law, or the mortgage securing them contain a clause requiring the mortgagor to pay the taxes therefor, or they be held by nonresidents of the state, it is at least doubtful whether the corporation can reimburse itself for the payment of the interest tax. The result is that practically all corporations will have to pay the tax chargeable to the interest on their bonded debts. The intention of the legislature should be made plain in these respects.

Deduction of Dividends.—Paragraph (e) of section 1087m—3 and paragraph (c) of section 1087m—4 provide for the deduction of dividends received from corporations, joint stock companies or associations and profits derived from partnerships, when the income from which the dividend has been declared or the profits derived "shall have been assessed" to the company from which such dividend or profit has been received. The obvious purpose of these provisions is to permit collection of the tax at the source and avoid double taxation. When a dividend or profit is received from a corporation or partnership whose entire income has been assessed, the entire amount so received may be deducted. Conversely, when no part of the income or profit has been assessed, no part of the dividend or profit can be deducted. Thus far the law is plain, but it is not clear what, if any, deduction should be allowed when only a part of the income is assessed as in the case of companies engaged in business within and without the state. The logic of the situation would seem to limit the deduction in such cases to such part of the dividend or profit as had been taxed at the

source and while the language of the statute on the subject is not apt to indicate that course, the Commission has adopted that construction and ruled that when only part of the income or profit has been assessed only a corresponding part of the dividend can be deducted.

Several taxpayers have objected to this construction, insisting that when any assessment is made against the parent company the income "has been assessed" within the meaning of the law and that all dividends or profits received therefrom are accordingly deductible. Preliminary steps have been taken to test the question in court and it must be conceded that the law on the subject is not as definite as could be desired. It is recommended that the sections relating to the subject be amended so as to expressly provide that when only a part of the income of a copartnership or corporation shall have been assessed under the act only a corresponding part of the dividends or income received therefrom may be deducted.

Depreciation and Losses.—Deductions under the head of depreciation and losses have been a fruitful source of contention and difficulty. The law authorizes the deduction of "a reasonable allowance for depreciation of the property from which the income is derived," and for "losses actually sustained within the year and not compensated for by insurance or otherwise." Claims have been made for depreciation ranging from one per cent to twenty-five per cent on the same classes of property. Repairs are allowed "as a necessary and ordinary expense," and it has been found in practice that these two deductions frequently overlap.

Deductions for losses under other income tax laws have generally been confined to damage to or destruction of physical property of the taxpayer, and bad accounts which had previously been reported as income. Losses resulting from fluctuation in market value have not been allowed. Various claims have been made for losses under the paragraph quoted, including depreciation in the value of corporate stocks and other like property resulting from change in market value or destruction of or damage to the physical property of the corporation issuing the stock. Considered as a whole the income tax act does not seem to contemplate the assessment of appreciation in value until actually realized by sale or other disposition of the property. It would

seem to follow that depreciation should not be allowed in such cases until the amount of the loss is determined in like manner.

Following the English decisions and the precedents of the internal revenue department under the income tax of 1863 and the rules prescribed for administration of the income tax of 1894, the Commission felt compelled to deny deductions for depreciation of this character while the property was still held by the taxpayer. The soundness of this construction has been sharply challenged and the law on the subject is not entirely clear. If the purpose of the legislature is to confine deductions for losses as above indicated the statute should be amended so as to more clearly express that intention. If, on the other hand, a wider range of deduction is deemed advisable there is equal reason for making the statute more specific. The subject is properly one for the consideration of the legislature and attention is called to it for that reason.

Deduction of Inheritances.—Paragraph i, section 1087m—4, provides for the deduction of all "inheritances, devises and bequests received during the year, upon which inheritance taxes shall have been paid to this state." A question has arisen as to whether legacies received during the year which are within the exemptions of the inheritance tax law, and therefore pay no inheritance tax, are subject to the income tax. The apparent intention of the legislature was to permit the deduction of all legacies received during the year from estates which are subject to and have complied with the inheritance tax law. The Commission has construed the act accordingly. A literal reading, however, would seem to limit the deduction to that part of the legacy on which an inheritance tax had been paid and to deny deduction as to legacies exempt from the inheritance tax. As the rates under the income tax are higher in many cases than the inheritance tax rate applicable to members of a family, the practical effect of this construction would be to impose a higher tax upon the legatee than if no exemption existed under the inheritance tax law. The Commission adopted the construction first indicated, and if that view of the law is approved by the legislature, the section should be amended accordingly.

Salaries to Members of Firm.—In section 1087m—3 (a) corporations are allowed to deduct "payments made within the year for personal services of officers and employes" actually

engaged in producing the income reported. No corresponding deduction is provided for in the case of individuals or copartnerships, but they are allowed to deduct "all ordinary and necessary expenses actually paid within the year in carrying on the business" from which the income is derived. This is understood to include wages paid to laborers and other employes, but not to extend to compensation paid to or received by members of a firm for their personal services. All persons other than corporations, joint stock companies and associations are grouped together as individuals, but the income of a copartnership or firm is required to be assessed as a unit, and no exemptions are allowed. The effect of these provisions in the case of copartners having no income other than that derived from the firm business is to increase the rate and deny them the benefit of their individual exemptions. It is not believed that the legislature intended to apply a harsher rule to copartners than to officers of corporations or individuals. The failure to allow exemptions or deductions for salaries received or profits withdrawn was probably an oversight. Accordingly the Commission adopted a rule permitting the deduction of a reasonable allowance to each partner for his personal services to the firm, which actually contributed to the income. If this course meets the approval of the legislature, section 1087m—4 should be amended accordingly. Such an amendment is necessary to harmonize the law relating to copartnerships with the provisions relating to individuals and officers or corporations.

Assessment of Income of Wife and Minor Children.—Paragraph (e), section 1087m—5. In the case of a husband, wife and minor children residing together as members of a family, the law treats the family as a unit and requires the incomes of the wife and minor children to be added to that of the husband or father. While the act does not, in terms, specify against whom the assessment shall be made, it is understood to require the assessment to the husband or father. The law fails to specify who shall be liable for the tax, and in case of a husband having little or no income and the wife and children having considerable income, difficulty in collecting the tax may arise. It is desirable that the statute be made certain in this respect. An amendment affirmatively providing for assessment of the entire income of the family to the husband, and making each member of the family

whose income is included in the return, liable for tax would probably accomplish the purpose.

Corporation Rate.—Paragraph 2 of section 1087m—6, prescribing rates for corporations, has proved unsatisfactory in practice. Under this section the progression is not based upon the amount of income but upon the ratio which the taxable income bears to the assessed valuation of the property which produced it. The rate ranges from one-half of one per cent where the ratio of taxable income to assessed valuation does not exceed one per cent, to 6 per cent where such ratio is more than 11 per cent. It follows that of two corporations having exactly the same taxable income one may be required to pay twelve times as much as the other. The basic idea of income taxation is adjustment of burden according to ability to pay, and the amount of taxable income would seem to be the best test of such ability. The economic soundness of the scheme for determining corporation rates is therefore very doubtful. The following table illustrates the operation of the law:

Assessed valuation.	Income.	Ratio.	Rate.	Amount of tax.
$10,000	$2,000	20%	6%	$120
200,000	2,000	1	½ of 1	10
600,000	6,000	1	½ of 1	30

Inequality similar to that shown by the foregoing table has actually occurred in the administration of the law. Many lines of business yielding substantial incomes require very little property and hence would be subject to the maximum rate. Other lines of business yielding approximately the same incomes require a great amount of property and hence get the benefit of lower rates. The amount of property employed in producing a given income varies at different times of year and may be more or less than normal when the assessment is made. Many corporations derive income from property not subject to assessment at all, such as stocks, bonds, mortgages and similar securities. The statute makes no provision for determining the rate in such cases. The same property may yield income to two different persons, as in the case of landlord and tenant. The landlord derives rent, the tenant uses the property in carrying on his business. Which one is entitled to use the assessed valuation in de-

termining the rate of taxation or may both use it? If so, are the respective incomes to be aggregated or treated separately? The question is very important in the case of mining property owned by one corporation and operated by another. The statute is entirely silent on the subject.

In the case of income derived from sources without the state, shall the rate be determined by assessments made in other jurisdictions beyond the control of our taxing authorities, and if so, shall the difference in the basis of assessment in the different jurisdictions be taken into account? The basis is one fraction of true value in Illinois, another in Iowa and still another in Nebraska.

In actual practice this provision has resulted in confusion and inequality, and needless complications in the administration of the law. The principle of determining rates underlying the present method was incorporated in the income tax law of Georgia enacted in 1862 but after one year's trial it was abandoned and has not since found place in any income tax law in this country. We are advised that it exists in a modified form in the income tax law of Sweden but not in any other European country.

It is believed that a graduation of rates according to amount of taxable income affords a sounder and more practical basis and that an adjustment can be made which will simplify administration and not materially affect the yield from corporations. The average tax rate for individuals during the first year's administration of the law was 1.96 per cent, while the average rate for corporations was 5.4 per cent. It will be seen, therefore, that the tax rate in the case of corporations is more than twice the rate in the case of individuals.

There is propriety in a higher rate for corporations than for individuals for the reason that the former are allowed to deduct all expenses incurred in producing the income, including the salaries of officers, whereas no deduction is allowed for the personal services of individuals. The taxable income of a corporation therefore represents only the earnings of the investment, whereas in the case of individuals it represents both the result of personal services and invested capital. If a different rate for corporations is to be maintained it is believed that rates graduated according to amount of income, but at double the rates applicable to individuals, would accomplish about the same

purpose, greatly simplify the administration of the law, and more nearly conform to sound economic policy. The Commission therefore recommends that the provision for determining the rate of taxation applicable to corporations be amended accordingly. If this amendment should not be adopted then it should at least be made certain that corporations having a taxable income but no assessed valuation of property should be subject to the maximum rate.

Office Room and Supplies for Assessors of Incomes.—Section 1087m—9 provides that the salaries of assessors of income and their deputies and other expenses "while traveling in the performance of their duties" shall be paid by the state, and that they shall be furnished with the "necessary printing, stationery and postage." The statute is not broad enough to authorize state officers to provide and furnish offices nor to supply typewriters or filing cases and similar equipment necessary to enable the assessor to perform his duties. Neither is there any express provision requiring county boards to furnish these facilities. Offices were generally provided for supervisors of assessment at the expense of the county, and as assessors of incomes are required to perform the same duties, and counties receive 20 per cent of the income tax collected, it would seem proper to require them to provide and furnish suitable offices and the necessary supplies for the assessor of incomes.

In a majority of districts county boards have provided offices in the court house, and in at least one instance, have rented quarters outside at county expense. For lack of accommodation in the courthouse and authority to rent rooms outside it was necessary to secure quarters through private contract in the city of Milwaukee. The statute should be amended so as to remedy this defect. This end can be attained by adding a clause to section 1087m—9 requiring county boards to provide suitable rooms at the courthouse or other convenient place at the county seat, and to supply the same with the necessary furniture and equipment, including typewriter, telephone and filing cases. Perhaps further provision should be made for apportioning the expense in districts comprising more than one county. As it is important that such accommodations be of suitable character and promptly furnished, it may be well to add that in the case of failure or refusal of any county board to comply with the amend-

ment, the Tax Commission should be authorized to procure such accommodations at the expense of the county.

Miscellaneous Amendments.—Paragraph 1 of section 1087m—19 provides for an appeal to the Tax Commission from the action of the county board of review by "any person dissatisfied" therewith. Ordinarily no person is allowed to interfere in tax proceedings unless adversely affected in a financial way. The word "dissatisfied" is not apt to define the class of persons who may appeal, and may be interpreted to include only persons financially interested. In that event it is doubtful whether assessors of income or any other officer could appeal from the action of the board of review, no matter how erroneous or how widely it may affect the assessment. It is believed that some such authority should be given, and that the law should be made definite in this respect. An amendment expressly authorizing assessors of income to appeal from any ruling of the board of review adversely affecting the public interest would seem to serve the purpose.

The exact character of the income tax is not defined in the act and the precedents in other jurisdictions are few and uncertain. While the tax differs from the personal property tax in many respects they have several features in common. Accordingly paragraph 4 of section 1087—22 provides that all laws not in conflict with the Income Tax Act relating to the payment and collection of personal property taxes shall apply to the income tax. It will be observed that this section does not cover the process of assessment and that is the most difficult and important step in the administration of the law. An amendment to this section so as to include the subject of assessment, as well as the payment and collection of the tax, would solve a number of minor questions which constantly arise in administration and are not otherwise covered by the law, and it is recommended that that section be changed accordingly.

Several questions relating to the application of the law as affected by the time when and place where income is derived, the residence of the taxpayer at the time of the assessment, removal into or out of the state during the income year, exemptions to be allowed in the case of births, deaths or marriages during the year, whether the income received by executors, trustees, and guardians should be assessed to the representative as a unit or to the beneficiaries direct, and if assessed to the representative, what

exemptions should be allowed, and numerous similar questions, are not covered by any express provision of the act and seem to call for legislative action. Many of these questions involve important considerations of policy and in some measure at least partake of a legislative character. If so they cannot legally be delegated to an administrative body and in any event they are sufficiently important to warrant legislative consideration. Amendments covering these questions and all other changes recommended have been prepared and will be submitted for the consideration of the legislature as soon as it convenes.

The affirmative recommendations for amendment above set forth are confined to those features of the law which have proved most troublesome in administration and which it is believed present no ground for serious difference of opinion. The aim has been to defer all debatable modifications of the law for later consideration. There are a number of major questions such as the apportionment of income derived from interstate business; the application of the offset provision to banks when they pay taxes for only a part of their stockholders; the right of corporations to offset their personal taxes against the income tax assessed to their bondholders; the assessment of rental value of residences and deductions under the head of depreciation and losses, discussed above. These questions can best be solved in the light of experience. A more thorough test of the law and a more settled course of administration will either render amendment unnecessary or furnish a guide for the necessary changes. After the 1912 taxes have been collected and complete statistics for the year are available, both the commission and the legislature will be in better position to take up the subject of a general revision of the act. If that course should be deemed advisable during the forthcoming session of the legislature a supplementary report on the subject will be submitted.

CHAPTER V

THE INHERITANCE TAX

The temporary tax commission of 1897 recommended the adoption of a tax on legacies and successions as a partial substitute for the failing personal property tax (Report of 1898, pages 160–169); and such a tax has been advocated and approved in every subsequent report of the Tax Commission. This form of taxation was provided for by chapter 355, Laws of 1899, which was declared unconstitutional by the supreme court in the case of *Black v. State,* 113 Wis. 205, on the ground of unreasonable and unlawful classifications.

In 1903 the legislature enacted the present law, avoiding the unconstitutional features of the former act. This law was sustained in the case of *Nunnemacher v. State,* 129 Wis. 190, and has been in successful operation ever since. The following table shows the amount of revenue produced annually to the state since the enactment of the law.

For fiscal year ending:

June 30, 1904 (three months	$ 14,689.14
June 30, 1905	125,964.80
June 30, 1906	103,954.74
June 30, 1907	396,458.39
June 30, 1908	245,653.32
June 30, 1909	449,000.93
June 30, 1910	283,566.97
June 30, 1911	848,033.78
June 30, 1912	783,528.90
Total	$3,250,850.97

The history, theory and operation of the law, and arguments for and against, have been presented with sufficient fulness in the former reports of the Commission, and need not be repeated here.[1]

[1] Report of 1898, pp. 160–169; Report of 1901, pp. 165–166; Report of 1903, pp. 48–87; Report of 1907, pp. 126–140; Report of 1909, p. 103; Report of 1910, p. 27.

The inheritance tax is especially suitable as a source of state revenue, reducing by the amount so collected the sum to be levied as a direct tax upon the general property of the state. The amount produced is so variable when the county is taken as a unit as to render it most uncertain and unsatisfactory as a source of revenue for county purposes. During the past year in one county a single estate paid a tax of nearly $140,000; and in another county a tax was paid of more than $66,000. In these counties the estates referred to paid more than all the other estates settled for several years together, and probably more than any single estate in the same counties will pay for a score of years to come. Besides, the large estates that pay heavy inheritance taxes are usually not local in their nature. They are often made up of property located in several counties, and are accumulated from business enterprises extending throughout the state or several states. It frequently happens that the larger estates are accumulated while the owner resides and carries on his business in one of the smaller towns or villages, and that in later life he moves with his wealth to a larger city to spend his declining years. In such cases the larger towns and the counties where they are located would be the beneficiaries of the inheritance tax if it were distributed locally. On the other hand, when the state is taken as a whole, the tax, while somewhat variable from year to year, is sufficiently certain in amount to be considered a reliable source of income. The counties now receive 7½ per cent of the gross tax paid, and this amount should not be increased. It may be pertinent to add that practically every state in the Union having an inheritance tax law uses the proceeds for state purposes.

It will be noted that a very material increase in the annual revenue produced has taken place since the enactment of the law in 1903, an increase much beyond the growth in population of the state. This increase can be accounted for in part by the better administration and enforcement of the law. Like all taxes, this tax while new was considered obnoxious by those to whom it applied. Legatees, devisees, executors, their attorneys, and even the county judges in many instances, were out of sympathy with the law. As a result the enforcement was lax and inventories were passed with the appraisal in many instances far below true value. But this stage is past. The tax is now taken as a matter of course. It is approved by public

sentiment, and upheld in its integrity by the courts; and its immediate enforcement is placed in the hands of a local officer, the public administrator, who is usually active in its full application to the estates being settled in the county courts. It is no longer looked upon as reputable to attempt to evade the tax.

But a further basis of increase in the amount of tax collected is found in the application of the law to the estates of nonresidents owning stocks in Wisconsin corporations, especially railroad stocks. That such stocks are Wisconsin property subject to the inheritance tax upon transfer at the death of the owner did not seem to be very clearly apprehended until within the past two or three years. The stocks of Wisconsin railroads and some other Wisconsin corporations are largely owned and held in the large financial centers of the east while some are held in foreign countries. The law making the corporation liable for the tax, if it makes the transfer on its books without notice, has resulted in such corporations refusing to make the transfer until authority is secured from the proper state officials, and therefore in causing the executors or other representatives of the estate to apply for such authority. In such cases authority is promptly furnished upon payment of the tax found to be due. Much satisfaction is expressed by foreign executors, administrators and their attorneys at the promptness with which such permits are secured and the transfers made under the Wisconsin law.

The following is a statement of the taxes paid into the state treasury by the estates of nonresident decedents since this phase of the law has been given more special attention:

For the quarter ending:	
September 30, 1911	$26,959.21
December 31, 1911	99,717.77
March 31, 1912	65,454.98
June 30, 1912	107,398.38
Total for fiscal year	$299,530.34
For the quarter ending:	
September 30, 1912	107,001.75
Total	$406,532.09

Prior to July, 1911, no court was specifically vested with jurisdiction, and no separate records appear to have been kept of the nonresident inheritance taxes collected. The inheritance tax collected for the year ending June 30, 1912, from nonresident

estates amounted to more than one-third of the entire inheritance tax collected for that year.

It has been found advantageous to employ assistants in examining the court records, reporting estates having Wisconsin property, conferring with executors, administrators, and their attorneys, and performing other services for the Commission in the larger eastern cities, especially in New York, in connection with such nonresident estates.

The work of the Commission in the administration of the law is ample to employ the full time of a competent man at the head of the inheritance tax department. The present inheritance tax investigator serves as counsel to public administrators in the several counties, appearing personally at the hearings in the larger estates and in cases of conveyances made in contemplation of death, or made to evade the tax; counsels with the county judges as to the enforcement of the law; handles the correspondence and negotiations with foreign estates; examines the facts and issues permits to transfer stocks and other personal property where it is found that no tax is due; and reports to the attorney general such litigated cases as involve appeals to the circuit courts and supreme court.

The Inheritance Tax Law is in need of several amendments, none radical, but some of which are important, and others are for the purpose of systematizing and simplifying the law itself and the procedure thereunder. Among the changes recommended are the following:

1. Changing the primary rate in the second subdivision from 1½ to 2 per cent. This will establish a more harmonious progression, as well as increase the rate somewhat to the first class of collateral relations where it is thought the increased rate will not be an undue burden.

2. Exempting from the tax tangible personal property outside of the state in certain cases of resident decedents, as a step toward avoiding double taxation.

3. Providing more definitely for the taxation of transfers made in the form of gifts, grants, and donations when such transfers are in the nature of a final disposition or distribution of the estate of the donor or of a material part thereof. The general purpose of the law is to impose a tax upon the passing of estates from the ancestor to his successors. At present large estates or large portions of an estate may be, and frequently are,

conveyed during the later years of the owner's life to his children, in a manner that is clearly testamentary in its nature, yet that cannot readily be proved to have been made either in contemplation of death nor to evade the tax. The law should be made as broad in its language as it is in its purpose.

4. Allowing the payment of the tax before the entry of the order determining the same, where the settlement of the estate is delayed, thus permitting the estate to save the usual discount or to avoid the payment of interest or penalty.

5. Providing for the issue of a certificate by the Commission showing no tax due, and authorizing the transfer of stock when the facts warrant such permit. The Commission has been issuing permits for this purpose for more than a year past, but without any express authority in the law.

6. Providing for notice in the adjustment of the tax to be given to the Commission, and vesting certain additional administrative duties in the Tax Commission.

7. Simplifying the procedure in the county courts, and extending the authority of the Commission to participate in such proceedings where it appears advisable.

8. Increasing the compensation of public administrators in the larger and more difficult estates. The maximum fee now allowed to public administrators is twenty-five dollars, and in estates where the tax amounts to several thousand dollars the necessary investigations and services required are not adequately compensated by this amount. The amount and nature of the work and the interests of the state require an amount of labor and a degree of skill that cannot be obtained unless a reasonable remuneration is provided.

9. Providing for uniformity in the forms and blanks to be used in the county courts and for preparing such forms by the Tax Commission and supplying them to the county courts by the state. At present the blanks are prepared by or under the direction of the county judge; printed locally, in small quantities, at the expense of the inheritance tax fund. The change proposed will provide uniformity in the forms and secure economy in the cost of printing.

10. Some minor provisions in combining, harmonizing and rearranging certain sections of the law. In these changes it is not proposed to modify the general plan nor scope of the present

law, but rather to simplify and systematize its various parts, especially the parts relating to procedure.

As the law now stands in this and other states, it is possible that the same property may be taxed under the inheritance tax laws in two, three, and perhaps more different states. Thus in a recent case stocks belonging to a large estate were taxed in this state because it was the residence of the decedent, in another state because the stocks were kept there in a safety deposit vault for safe keeping, and in a third state because the railroad company issuing the stock was a corporation of that state.

It is agreed among students of taxation that the transfer of property resulting from death should be subjected to a tax but once and by one jurisdiction only. By comity among the different states the laws should be so shaped as to bring about this result, and Wisconsin should do its share, if not take the lead, in this direction.

One of the chief difficulties is the conflict of interest between the states. Thus in the case of railroad stocks, the large commercial and financial centers claim the tax on the transfer of the stock on the basis of the residence of the owner; while the states where the railroads are located and where they derive their revenue claim the tax on the basis of the location of the physical property represented by the stocks.

It is believed that the location of the physical property should determine the place of taxation. This principle is now applied without question in the case of real estate, and should, we think, apply equally to all forms of tangible property. The place where the physical property is located is subject to the expense of its protection, and largely furnishes the business which produces its income. The certificates of stock are but the evidences of the ownership of the physical property. More and more real estate is passing into the ownership of corporations. In the northern portion of the state considerable tracts of land are owned by land companies. In the cities corporations own many of the large and valuable buildings and business sites used for hotels, theaters, office buildings and mercantile blocks. All such property may be withdrawn from the purview of the inheritance tax unless it be held that the stock is Wisconsin property.

In this connection it is proper to consider another question, namely, the exemptions proper to allow to persons succeeding to property located in several states. It is conceded that a reason-

able amount to the beneficiary should be exempted from the tax; thus in this state an exemption of ten thousand dollars is allowed to the widow, and two thousand dollars to the surviving husband and each lineal descendant, besides smaller amounts to more remote relatives and strangers. The theory of the exemption is to avoid burdening small estates and to permit a necessary minimum as a subsistence fund. But where the deceased leaves property in several states the lawful exemption is claimed and allowed in each state. This becomes important when, for example, the property consists of stocks of a railroad company incorporated in several states, where the value of stock is apportioned for inheritance tax purposes in proportion to the relative value of the physical property in each state. In such a case a widow might have an exemption of ten thousand dollars in each of half a dozen or more states, resulting in the transfer of large blocks of stock with little or no tax on account of the numerous exemptions. Clearly this is not the purpose of the exemption.

Just what the remedy is in such cases is not so easy to say. The federal constitution provides that "the citizens of each state shall be entitled to all privileges and immunities of citizens in the several states." It is possible that the courts may hold that exemptions allowed to residents of the state cannot be denied to nonresidents; and yet a reasonable exemption allowed once should cover the entire immunity from the tax of each beneficiary of an estate. It is possible that a provision in the law limiting the entire exemption to the amount stated in the law, whether allowed by this or any foreign jurisdiction, and applying to residents and nonresidents alike, might be devised so as to pass the scrutiny of the courts; or it may be possible to apportion the exemption in proportion to the property subject to the tax in the several states, as debts are now apportioned.

CHAPTER VI

UNIFORM MUNICIPAL ACCOUNTING

The original act creating a permanent Tax Commission (chapter 380, laws of 1905) recognized the importance of uniformity and system in the accounting methods of the municipalities of the state by providing in subdivision 5, section 9: "It shall be the duty of the commission and it shall have power and authority to require town, city, village, county and other public officers to report information as to the assessment of property, collection of taxes, receipts from licenses and other sources, the expenditure of public funds for all purposes and such other information as may be needed in the work of the commission in such form and upon such blanks as the commission may prescribe." Subdivision 12 further authorized the Commission—"To inquire into the system of accounting of public funds in use in towns, cities, villages and counties and to devise and prescribe a uniform system of accounting of the receipts and disbursements of public funds in the municipalities of the state." Later, in the legislative session of 1909 a resolution was passed, directing the Commission to proceed with an investigation, largely statistical in character, into public expenditures. This fact immediately brought the fundamental questions of municipal accounting to the front.

The investigation of public expenditures proceeded so far as to find expression in a published volume on state finance and expenditures, the publication of which was authorized by the Commission composed of N. S. Gilson, George Curtis, Jr., and N. P. Haugen.

The investigation of municipal finance, however, was found to be much more difficult to gather than had been anticipated, and to require the laying of a thorough groundwork in the classification of municipal accounts before any figures could be published.

It became apparent that as the accounts are kept in many municipalities a correct or even a reasonably correct report of financial transactions could not be returned. For these reasons it seemed best to defer the statistical work until such time as the fundamental accounting work was put on such a basis as to make the statistics trustworthy.

Accordingly chapter 523, laws of 1911, was recommended to the legislature and enacted into law. This statute merely emphasized the sections of chapter 380, laws of 1905, quoted above and served to enlarge the authority and make more definite the duties of the Commission as to the collection of statistical material, its publication and the formulation of a system of municipal accounts.

This law requires the Commission "to collect annually from all town, city, village, county and other public officers information as to the assessment of property, collection of taxes, receipts from licenses and other sources, the expenditures of public funds for all purposes and such other information as may be needful in the work of the commission in such form and upon such blanks as the commission shall prescribe." It is also made the duty of the Commission "to inquire into the systems of accounting of public funds in use in towns, villages, cities and counties; to devise, prescribe and at the request of any town, village, city or county to install a system of accounts which shall be as uniform as practicable." It is also prescribed in the act that the Commission shall establish a tariff of charges for installing systems of accounts and for auditing past records and accounts when made upon the request of municipalities.

Pursuant to this statute the Commission has employed accountants and auditors and has developed certain general classifications and methods of accounting which are being installed in the municipalities of the state upon application.

The town of Westboro, Taylor county, was the first municipality to take advantage of this law and a system of accounts was installed in this town in December, 1911. Following the town of Westboro the counties of Door and Racine passed resolutions at the annual county board meetings requesting the installation of systems of accounts. Following these the cities of Columbus, Madison, Eau Claire, Ashland, Neenah and Seymour, the towns of Three Lakes, Burke, Peshtigo, Kennan, Delafield, Wabeno, Walworth, Hiles, Conover, Farmington,

Fifield and Gordon and the villages of New Holstein, Mukwonago and Sun Prairie made application to the Commission for installation. In the spring of 1912 the counties of Ashland and Forest and later the county of Richland joined with the pioneer counties in this movement for better accounting records and financial practice. In all of these districts installation has been completed or is under way.

The installation of systems of accounts for counties, towns and villages and for cities with less than 2,000 population is comparatively simple. The problem in this installation is to outline a system sufficiently simple to meet the needs of a changing body of non-expert officials by whom it must be kept up and at the same time to secure the necessary accounting and statistical facts. The problems of municipal accounting increase greatly in complexity and difficulty however in the larger cities. Speaking generally, the financial affairs (but not always the financial records), of Wisconsin counties, towns and villages and small cities are in excellent condition. On the other hand, the financial affairs and methods of the larger cities have been exceedingly haphazard as a general rule. In many cases the plainest provisions of the statutes have been violated with respect to sinking funds and other important financial matters.

Thus, while a simple record of receipts and disbursements classified with reasonable care serves fairly well in the small municipalities of the state and is all that the officials to whom these accounts are entrusted can reasonably be expected to keep, these elementary methods do not at all suffice for the more complex conditions of the larger cities.

In the first place, while the pay-as-you-go spirit is exceedingly pronounced in the country districts and in county governments, almost the precise reverse is the common practice in the cities. Instead of showing a disposition to pay for improvements out of revenues, the common disposition appears to be to borrow for all improvements and frequently to borrow for current expenditures. Thus while, generally speaking, our towns and counties are acquiring fixed property in values amounting to large sums with comparatively little debt to offset them, our cities seem disposed to incur large debts, offsetting, to a very large extent, whatever capital assets the city may own.

This fact is very strikingly brought out by statistics of debt compiled by the Commission in 1910 and heretofore unpublished. The total bonded debt of the counties, towns, cities and villages of the state in 1909 was shown by this compilation to be $29,042,316. Of this amount the counties had 12 per cent, the towns less than 3 per cent, the villages 5½ per cent and the cities 79 per cent.

DEBT OF WISCONSIN MUNICIPALITIES, 1909.

	Debt
Total	$29,042,316
Counties	3,581,884
Towns	832,245
Under 1000 Population	384,331
1000 Population and Over	447,914
Villages	1,598,523
Cities	23,029,664
Under 5000 Population	3,058,444
5000–29999	6,503,235
30,000 and Over	13,467,985

The most important question, therefore, of city finance is whether a city is keeping within the budget it has adopted.

A prime requisite of any accounting system is that there shall be a proper audit of every receipt and of every expenditure by proper officials. Until very recently it can safely be said the greater part of the public expenditures of Wisconsin were being made without any audit whatsoever worthy of the name. In the ordinary county, in most of the cities, and to a very considerable extent in the towns, expenditures were made and are made by the treasurer upon orders from several different sources. As a result in such municipalities there is no check upon the treasurer by any one individual except insofar as the auditing committee of the town, village or county board or the city council makes it. Such a check is rarely made by these committees in the manner of an audit nor in such a form as readily to disclose a shortage in the finances of such districts. The auditors of the Commission have frequently found in their investigations that errors in the books of treasurers or clerks have been passed by the auditing committees without discovery for years at a time. The first requirement, therefore, of the accounting system framed

by the Commission has been that there shall be a complete audit of receipts and expenditures on the part of the proper town, village and county clerks and the city clerks and comptrollers.

Some statutes authorizing expenditures have been passed without clearly designating the official responsible for the proper audit. Except in the few cases in which it was plain that the legislature intended to dispense with the audit altogether this office has uniformly assumed—in installing systems of accounts—that the legislature intended to preserve the auditing function of the city comptrollers, or of county, town, and village clerks. It is very desirable, however, that clear statutory expression be given to the principle that all auditing shall be centralized in the controlling officials of each municipality and that no orders on the treasurer shall issue without a regular audit.

As noted above, the Tax Commission is given authority under chapter 523 to make audits of municipalities either upon their own motion or upon request. Audits have been requested by the towns of Gordon and Three Lakes and by the city of Eau Claire. The audits in the towns of Gordon and Three Lakes have been completed and the other is under way.

In the town of Gordon, Ashland county, a very serious condition had been found revealing gross mismanagement and a shortage of approximately $50,000. Civil suit has been commenced, but criminal prosecution, we believe, has not as yet been begun. In the town of Three Lakes various discrepancies arising for the most part through ignorance of the law, were pointed out.

Reference is made above to the bonded debt of our muncipalities. This debt is growing rapidly and too often bonds are refunded instead of being retired at maturity. Indebtedness to the state school trust funds, amounting to over $4,000,000 in excess of the amount owed to such funds by the state, constitutes a welcome exception to this rule. These loans are payable serially from one to twenty years with 3½ per cent interest.

CHAPTER VII

THE AD VALOREM TAXATION OF CORPORATIONS

Statistics of Assessment.

The legislature has, from time to time, enacted laws for the ad valorem taxation of the property of certain public service corporations in this state and placed the administrative duties of carrying out the provisions of such laws upon the Tax Commission. Corporations subject to ad valorem taxation by this commission under existing laws are:

Railroad companies;
Street railway companies and light, heat and power companies operated in connection therewith;
Telegraph Companies;
Express, sleeping car, freight line and equipment companies.

Assessment of Railroad Companies.[1]

Nine complete assessments of railroad property under the ad valorem law have been made by the Tax Commission, for the years from 1904 to 1912, inclusive. The assessments of 1904, 1905 and 1906 may be found in the 1907 Report of the Commission, pages 102–107; the assessment for 1908 in the 1909 Report, page 81, and for 1909, 1910 and 1911, in the 1910 Report, pages 30 to 35, inclusive. Following is a detailed statement of the railroad tax roll for 1912:

[1] For the law relating to the assessment and taxation of steam railroad companies see chapter 315, laws of 1903; chapter 216, laws of 1905; and the opinion of the supreme court of Wisconsin in *Chicago and Northwestern Ry. Co. v. The State*, 128 Wis. 553. The administration and operation of the law is discussed at length in the Third Biennial Report of the Wisconsin Tax Commission, 1907, pp. 82–121.

ABSTRACT OF VALUATION AND ASSESSMENT OF THE PROPERTIES OF RAILROADS IN WISCONSIN FOR THE YEAR 1912, AND THE TAXES LEVIED THEREON FOR SAID YEAR BY THE TAX COMMISSION.

Name of Company	Final Valuation and Assessment.	Amount of Taxes Levied at .01108684064.
Ahnapee & Western Ry. Co.	$350,000	$3,880.40
Ashland, Odanah & Marengo R. R.	130,000	1,441.29
Bayfield Transfer Ry. Co.	40,000	443.47
Big Falls Ry. Co.	40,000	443.47
Cazenovia & Sauk City R. R. Co.	16,000	177.39
Chicago & Lake Superior Ry. Co.	6,000	66.52
Chicago & Milwaukee Electric R. R. Co., and W. I. Johnson, Chicago, as receiver of said company	1,500,000	16,630.26
Chicago & North-Western Ry. Co.	105,000,000	1,164,118.27
Chicago, Burlington & Quincy R. R. Co.	18,000,000	199,563.13
Chicago, Harvard & Geneva Lake Ry. Co.	25,000	277.17
Chicago, Milwaukee & St. Paul Ry. Co.	96,500,000	1,069,880.12
Chicago, St. Paul, Minneapolis & Omaha Ry. Co.	30,250,000	335,376.93
Chippewa River & Northern Ry. Co.	5,000	55.44
Chippewa Valley & Northern Ry. Co.	45,000	498.91
Davis, John R., Lumber Co., and A. W. Sanborn, of Ashland, Wis., and Central Wis. Trust Co., of Madison, Wis., as receivers of said company	35,000	388.04
Drummond & Southwestern Ry. Co.	40,000	443.47
Duluth, South Shore & Atlantic Ry. Co.	1,350,000	14,967.24
Dunbar & Wausaukee Ry. Co.	95,000	1,053.25
Elgin, Joliet & Eastern Ry. Co.	425,000	4,711.91
Fairchild & Northeastern Ry. Co.	100,000	1,108.63
Grand Trunk Milwaukee Car Ferry Co.	540,000	5,986.89
Great Northern Ry. Co.	8,200,000	90,912.09
Green Bay & Western R. R. Co.	2,350,000	26,054.03
Hazelhurst & Southeastern Ry. Co.	50,000	554.34
Hillsboro & Northeastern Ry. Co.	20,000	221.74
Illinois Central R. R. Co.	1,100,000	12,195.53
Interstate Transfer Ry.	250,000	2,771.71
Iola & Northern R. R. Co.	13,000	144.13
Kewaunee, Green Bay & Western R. R. Co.	685,000	7,594.49
La Crosse & Southeastern Ry. Co.	250,000	2,771.71
Lake Superior Terminal & Transfer Ry. Co.	550,000	6,097.76
Laona & Northern Ry. Co.	70,000	776.08
Lincoln & Oneida County Railway	14,000	155.22
Marathon County Ry. Co.	40,000	443.47
Marinette, Tomahawk & Western Ry. Co. & C. H. Grundy, Tomahawk (Receiver thereof)	100,000	1,108.69
Mattoon Ry. Co.	75,000	831.51
Milwaukee, Sparta & Northwestern Ry.	8,000,000	88,694.73
Mineral Point & Northern Ry. Co.	300,000	3,326.05
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co.	11,250,000	124,726.96
Minneapolis, St. Paul & Sault Ste. Marie Ry. Co. as Lessee of the Wisconsin Central System	32,500,000	360,322.32
Northern Pacific Ry. Co.	3,000,000	33,260.52
Northwestern Coal Ry. Co.	85,000	942.38
Oshkosh Transportation Co.	100,000	1,108.63
Robbins Lumber Co.	40,000	443.47
Roddis Lumber & Veneer Co.	30,000	332.60
Stanley Merrill & Phillips Ry. Co.	200,000	2,217.37
Superior & Southeastern Ry. Co.	100,000	1,108.68
Tomahawk & Eastern Ry.	55,000	609.78
Waupaca, Green Bay Ry.	40,000	443.47
Whitcomb & Morris Ry. Co.	12,000	133.04

ABSTRACT OF VALUATION AND ASSESSMENT OF THE PROPERTIES OF RAILROADS IN WISCONSIN FOR THE YEAR 1912, AND THE TAXES LEVIED THEREON FOR SAID YEAR BY THE TAX COMMISSION—Continued.

Name of Company	Final Valuation and Assessment.	Amount of Taxes Levied at .01108684064.
Winona Bridge Ry. Co.	205,000	2,272.80
Wisconsin & Michigan Ry. Co., and Frank McKey, Chicago, as receiver of said Company	300,000	3,326.05
Wisconsin & Northern Ry. Co.	500,000	5,543.42
Wisconsin Northwestern Ry.	100,000	1,108.68
Wisconsin Ruby & Southern Ry. Co.	9,000	99.78
Total	$325,085,000	$3,604,165.58

Summaries of Railroad Assessments.—On page 82 of the 1909 Report of this Commission are given summaries of the principal items in the assessments of railroad properties for the year 1904 to 1908, inclusive, and on page 35 of the 1910 report are like summaries for the years 1909, 1910 and 1911. Following is a summary for 1912:

Value of railroad property	$333,959,000.00
Value of general property	2,941,412,842.00
Aggregate state, county and local taxes	32,610,975.44
Average rate of taxation	.01108684064
Railroad taxes	3,604,165.58

Street Railways.

The following tables show details of the assessments of 1911 and 1912, including the amounts apportioned to the municipalities in which such companies operate.

TABLE X.

ASSESSMENT OF STREET RAILWAY COMPANIES

AND OF LIGHT, HEAT AND POWER COMPANIES OPERATED IN CONNECTION THEREWITH IN WISCONSIN FOR THE YEAR 1911.

Name of company.	Assessment.	Amt. of taxes levied at .01117968554.	15 per cent retained by state.	85 per cent for distribution to municipalities.
Ashland Lt., Pr. & St. Ry.	$235,000	$2,627.23	$394.08	$2,233.15
Bay Shore St. Ry.	20,000	223.59	33.54	190.05
Beloit Traction Co.	110,000	1,229.76	184.46	1,045.30
Chi. & Mil. El. Ry.	180,000	2,012.34	301.85	1,710.49
Chip. Val. Ry. Lt. & Pr. Co.	975,000	10,900.19	1,635.03	9,265.16
Duluth St. Ry.	875,000	9,782.23	1,467.33	8,314.90
Eastern Wis. Ry. & Lt. Co.	775,000	8,664.26	1,299.64	7,364.62
Grand Rapids St. R. R.	110,000	1,229.76	184.46	1,045.30
Green Bay Traction Co.	705,000	7,881.68	1,182.25	6,699.43
Janesville St. Ry.	37,000	413.65	62.05	351.60
Kenosha Elec. Ry.	225,000	2,515.43	377.31	2,138.12
La Crosse & Onal. St. Ry.	20,000	223.59	33.54	190.05
La Crosse City Ry.	460,000	5,142.66	771.40	4,371.26
Manitowoc & Nor. Tr. Co.	120,000	1,341.56	201.23	1,140.33
Menom. & Mar. Lt. & Tr. Co.	240,000	2,683.12	402.47	2,280.65
Merrill Ry. & Ltg. Co.	120,000	1,341.56	201.23	1,140.33
Mil. El. Ry. & Lt. Co. (The)	24,200,000	270,548.39	40,582.26	229,966.13
Mil. Lt., Ht. & Tr. Co.	6,650,000	74,344.91	11,151.74	63,193.17
Mil Nor. Ry.	1,650,000	18,446.48	2,766.97	15,679.51
Rockford & Inter. Ry.	310,000	3,465.70	519.86	2,945.84
Sheboygan Ry. & El. Co.	865,000	9,670.43	1,450.56	8,219.87
Southern Wis. Ry.	850,000	9,502.73	1,425.41	8,077.32
Twin City Gen. El. Co.	45,000	503.09	75.46	427.63
Waupaca E Lt. & Ry. Co.	86,000	961.45	144.22	817.23
Wausau St. R. R.	500,000	5,589.84	838.48	4,751.36
Wisconsin El. Ry.	650,000	7,266.80	1,090.02	6,176.78
Wis. Tr., Lt., Ht. & Pr. Co.	1,150,000	12,856.64	1,928.50	10,928.14
Total	$42,163,000	$471,369.07	$70,705.35	$400,663.72

TABLE XI.

ASSESSMENT OF STREET RAILWAY COMPANIES

AND OF LIGHT, HEAT AND POWER COMPANIES OPERATED IN CONNECTION THEREWITH IN WISCONSIN FOR THE YEAR 1912.

Name of company.	Assessment.	Amt. of taxes levied at .01108684064.	15 per cent retained by state.	85 per cent for distribution to municipalities.
Ashland Lt., Pr. & St. Ry.....	$400,000	$4,434.74	$665.21	$3,769.53
Bay Shore St. Ry.....	20,000	221.74	33.26	188.48
Beloit Traction Co.....	180,000	1,995.63	299.34	1,696.29
Chi. & Mil. El. Ry. Co.....	200,000	2,217.37	332.61	1,884.76
Chip. Val. Ry. Lt. & Pr. Co.....	1,600,000	17,738.95	2,660.84	15,078.11
Duluth St. Ry.....	1,100,000	12,195.52	1,829.52	10,366.19
Eastern Wis. Ry. & Lt. Co.....	1,050,000	11,641.18	1,746.18	9,895.00
Grand Rapids St. R. R.....	110,000	1,219.55	182.93	1,036.62
Janesville Traction Co.	40,000	443.47	66.33	376.95
Kenosha Elec. Ry.....	350,000	3,880.39	582.06	3,298.33
La Crosse & Onal. St. Ry.....	25,000	277.17	41.58	235.59
La Crosse City Ry.....	500,000	5,543.42	831.51	4,711.91
Manitowoc & Nor. Tr. Co.....	120,000	1,330.42	199.56	1,130.86
Menom. & Mar. Lt. & Tr. Co....	250,000	2,771.71	415.76	2,355.95
Merrill Ry. & Ltg. Co.....	130,000	1,441.29	216.19	1,225.10
Mil. El. Ry. & Lt. Co. (The).....	26,750,000	296,572.99	44,485.95	252,087.04
Mil. Lt., Ht. & Tr. Co.....	6,800,000	75,390.52	11,308.58	64,081.94
Mil. Nor. Ry.....	1,650,000	18,293.29	2,743.99	15,549.30
Rockford & Inter. Ry.....	320,000	3,547.79	532.17	3,015.62
Sheboygan Ry. & El. Co.....	900,000	9,978.16	1,496.72	8,481.44
Southern Wis. Ry.....	1,000,000	11,083.84	1,663 03	9,420.81
Twin City Gen. El. Co.....	65,000	720.64	108.10	612.54
Waupaca El. Lt. & Ry. Co.	80,000	886.95	133.04	753.91
Wausau St. R. R.	725,000	8,037.96	1,205.69	6,832.27
Wisconsin El. Ry.	650,000	7,206.45	1,080.97	6,125.48
Wis. Public Service Co.	750,000	8,315.13	1,247.27	7,067.86
Wis. Tr., Lt., Ht. & Pr. Co.....	1,000,000	17,738.94	2,660.84	15,078.10
Totals.....	$47,365,000	$525,128.21	$78,769.23	$446,358.98

15 per cent is retained in the state treasury.

The distribution of 85 per cent of the taxes levied for the years 1911 and 1912, as shown in above tables, is as follows:

TABLE XII.

TOWNS, CITIES AND VILLAGES TO WHICH 85 PER CENT OF AXE LEVIED UPON STREET RAILWAY COMPANIES FOR THE YEAR 1911 WAS DISTRIBUTED

AND THE AMOUNT OF TAX TO BE PAID BY THE STATE TREASURER TO EACH MUNICIPALITY.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Ashland Light, Power & Street Railway Company	ASHLAND CO.		
	Ashland	city	$1,911.00
	Sanborn	town	17.10
	White River	town	285.08
	BAYFIELD CO.		
	Barksdale	town	2.86
	Washburn	city	2.86
	Washburn	town	14.25
			$2,233.15
Bay Shore Street Railway Co.	BROWN CO.		
	Green Bay	city	$52.68
	Preble	town	137.37
			$190.05
Beloit Traction Company	ROCK CO.		
	Beloit	city	$1,045.30
Chicago & Milwaukee Electric Railway Company	MILWAUKEE CO.		
	Milwaukee	city	$1,710.49
Chippewa Valley Railway, Light and Power Company	BARRON CO.		
	Cedar Lake	town	$33.08
	Oak Grove	town	33.08
	CHIPPEWA CO.		
	Chippewa Falls	city	242.84
	Lafayette	town	429.07
	Wheaton	town	27.88
	DUNN CO.		
	Elk Mound	town	102.84
	Elk Mound	village	44.84
	Menomonie	town	28.54
	Menomonie	city	816.26
	Red Cedar	town	411.84
	Weston	town	38.08
	EAU CLAIRE CO.		
	Eau Claire	city	6,737.44
	Union	town	110.90
	PIERCE CO.		
	Emwood	village	5.28
	El Paso	town	19.83
	Hartland	town	39.47
	PIERCE CO.		
	Rock Elm	town	31.96
	Salem	town	13.53
	Trenton	town	10.28
	WASHBURN CO.		
	Long Lake	town	55.04
	Loomis	town	33.08
			$9,265.16

TABLE XII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Duluth Street Railway Company	DOUGLAS CO.		
	Superior	city	$8,314.90
Eastern Wisconsin Railway & Light Company	FOND DU LAC CO.		
	Fond du Lac	city	$4,872.51
	Fond du Lac	town	171.82
	Friendship	town	575.99
	N. Fond du Lac	village	787.65
	WINNEBAGO CO.		
	Algoma	town	67.53
	Black Wolf	town	689.62
	Oshkosh	city	199.50
			$7,364.62
Grand Rapids Street Railroad Company	WOOD CO.		
	Grand Rapids	city	$261.33
	Nekoosa	village	195.99
	Port Edwards	town	587.98
			$1,045.30
Green Bay Traction Company	BROWN CO.		
	Allouez	town	$276.95
	Ashwaubenon	town	311.19
	De Pere	city	607.77
	Green Bay	city	3,843.26
	Howard	town	24.85
	Lawrence	town	672.15
	Preble	town	24.53
	Wrightstown	town	182.76
	Wrightstown	village	224.10
	OUTAGAMIE CO.		
	Kaukauna	city	72.22
	Kaukauna	town	394.60
	Vandenbrock	town	65.05
			$6,699.43
Janesville Street Railway Company	ROCK CO.		
	Janesville	city	$351.60
Kenosha Electric Railway Company	KENOSHA CO.		
	Kenosha	city	$2,138.12
La Crosse & Onalaska Street Railway Co.	LA CROSSE CO.		
	Campbell	town	$54.70
	La Crosse	city	69.57
	Onalaska	city	65.78
			$190.05
La Crosse City Railway Co.	LA CROSSE CO.		
	La Crosse	city	$4,371.26
Manitowoc & Northern Traction Company	MANITOWOC CO.		
	Manitowoc	city	$616.09
	Manitowoc	town	159.87
	Two Rivers	city	159.58
	Two Rivers	town	204.79
			$1,140.33
Menominee & Marinette Light & Traction Company	MARINETTE CO.		
	Marinette	city	$2,269.77
	Peshtigo	town	10.88
			$2,280.65

TABLE XII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Merrill Railway & Lighting Co.	LINCOLN CO.		
	Merrill	city	$1,140.33
Milwaukee Electric Railway & Light Co. (The)	MILWAUKEE CO.		
	East Milwaukee	village	$2.29
	Lake	town	2,258.27
	Milwaukee	city	227,687.17
	Wauwatosa	town	18.40
			$229,966.13
Milwaukee Light, Heat & Traction Company	JEFFERSON CO.		
	Ixonia	town	$624.16
	Watertown	city	604.76
	Watertown	town	187.87
	KENOSHA CO.		
	Somers	town	1,032.51
	MILWAUKEE CO.		
	Cudahy	crty	1,511.33
	E. Milwaukee	village	703.65
	Franklin	town	850.07
	Greenfield	town	3,733.14
	Lake	town	1,923.85
	Milwaukee	town	441.40
	No. Milwaukee	village	978.42
	Oak Creek	town	1,058.99
	So. Milwaukee	city	2,829.92
	Wauwatosa	city	2,839.65
	Wauwatosa	town	3,267.97
	West Allis	city	3,523.90
	W. Milwaukee	village	984.04
	Whitefish Bay	village	862.02
	RACINE CO.		
	Burlington	city	128.35
	Burlington	town	177.63
	Caledonia	town	1,952.54
	Mt. Pleasant	town	873.77
	Racine	city	18,626.31
	Rochester	town	218.96
	Waterford	town	66.67
	Waterford	village	80.57
	Norway	town	330.18
	WALWORTH CO.		
	East Troy	town	515.78
	East Troy	village	48.66
	WALWORTH CO.		
	Delafield	town	1,677.59
	Mukwonago	town	169.23
	Mukwonago	village	108.69
	Muskego	town	986.82
	New Berlin	town	3,915.39
	Oconomowoc	city	346.42
	Oconomowoc	town	86.95
	Pewaukee	town	1,401.43
	Summit	town	1,021.83
	Vernon	town	667.70
	Waukesha	city	1,050.90
	Waukasha	town	783.15
			$63,193.17

TABLE XII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Milwaukee Northern Railway Co.	MILWAUKEE CO.		
	Granville	town	$1,491.28
	Milwaukee	city	3,668.54
	Milwaukee	town	2,307.08
	OZAUKEE CO.		
	Belgium	town	916.78
	Cedarburg	city	289.28
	Cedarburg	town	453.14
	Grafton	town	564.78
	Grafton	village	252.28
	Mequon	town	1,905.84
	Port Washington	city	340.87
	Port Washington	town	831.80
	SHEBOYGAN CO.		
	Cedar Grove	village	231.90
	Holland	town	717.02
	Oostburg	village	174.20
	Sheboygan	city	255.74
	Sheboygan	town	239.11
	Wilson	town	1,039 87
			$15,679.51
Rockford & Interurban Railway Company	ROCK CO.		
	Beloit	city	$425.80
	Beloit	town	886.58
	Janesville	city	462.80
	Rock	town	1,170.66
			$2,945 84
Sheboygan Railway & Electric Company, (formerly Sheboygan Light, Power & Railway Co.)	SHEBOYGAN CO.		
	Elkhart Lake	village	$87.30
	Plymouth	town	389.29
	Plymouth	city	116.89
	Rhine	town	62.22
	Sheboygan	town	1,455.82
	Sheboygan	city	5,659.05
	Sheboygan Falls	town	322.96
	Sheboygan Falls	village	126.34
			$8,219.87
Southern Wisconsin Railway Co.	DANE CO.		
	Blooming Grove	town	$76.41
	Fair Oaks	village	150.40
	Madison	city	7,676.77
	Madison	town	173.74
			$8,077.32
Twin City General Electric Co.	IRON CO.		
	Vaughn	town	$427.63
Waupaca Electric Light & Railway Company	WAUPACA CO.		
	Farmington	town	$292.18
	Wauaca	city	525.05
			$817.23
Wausau Street Railroad Co.	MARATHON CO.		
	Schofield	village	$282.09
	Wausau	city	4,132.12
	Weston	town	337.15
			$4,751.36

TABLE XII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Wisconsin Electric Railway Co.	WINNEBAGO CO.		
	Algoma	town	$308.65
	Black Wolf	town	102.16
	Clayton	town	110.56
	Neenah	city	266.28
	Neenah	town	330.21
	Omro	town	355.85
	Omro	village	83.26
	Oshkosh	city	3,832.45
	Oshkosh	town	391.92
	Vinland	town	395.44
			$6,176.78
Wisconsin Traction, Light, Heat and Power Company	CALUMET CO.		
	Harrison	town	$554.38
	OUTAGAMIE CO.		
	Appleton	city	5,223.43
	Grand Chute	town	554.82
	Kaukauna	city	408.38
	Little Chute	village	451.66
	Vandenbrock	town	196.82
	WINNEBAGO CO.		
	Menasha	city	1,672.99
	Menasha	town	759.51
	Neenah	city	1,106.15
			$10,928.14
	TOTAL		400,663.72

TABLE XIII.

TOWNS, CITIES AND VILLAGES TO WHICH 85 PER CENT OF TAXES LEVIED UPON STREET RAILWAY COMPANIES FOR THE YEAR 1912 WAS DISTRIBUTED

AND THE AMOUNT OF TAX TO BE PAID BY THE STATE TREASURER TO EACH MUNICIPALITY.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Ashland Light, Power & Street Railway Company	ASHLAND CO.		
	Ashland	city	$2,929.90
	Sanborn	town	23.30
	White River	town	642.67
	BAYFIELD CO.		
	Barksdale	town	33.05
	Eileen	town	4.72
	Washburn	city	96.65
	Washburn	town	39.24
			$3,769.53
Bay Shore Street Railway Company	BROWN CO.		
	Green Bay	city	$79.00
	Preble	town	109.48
			$188.48
Beloit Traction Company	ROCK CO.		
	Beloit	city	$1,696.29
Chicago & Milwaukee Electric Railway Company	MILWAUKEE CO.		
	Milwaukee	city	$1,884.76
Chippewa Valley Railway, Light and Power Company	BARRON CO.		
	Cedar Lake	town	$26.84
	Oak Grove	town	26.99
	CHIPPEWA CO.		
	Chippewa Falls	city	2,519.98
	Lafayette	town	487.63
	Wheaton	town	26.24
	DUNN CO.		
	Elk Mound	town	94.69
	Elk Mound	village	90.32
	Menomonie	town	77.05
	Red Cedar	town	2,146.60
	Menomonie	city	1,543.40
	Tainter	town	102.00
	Weston	town	130.28
	EAU CLAIRE CO.		
	Eau Claire	city	7,152.91
	Seymour	town	42.82
	Union	town	102.54
	PIERCE CO.		
	Elmwood	village	17.79
	El Paso	town	65.89
	Hartland	town	133.14
	Rock Elm	town	110.82
	Salem	town	45.23
	Trenton	town	63.33
	WASHBURN CO.		
	Long Lake	town	44.78
	Loomis	town	26.84
			$15,078.11

TABLE XIII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Duluth Street Railway Co.	DOUGLAS CO.		
	Superior	city	$10,366.19
Eastern Wisconsin Railway & Light Company	FOND DU LAC CO.		
	Fond du Lac	city	$6,402.96
	Fond du Lac	town	148.13
	Friendship	town	802.07
	N. Fond du Lac	village	972.00
	WINNEBAGO CO.		
	Algoma	town	115.18
	Black Wolf	town	699.63
	Oshkosh	city	755.03
			$9,895.00
Grand Rapids Street Railroad Company	WOOD CO.		
	Grand Rapids	city	$488.72
	Nekoosa	village	230.54
	Port Edwards	village	273.27
	Port Edwards	town	44.09
			$1,036.62
Janesville Traction Company	ROCK CO.		
	Janesville	city	$376.95
Kenosha Electric Railway Co.	KENOSHA CO.		
	Kenosha	city	$3,298.33
La Crosse & Onalaska Street Railway Company	LA CROSSE CO.		
	Campbell	town	$72.97
	La Crosse	city	87.59
	Onalaska	city	75.03
			$235.59
La Crosse City Railway Co.	LA CROSSE CO.		
	La Crosse	city	$4,711.91
Manitowoc & Northern Traction Company	MANITOWOC CO.		
	Manitowoc	city	$643.47
	Manitowoc	town	98.32
	Two Rivers	city	309.89
	Two Rivers	town	79.18
			$1,130.86
Menominee & Marinette Light and Traction Company	MARINETTE CO.		
	Marinette	city	$2,344.38
	Peshtigo	town	11.57
			$2,355.95
Merrill Railway & Lighting Co.	LINCOLN CO.		
	Merrill	city	$1,225.10
Milwaukee Electric Railway & Light Company (The)	MILWAUKEE CO.		
	East Milwaukee	village	$2,215.85
	Lake	town	1,918.38
	Milwaukee	city	247,100.76
	Wauwatosa	town	852.05
			$252,087.04

TABLE XIII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Milwaukee Light, Heat & Traction Company	JEFFERSON CO.		
	Ixonia	town	$1,307.91
	Watertown	city	1,356.61
	Watertown	town	430.63
	KENOSHA CO.		
	Somers	town	1,007.37
	MILWAUKEE CO.		
	Cudahy	city	1,441.20
	E. Milwaukee	village	643.38
	Franklin	town	1,062.48
	Greenfield	town	3,414.20
	Lake	town	1,759.05
	Milwaukee	city	636.98
	Milwaukee	town	403.72
	N. Milwaukee	village	677.99
	Oak Creek	town	879.20
	S. Milwaukee	city	2,629.28
	Wauwatosa	city	1,925.66
	Wauwatosa	town	2,794.61
	West Allis	city	4,390.89
	W. Milwaukee	village	674.78
	Whitefish Bay	village	855.49
	RACINE CO.		
	Burlington	city	586.99
	Burlington	town	462.67
	Caledonia	town	1,886.57
	Mt. Pleasant	town	1,006.09
	Racine	city	14,932.37
	RACINE CO.		
	Rochester	town	620.95
	Waterford	town	180.07
	Waterford	village	187.12
	Norway	town	821.53
	WALWORTH CO.		
	East Troy	town	836.91
	East Troy	village	343.48
	WAUKESHA CO.		
	Delafield	town	2,399.87
	Mukwonago	town	269.15
	Mukwonago	village	187.76
	Muskego	town	1,687.28
	New Berlin	town	2,788.85
	Oconomowoc	city	511.37
	Oconomowoc	town	176.23
	Pewaukee	town	1,420.06
	Summit	town	1,391.86
	Vernon	town	1,042.61
	Waukesha	city	1,256.01
	Waukesha	town	794.62
			$64,081.94
Milwaukee Northern Railway Co.	MILWAUKEE CO.		
	Granville	town	$817.58
	Milwaukee	city	4,151.98
	Milwaukee	town	927.20

TABLE XIII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Milwaukee Northern Railway Co.—con.	OZAUKEE CO.		
	Belgium	town	621.97
	Cedarburg	city	987.85
	Cedarburg	town	203.39
	Grafton	town	482.49
	Grafton	village	426.36
	Mequon	town	697.54
	Port Washington	city	2,229.93
	Port Washington	town	639.39
	Thiensville	village	427.45
	SHEBOYGAN CO.		
	Cedar Grove	village	362.14
	Holland	town	434.60
	Oostburg	village	249.26
	Sheboygan	city	995.62
	Sheboygan	town	156.27
	Wilson	town	738.28
			$15,549.30
Rockford & Interurban Railway Company	ROCK CO.		
	Beloit	city	$869.86
	Beloit	town	738.83
	Janesville	city	790.93
	Rock	town	616.00
			$3,015.62
Sheboygan Railway & Electric Company	SHEBOYGAN CO.		
	Elkhart Lake	village	$130.02
	Plymouth	city	397.91
	Plymouth	town	542.85
	Rhine	town	148.51
	Sheboygan	city	5,463.74
	Sheboygan	town	1,039.74
	Sheboygan Falls	town	522.03
	Sheboygan Falls	village	236.64
			$8,481.44
Southern Wisconsin Railway Company	DANE CO.		
	Blooming Grove	town	$58.43
	Fair Oaks	village	802.34
	Madison	city	8,079.22
	Madison	town	483.82
			$9,423.81
Twin City General Electric Co.	IRON CO.		
	Carey	town	$196.15
	Vaughn	town	416.39
			$612.54
Waupaca Electric Light & Railway Co.	WAUPACA CO.		
	Farmington	town	$270.07
	Waupaca	city	483.84
			$753.91
Wausau Street Railroad Co.	MARATHON CO.		
	Schofield	village	$405.22
	Wausau	city	5,891.60
	Weston	town	535.45
			$6,832.27

TABLE XIII—Continued.

Name of company.	Towns, cities and villages to which tax is to be distributed.		Amount to be paid to each municipality.
Wisconsin Electric Railway Co.	WINNEBAGO CO.		
	Algoma	town	$368.81
	Clayton	town	141.98
	Black Wolf	town	128.27
	Neenah	city	209.68
	Neenah	town	348.85
	Omro	town	487.47
	Omro	village	89.80
	Oshkosh	city	3,529.62
	Oshkosh	town	425.48
	Vinland	town	395.52
			$6,125.48
Wisconsin Public Service Co.	BROWN CO.		
	Allouez	town	$197.48
	Ashwaubenon	town	363.01
	De Pere	city	657.24
	Green Bay	city	3,923.79
	Howard	town	43.61
	Lawrence	town	701.41
	Preble	town	21.56
	Wrightstown	town	235.50
	Wrightstown	village	298.26
	OUTAGAMIE CO.		
	Kauakuna	city	165.88
	Kaukauna	town	396.93
	Vandenbrock	town	63.19
			$7,067.86
Wisconsin Traction, Light, Heat and Power Company	CALUMET CO.		
	Harrison	town	$265.22
	OUTAGAMIE CO.		
	Appleton	city	8,022.60
	Grand Chute	town	471.95
	Kaukauna	city	1,368.49
	Little Chute	village	870.46
	Vandenbrock	town	289.20
	WINNEBAGO CO.		
	Menasha	city	1,755.69
	Menasha	town	363.23
	Neenah	city	1,671.26
			$15,078.10
	TOTAL		$446,358.98

Telegraph Companies.

The license fee system provided for telegraph companies by chapter 160, laws of 1897, was abolished by chapter 494, laws of 1905, pursuant to the provisions of which an annual assessment is made of the property of such companies and taxes levied thereon by the Tax Commission. The general plan of the act is similar to the law for the ad valorem taxation of railroad and street railway property, with such modifications as the difference in character of property requires. The revenue derived from the tax upon telegraph companies is paid into the state treasury and used for general state purposes. The following table shows the valuation placed upon the property of telegraph companies and the taxes levied thereon for the year 1912:

VALUATION AND TAXES LEVIED ON TELEGRAPH COMPANIES.

Name of Company.	1912 (Rate .01108684064)	
	Valuation.	Tax.
Chicago & Milwaukee Telegraph Co.	$16,000	$177 39
Chicago, Milwaukee & Lake Superior Telegraph Co.	85,000	942 38
North American Telegraph Co.	260,000	2,882 58
Western Union Telegraph Co.	1,600,000	17,738 95
Total	$1,961,000	$21,741 30

The Western Union Telegraph Co. has, each year, paid the tax levied upon its property as above, "under protest," and has commenced action to recover a portion of the amounts so paid as excessive, all of which actions are pending, though none has yet been brought to trial.

Express, Sleeping Car, Freight Line and Equipment Companies.

The property of these companies is assessed and taxes levied thereon by the Tax Commission pursuant to the provisions of chapters 111, 112, 113 and 114, laws of 1899, as amended by chapter 477, laws of 1905.

The valuations placed on the property of each class of companies and the taxes levied thereon for the year 1911 are given in the following table:

STATEMENT OF EXPRESS, SLEEPING CAR, FREIGHT LINE AND EQUIPMENT COMPANIES DOING BUSINESS IN WISCONSIN.

SHOWING THE ACTUAL VALUE OF THE PROPERTY OF EACH CLASS OF COMPANIES SUBJECT TO ASSESSMENT AND TAXATION IN THIS STATE FOR THE YEAR 1911 AND THE AMOUNT OF TAX LEVIED UPON THE PROPERTY OF EACH CLASS OF COMPANIES:

Name of company.	1911 (Rate .01108684064)	
	Valuation.	Tax.
Express Companies:		
Adams	$100.000	$1.117 97
American	600,000	6,707 81
Northern	150.000	1,676 95
United States	50.000	558 98
Wells, Fargo & Co	500.000	5,589 84
Western	55,000	614 88
Total	$1,455,000	$16,266 43
Sleeping Car Companies:		
The Pullman Co	1,130,000	12,633 04
Freight Line and Equipment Companies	711,930	8,629 93
Total, all companies	3,296,930	$37,529 40

CHAPTER VIII

STATISTICS OF ASSESSMENTS AND TAXES

Chapter 262, laws of 1911, provides for the return to the Tax Commission, instead of the secretary of state as heretofore, of the statistics of local assessments compiled by county clerks and the statistics of taxes prepared by town, city, village and county clerks. There are reproduced herewith, therefore, the abstracts of local assessments together with the tables of true values as fixed by the Commission in accordance with the provisions of the above chapter and of paragraph 14, section 9, chapter 380, laws of 1905.

Tables XIV, XV, XVI and XVII, following, contain a statement of the state and local assessed valuations by classes of property with the addition of the local assessments of 1910 and 1911 and the state assessments of 1911 and 1912.

The percentages of assessed to true values in these tables differ from those contained in the tables published in 1910, in that the state assessment of each year is compared with the local assessment of the same year. In the 1910 report the comparison was between the local assessment of one year and the state assessment of the year following.

TABLE XIV.

STATE ASSESSMENTS, TOTALS BY YEARS, 1901-1912, AND LOCAL ASSESSMENTS, 1901-1911.

STATE ASSESSMENTS.

Year.	Total.	Real estate.	Personal property.
1912	$2,841,630,416	$2,308,301,611	$533,328,805
1911	2,941,412,842	2,202,225,226	739,187,616
1910	2,743,180,404	2,108,140,021	635,040,383
1909	2,602,549,798	2,012,484,004	590,065,794
1908	2,478,561,786	1,901,290,225	577,271,561
1907	2,256,300,000	1,780,265,161	476,034,839
1906	2,124,800,000	1,671,142,204	453,657,796
1905	1,952,700,000	1,513,335,382	439,364,618
1904	1,842,841,000	1,422,621,485	420,219,515
1903	1,753,172,000	1,309,504,464	443,667,536
1902	1,504,346,000	1,226,376,973	277,969,027
1901	1,436,284,000	1,186,349,139	249,934,861

LOCAL ASSESSMENTS.

Year.	Total.	Real estate.	Personal property.
1911	$1,907,872,199	$1,541,001,820	$366,870,379
1910	1,680,811,386	1,359,777,232	321,034,154
1909	1,613,427,747	1,314,252,061	299,175,686
1908	1,565,884,559	1,277,990,641	287,893,918
1907	1,531,909,825	1,251,461,225	280,448,600
1906	1,468,922,432	1,210,951,632	257,970,800
1905	1,411,576,454	1,169,451,206	242,125,248
1904	1,384,580,755	1,146,813,692	237,767,063
1903	1,358,098,346	1,119,992,057	238,106,289
1902	1,369,811,147	1,086,223,406	283,587,741
1901	1,082,641,094	878,911,348	203,729,746

TABLE XV.

PERCENTAGE OF LOCAL TO STATE ASSESSMENTS AND OF EACH CLASS OF PROPERTY TO THE TOTAL OF ALL PROPERTY IN BOTH LOCAL AND STATE ASSESSMENTS.

Assessment year.	Local Assessments, 1901-1911.			State Assessments, 1901-1912.					
	Percentages of local to state assessments.			Percentages of each class of property to the total of all.					
				State assessment.			Local assessment.		
	Total.	Real estate.	Personal property.	Total.	Real estate.	Personal property.	Total.	Real estate.	Personal property.
1912	.....	.....	.....	100.00	81.23	18.77	.....	.....	.....
1911	64.86	69.98	49.63	100.00	74.87	25.13	100.00	80.78	19.22
1910	61.28	64.50	50.55	100.00	76.85	23.15	100.00	80.90	19.10
1909	61.99	65.30	50.70	100.00	77.33	22.67	100.00	81.46	18.54
1908	63.16	67.22	49.86	100.00	76.72	23.23	100.00	81.61	18.39
1907	67.90	70.29	58.91	100.00	78.90	21.10	100.00	81.70	18.30
1906	69.11	72.44	56.86	100.00	78.65	21.35	100.00	82.44	17.56
1905	72.27	77.27	55.10	100.00	77.50	22.50	100.00	82.85	17.15
1904	75.11	80.60	56.57	100.00	77.20	22.80	100.00	82.83	17.17
1903	77.46	85.51	53.67	100.00	74.69	25.31	100.00	82.47	17.53
1902	91.04	83.58	102.01	100.00	81.51	18.49	100.00	79.29	20.71
1901	75.36	74.10	81.51	100.00	82.59	17.41	100.00	81.18	18.82

TABLE XVI.

TOTAL STATE AND LOCAL ASSESSMENTS BY YEARS AND CLASSES OF PROPERTY.

Taxable property as classified for taxation.	State assessment 1912	State assessment 1911	Local assessment 1911	State assessment 1910	Local assessment 1910	State assessment 1909	Local assessment 1909	State assessment 1908	Local assessment 1908
Total of all property	$2,841,630,416	$2,941,412,842	$1,907,872,199	$2,743,180,404	$1,680,811,386	$2,602,540,798	$1,613,427,747	$2,478,561,776	$1,565,884,559
Real estate	2,308,301,611	2,202,225,226	1,541,601,820	2,108,140,021	1,359,777,232	2,012,484,004	1,314,252,061	1,901,290,225	1,277,990,641
Personal property	533,328,805	739,187,616	366,870,379	635,040,383	321,034,154	590,065,794	299,175,686	577,271,561	287,893,918
Horses and mules	71,734,865	79,065,208	45,421,435	60,987,594	44,100,867	54,785,820	40,487,354	55,424,201	38,586,313
Neat cattle	69,750,219	64,784,525	40,516,258	65,530,182	41,198,349	63,532,015	37,954,780	57,587,401	36,774,283
Sheep and lambs	2,458,048	2,889,774	1,489,457	2,936,09	1,757,167	2,705,152	1,777,996	2,879,240	1,789,768
Swine	9,316,420	10,560,315	3,885,560	5,679,197	4,634,174	5,530,088	3,231,937	6,458,082	3,469,514
Wagons, carriages and sleighs	16,544,042	16,552,792	7,402,695	16,305,130	7,348,750	15,909,039	7,189,724	12,306,590	7,388,647
Bank stock	50,977,342	49,584,598	41,555,364	49,705,731	36,050,659	48,719,890	32,018,596	47,013,437	32,662,413
Moneys and credits	.....	150,930,603	25,791,947	95,828,954	22,349,805	90,513,353	22,278,390	90,581,963	23,763,504
Watches, pianos, organs and bicycles	....	9,537,227	5,601,986	8,032,063	5,244,467	7,763,035	4,536,380	7,734,649	4,153,944
Merchants' and manufacturers' stock, leaf tobacco	219,594,583	191,861,161	105,537,926	189,759,872	86,178,242	179,910,217	83,136,880	181,677,535	76,035,435
Logs, timber, etc	20,775,390	20,771,971	11,517,395	20,858,380	11,376,133	19,572,221	11,369,197	21,780,667	11,341,982
Water and light companies	40,632,119	35,860,046	26,441,262	29,719,763	18,856,635	26,911,826	16,070,825	23,995,735	14,989,295
Automobiles and other motor vehicles	8,917,620	10,651,825	6,098,018	3,524,06	3,814,812	2,240,352	2,173,021	.....	1,275,934
Steam and other vessels and all other personal property	22,628,157	96,137,571	45,611,176	86,134,356	38,124,094	71,972,786	36,950,606	69,832,061	35,662,786

TABLE XVII.

PERCENTAGE OF LOCAL ASSESSMENT TO STATE AND OF EACH CLASS OF PROPERTY TO THE TOTAL, LOCAL ASSESSMENTS, 1908-1911, AND STATE ASSESSMENTS, 1908-1912.

Taxable property as classified for taxation.	Ratio of local to state.				Ratio of each class of property to the total.								
	1911 local to 1911 state.	1910 local to 1910 state.	1909 local to 1909 state.	1908 local to 1908 state.	1912 state.	1911 state.	1911 local.	1910 state.	1910 local.	1909 state.	1909 local.	1908 state.	1908 local.
Total of all property	63.79	61.27	61.99	63.16	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Real estate	69.98	64.50	65.30	67.20	81.23	74.87	80.78	76.85	80.90	77.33	81.46	76.72	81.61
Personal property	45.38	50.55	50.70	49.86	18.77	25.13	19.22	23.15	19.10	22.67	18.54	23.28	18.39
Horses and mules	57.45	72.30	73.90	69.60	2.53	2.69	2.38	2.22	2.62	2.11	2.51	2.23	2.47
Neat cattle	62.53	62.85	59.73	63.85	2.45	2.20	2.12	2.39	2.45	2.44	2.35	2.32	2.35
Sheep and lambs	51.54	59.83	65.71	62.14	.09	.10	.08	.11	.11	.10	.11	.12	.11
Swine	36.80	81.60	58.43	53.73	.33	.36	.20	.21	.27	.21	.20	.26	.22
Wagons, carriages and sleighs	44.72	45.07	45.19	60.04	.58	.56	.39	.59	.44	.61	.45	.49	.47
Bank stock	83.80	72.51	65.71	69.46	1.79	1.69	2.18	1.81	2.14	1.87	1.98	1.90	2.09
Moneys and credits	.....	23.32	24.61	26.23	.....	5.13	1.35	3.49	1.33	3.48	1.38	3.65	1.52
Watches, pianos, organs, and bicycles	.....	65.04	58.43	53.70	.....	.32	.29	.29	.31	.30	.28	.31	.27
Mer. and mfg. stock and leaf tobacco	55.00	45.42	46.21	41.25	7.73	6.52	5.53	6.93	5.13	6.92	5.15	7.34	4.85
Logs, timber, etc.	55.44	54.53	58.08	52.06	.73	.71	.60	.76	.68	.75	.71	.88	.72
Water and light companies	73.72	63.44	59.71	62.43	1.43	1.22	1.39	1.08	1.12	1.03	1.00	.97	.96
Automobiles and other motor vehicles	57.25	108.25	96.98	.....	.31	.36	.32	.13	.23	.09	.13	.....	.08
Steam and other vessels and all other personal property	47.44	44.26	51.36	51.07	.80	3.27	2.39	3.14	2.27	2.76	2.29	2.81	2.28

In general the same comments that were made two years ago relative to the undervaluation of property apply to the values indicated in these tables. The income tax assessors, however, during 1912 have urged, with much success, the assessment of property at full value and it is believed that the statistics to be presented two years hence will show that a marked improvement has been made. There seems to be a material change in the ratio of assessed to true value for the state as a whole between 1910 and 1911. This change is largely due to the very good assessment in Milwaukee city.

Table XVIII, following, contains a statement by counties of the local assessment of all property in 1910 and 1911, and the state assessment for 1911 and 1912, together with the percentage which the 1911 local assessment formed of the state assessment for the same year.

TABLE XVIII.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY, TOTAL ALL PROPERTY.

County.	State—1912.	State—1911.	Local—1911.	Per cent 1911 Local to 1911 State.	Local—1910.
Adams	$7,693,517	$7,924,176	$4,835,210	61.01	$4,704,527
Ashland	17,969,541	17,842,526	13,125,994	74.32	12,216,056
Barron	23,101,490	24,534,636	14,873,335	60.63	14,078,135
Bayfield	16,259,510	16,378,482	10,029,929	61.24	10,063,507
Brown	56,306,594	57,738,481	32,421,499	56.14	31,702,396
Buffalo	18,924,633	19,374,697	14,021,856	72.37	13,658,798
Burnett	6,121,274	6,396,711	3,389,254	52.99	3,098,064
Calumet	26,122,037	26,700,961	20,736,454	77.67	20,339,079
Chippewa	29,985,427	31,515,273	16,984,007	53.89	17,289,151
Clark	29,811,131	30,655,464	21,651,982	70.64	21,433,491
Columbia	46,775,085	47,470,149	33,176,314	69.89	33,264,377
Crawford	14,602,258	15,274,448	7,964,840	52.15	7,966,895
Dane	136,600,741	138,501,543	84,114,285	60.74	81,671,614
Dodge	80,854,813	82,989,547	46,617,093	56.17	45,907,711
Door	17,048,998	17,560,520	8,478,010	48.28	8,209,438
Douglas	52,188,112	46,441,386	28,178,094	60.67	26,983,550
Dunn	23,810,853	25,333,949	11,706,563	46.22	11,705,959
Eau Claire	29,048,890	32,001,560	18,979,190	59.33	18,717,720
Florence	4,253,072	4,102,653	1,981,273	48.30	2,010,017
Fond du Lac	70,134,431	75,217,638	49,240,632	65.46	48,616,368
Forest	12,476,800	11,461,330	7,255,785	63.32	6,912,146
Grant	54,857,436	56,601,295	35,225,590	62.24	35,191,403
Green	45,752,427	46,214,062	26,753,106	57.89	26,490,548
Green Lake	22,328,183	23,378,883	13,278,492	56.80	13,071,253
Iowa	39,255,531	39,924,968	23,447,608	58.73	23,333,553
Iron	7,625,136	8,120,495	3,359,861	41.38	3,329,021
Jackson	16,604,925	17,898,007	10,791,911	60.29	10,945,610
Jefferson	55,181,450	56,906,349	33,623,241	59.09	33,126 397
Juneau	17,704,626	18,938,970	9,793,243	51.71	9,839,426
Kenosha	47,167,790	43,015,736	33,622,625	78.16	32,206,223
Kewaunee	20,366,713	20,835,916	11,857,544	56.92	11,463,016
La Crosse	40,699,067	44,420,464	32,629,053	73.46	32,054,050
Lafayette	40,918,257	41,705,379	24,535,070	58.83	22,608,339
Langlade	19,385,197	18,981,490	13,288,800	70.00	13,260,490
Lincoln	18,784,980	19,849,586	11,685,329	58.86	11,961,181

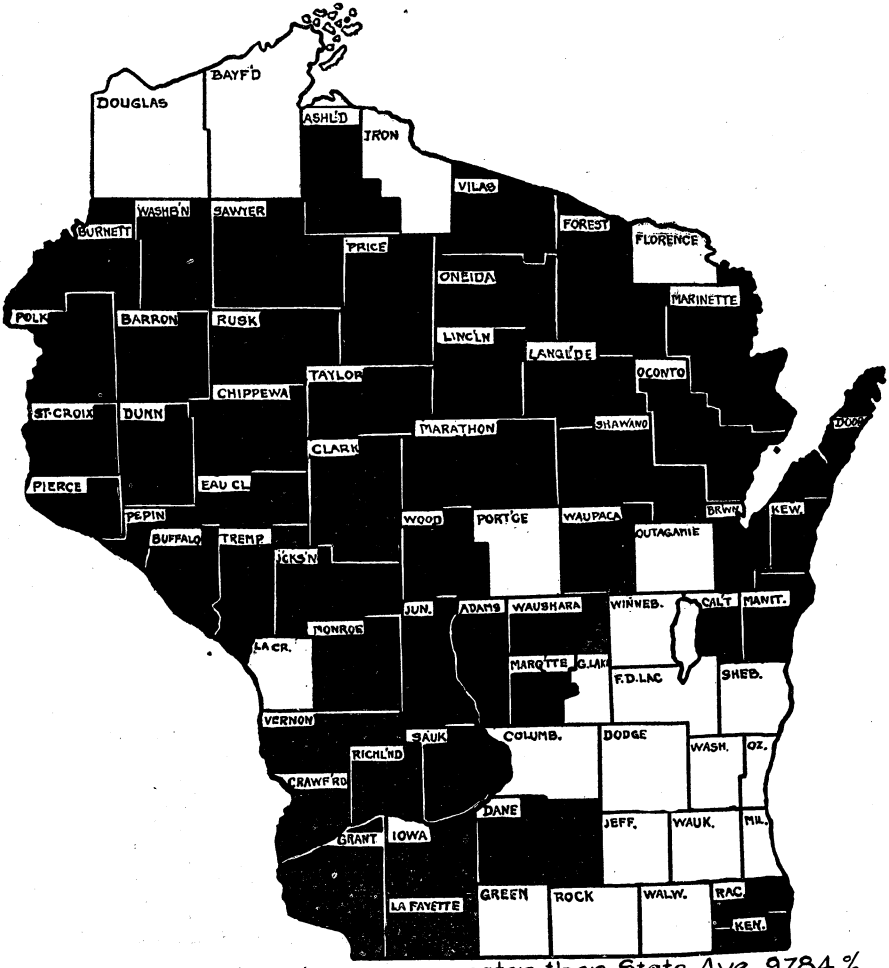
TABLE XVIII.—Cont.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY, TOTAL ALL PROPERTY —Continued.

County.	State—1912.	State—1911.	Local—1911.	Per cent 1911 Local to 1911 State.	Local—1910.
Manitowoc	56,364,936	59,393,458	36,807,847	61.97	35,965,225
Marathon	50,414,493	53,425,322	24,467,235	45.81	23,712,537
Marinette	27,615,084	29,849,672	14,093,540	47.21	13,890,289
Marquette	11,74),656	12,336,955	6,777,098	54.94	6,729,503
Milwaukee	548,604,119	578,715,754	488,270,636	84.38	232,199,739
Monroe	28,433,153	29,715,040	17,987,252	60.55	17,825,154
Oconto	21,747,487	23,909,426	11,140,115	46.55	11,230,234
Oneida	13,918,603	14,206,308	6,409,212	45.12	6,325,485
Outagamie	57,101,894	58,945,236	40,646,762	68.96	38,893,806
Ozaukee	23,181,256	23,924,411	17,294,102	72.12	16,931,586
Pepin	6,922,847	7,391,796	3,584,587	48.50	3,641,804
Pierce	21,989,286	23,098,717	12,579,606	54.47	12,005,498
Polk	21,547,971	22,429,361	12,003,818	53.50	11,585,003
Portage	23,859,792	24,546,636	13,703,755	55.83	13,322,590
Price	12,524,575	13,213,763	7,070,224	53.51	7,227,085
Racine	78,114,515	75,850,284	45,759,955	60.33	43,664,942
Richland	23,436,741	23,874,630	12,855,437	53.85	12,557,924
Rock	82,225,187	84,942,581	51,358,554	60.47	50,475,562
Rusk	11,637,752	11,630,348	6,001,782	51.61	5,849,535
St. Croix	28,465,616	30,216,809	15,825,859	52.37	15,709,636
Sauk	44,383,160	46,034,284	25,604,595	55.63	25,092,792
Sawyer	10,214,797	9,964,843	4,762,662	47.80	4,889,202
Shawano	28,009,145	28,760,229	15,039,487	52.30	14,477,539
Sheboygan	63,160,048	64,902,185	44,756,834	68.96	43,510,286
Taylor	13,454,325	14,143,482	8,152,052	57.65	7,872,127
Trempealeau	24,621,067	25,848,020	14,920,662	57.72	14,995,841
Vernon	29,106,288	30,938,962	16,568,106	53.56	16,555,076
Vilas	8,725,367	9,295,976	2,582,463	27.78	2,523,843
Walworth	56,403,804	58,973,994	34,711,138	58.87	34,449,451
Washburn	7,285,959	7,244,083	3,398,538	46.92	3,383,628
Washington	35,641,286	36,385,991	25,710,437	70.67	25,186,515
Waukesha	53,492,782	56,732,282	28,638,160	50.49	28,037,348
Waupaca	32,353,052	34,057,893	22,197,602	65.18	21,6?2,5 1
Waushara	18,718,127	19,233,781	12,608,285	65.56	10,823,262
Winnebago	69,930,494	74,775,471	51,519,113	68.91	50,668,872
Wood	29,554,827	30,297,129	18,408,617	60.77	17,535,361
Total	$2,841,630,416	$2,941,412,842	$1,907,872,199	64.86	$1,680,811,386

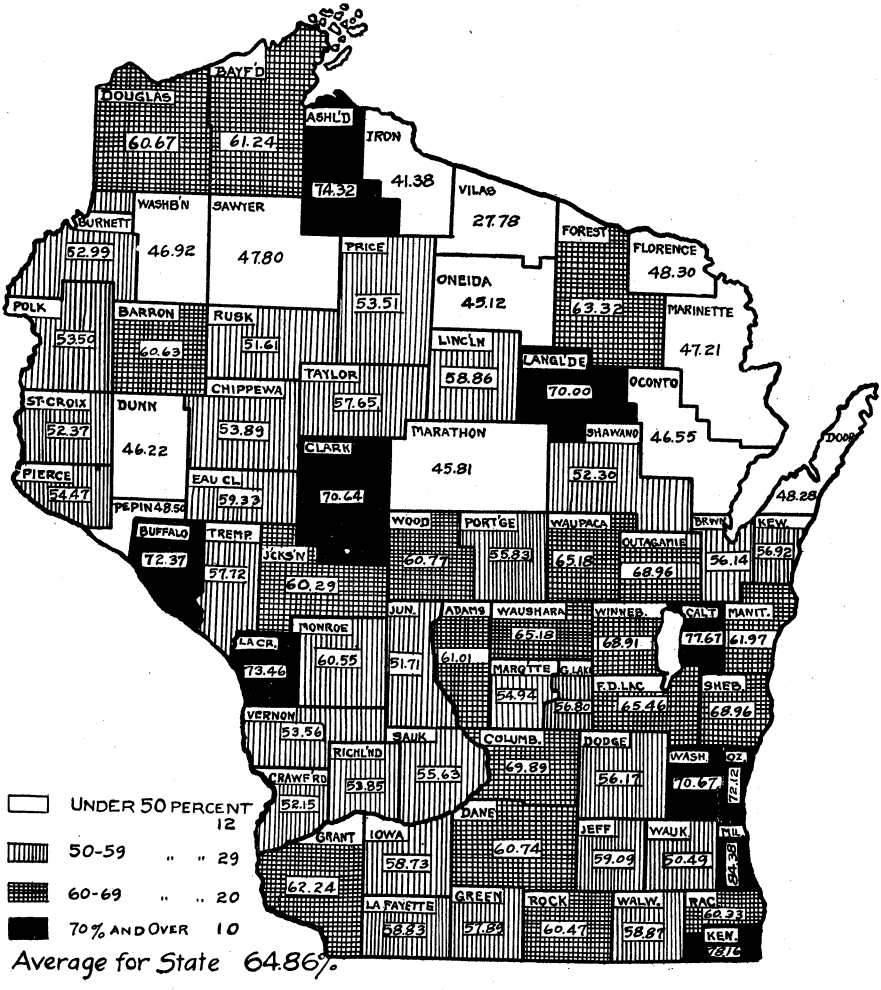
Map I on the following page contrasts the counties in which the value of property has increased more than the average between 1901 and 1912 with those in which the increase has been below the average. The black counties have shown more and the white counties less than the average increase as measured by the state assessments of 1901 and 1912. The relative decrease has been sustained by the southern and eastern counties and those counties containing large cities. The increase noted in the northern and western counties attaches primarily to real estate and is explained by the fact that lands just coming into agricultural use have increased in value more rapidly than city lots and farming land in the old and well settled counties.

MAP I.
RELATIVE INCREASE IN VALUE OF PROPERTY OF COUNTIES 1901-1912



50 Black counties show increase greater than State Ave. 97.84 %
21 White " " " less " " " 97.84 %

MAP II
RATIO OF LOCAL TO STATE ASSESSMENT
1911.



Map II is a comparison of the ratio of assessed to true value for the various counties of the state with the state and local assessment of 1911 and is similar to map III of the report of 1910. A period of two years elapsed between these two maps. The best assessed county in the state in 1909 was Calumet county with a ratio of 76.62 per cent. While Calumet in 1911 was assessed at a ratio of 77.67 per cent, it drops to third place in the rank of well assessed counties, having been passed by Kenosha with a ratio of 78.16 per cent and Milwaukee with a ratio of 84.38 per cent. The increase in the assessment of Milwaukee from 50.93 per cent of true value to 84.38 per cent is the greatest achievement in the improvement of the assessment conditions in the state in this period and accounts for the increase in the state average from 58.81 per cent in the earlier year to 64.86 per cent in 1911.

While nine counties had an assessment of 70 per cent or more in 1909, ten counties had an assessment of more than this amount in 1911. However, while only seven counties had an assessment of less than 50 per cent in 1909, twelve counties were below that ratio in 1911. Where thirty-five counties showed an assessed ratio between 50 and 60 per cent in 1909, only twenty-nine were in this group in 1911. Twenty counties in both years were in the group assessed between 60 and 70 per cent.

Buffalo county received special mention in the report of 1910 for the exceptionally good work of the supervisor of assessment in that county and for the relatively high ratio of the assessed to true value in 1909. This work was still further improved in 1911, Buffalo ranking with the ten counties of the state assessed at more than 70 per cent. Columbia county, on the other hand, lost ground slightly dropping from the 70 per cent to the 60 per cent group. On the whole, the showing for the state is not favorable, forty-seven counties showing a lower ratio of assessed to true values in 1911 than in 1909, and only twenty-four showing a higher ratio. However, the figures in this report, as has been stated, do not show the effects of the supervisory work of the assessors of income acting as supervisors of assessment.

Tables XIX to XXII following contain a statement of the assessed valuation of the various classes of property in detail by counties and tables XXIII and XXIV contain statements of the state and local assessments, population and state, county and local tax levies for the state from 1872 to 1911.

TABLE XIX.

PERCENTAGE OF STATE ASSESSMENT OF EACH COUNTY TO TOTAL OF STATE—ALL PROPERTY.

County.	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901
Adams	0.27	0.27	0.27	0.26	0.26	0.28	0.27	0.25	0.23	0.28	0.20	0.18
Ashland	.63	.61	.61	.61	.63	.63	.66	.68	.64	.63	.58	.58
Barron	.81	.83	.80	.79	.79	.78	.74	.69	.62	.56	.47	.38
Bayfield	.57	.56	.58	.60	.64	.61	.62	.70	.72	.70	.74	.73
Brown	1.98	1.96	2.02	2.00	1.92	1.88	1.87	1.85	1.84	1.68	1.67	1.56
Buffalo	.67	.66	.67	.68	.67	.69	.68	.68	.63	.62	.58	.50
Burnett	.22	.22	.22	.21	.21	.20	.19	.17	.15	.13	.12	.11
Calumet	.92	.91	.93	.94	.92	.95	.94	.95	.93	.89	.87	.85
Chippewa	1.06	1.07	1.07	1.08	1.07	1.08	1.05	.94	.90	.96	.79	.72
Clark	1.05	1.04	1.06	1.08	1.11	1.16	1.13	1.04	.99	.92	.77	.69
Columbia	1.65	1.61	1.64	1.64	1.67	1.73	1.72	1.73	1.75	1.75	1.74	1.65
Crawford	.51	.52	.50	.50	.52	.52	.51	.49	.48	.46	.36	.32
Dane	4.81	4.71	4.63	4.63	4.58	4.59	4.57	4.62	4.56	4.53	4.73	4.60
Dodge	2.85	2.82	2.75	2.79	2.82	2.97	2.98	3.00	3.11	3.05	3.26	3.26
Door	.60	.60	.59	.58	.55	.54	.53	.48	.46	.42	.37	.36
Douglas	1.84	1.58	1.72	1.62	1.58	1.70	1.80	1.44	1.42	1.51	1.61	1.90
Dunn	.84	.86	.85	.86	.85	.86	.85	.80	.78	.74	.70	.70
Eau Claire	1.02	1.09	1.06	1.06	1.03	1.01	1.01	1.01	.99	.96	.90	.88
Florence	.15	.14	.14	.14	.13	.13	.12	.13	.12	.12	.15	.17
Fond du Lac	2.47	2.56	2.64	2.74	2.79	2.85	2.83	2.72	2.64	2.65	2.65	2.80
Forest	.44	.39	.38	.35	.30	.25	.26	.23	.22	.19	.22	.22
Grant	1.93	1.92	1.97	2.00	2.01	2.05	2.11	2.15	2.12	1.94	1.92	1.81
Green	1.61	1.57	1.54	1.56	1.55	1.61	1.60	1.63	1.61	1.65	1.72	1.70
Green Lake	.79	.80	.80	.80	.82	.85	.85	.85	.86	.86	.88	.87
Iowa	1.38	1.36	1.38	1.37	1.35	1.35	1.32	1.35	1.44	1.26	1.18	1.01
Iron	.27	.28	.25	.24	.20	.19	.19	.22	.24	.28	.30	.30
Jackson	.58	.61	.59	.60	.60	.59	.58	.53	.49	.48	.40	.38
Jefferson	1.94	1.93	1.95	2.00	2.04	2.12	2.18	2.25	2.31	2.32	2.30	2.35
Juneau	.62	.64	.65	.67	.68	.70	.70	.69	.66	.65	.59	.51
Kenosha	1.66	1.46	1.52	1.48	1.43	1.34	1.29	1.27	1.29	1.33	1.28	1.31
Kewaunee	.72	.71	.70	.69	.68	.65	.64	.61	.59	.58	.52	.49
La Crosse	1.43	1.51	1.54	1.58	1.59	1.55	1.60	1.69	1.70	1.90	2.14	2.29
Lafayette	1.44	1.42	1.43	1.43	1.43	1.44	1.40	1.36	1.34	1.35	1.27	1.25
Langlade	.68	.64	.62	.60	.58	.54	.51	.47	.44	.39	.32	.30
Lincoln	.66	.67	.66	.66	.65	.61	.55	.51	.49	.46	.39	.35

Manitowoc	1.98	2.02	2.03	2.06	2.06	2.10	2.07	2.08	2.07	1.97	1.91	1.83
Marathon	1.77	1.81	1.77	1.76	1.73	1.69	1.58	1.47	1.35	1.12	.93	.89
Marinette	.97	1.02	1.01	1.00	1.02	1.01	1.00	.96	.93	.90	.92	.83
Marquette	.41	.42	.41	.39	.39	.37	.36	.34	.32	.34	.31	.29
Milwaukee	19.31	19.67	19.70	19.23	19.57	19.18	19.69	20.54	21.15	22.32	23.21	24.50
Monroe	1.00	1.01	.99	1.00	1.00	1.02	1.04	.98	.96	.93	.81	.72
Oconto	.77	.81	.80	.80	.80	.80	.76	.69	.68	.61	.52	.51
Oneida	.49	.48	.46	.45	.42	.39	.33	.35	.34	.40	.47	.41
Outagamie	2.01	2.00	2.07	2.10	2.10	2.13	2.11	2.12	2.12	2.08	2.13	2.16
Ozaukee	.82	.81	.83	.83	.84	.86	.88	.90	.89	.91	1.00	1.01
Pepin	.24	.25	.24	.25	.25	.25	.25	.25	.23	.22	.18	.17
Pierce	.77	.79	.78	.79	.78	.79	.79	.79	.76	.77	.72	.74
Polk	.76	.76	.73	.72	.67	.68	.66	.59	.55	.53	.43	.39
Portage	.84	.83	.83	.82	.81	.83	.83	.85	.85	.81	.88	.86
Price	.44	.45	.43	.42	.41	.40	.39	.35	.31	.29	.26	.25
Racine	2.75	2.58	2.53	2.58	2.57	2.42	2.30	2.26	2.31	2.33	2.44	2.48
Richland	.83	.81	.78	.76	.75	.77	.75	.74	.72	.73	.59	.57
Rock	2.89	2.89	2.91	2.96	2.97	3.00	3.11	3.21	3.30	3.26	3.39	3.47
Rusk	.41	.40	.39	.37	.33	.31	.31	.29	.27	.25	.21	.17
St. Croix	1.00	1.03	1.02	1.04	1.05	1.08	1.06	.99	.95	.92	.80	.77
Sauk	1.56	1.56	1.54	1.53	1.53	1.58	1.59	1.57	1.56	1.49	1.45	1.38
Sawyer	.36	.34	.33	.32	.30	.23	.21	.21	.18	.17	.19	.20
Shawano	.99	.98	.97	.97	.95	.92	.90	.81	.75	.65	.54	.50
Sheboygan	2.22	2.21	2.32	2.41	2.41	2.37	2.37	2.42	2.52	2.64	2.77	2.75
Taylor	.47	.48	.48	.48	.49	.49	.44	.42	.39	.36	.33	.31
Trempealeau	.87	.88	.86	.86	.82	.81	.81	.79	.79	.79	.67	.64
Vernon	1.02	1.05	1.04	1.03	1.03	1.05	1.04	1.06	1.01	.97	.84	.75
Vilas	.31	.32	.34	.36	.35	.31	.26	.30	.29	.28	.20	.19
Walworth	1.98	2.01	1.93	1.99	1.98	2.05	2.12	2.19	2.28	2.38	2.56	2.57
Washburn	.26	.25	.24	.24	.24	.22	.21	.19	.19	.17	.18	.16
Washington	1.25	1.24	1.26	1.30	1.30	1.34	1.37	1.39	1.41	1.43	1.54	1.53
Waukesha	1.88	1.93	1.92	1.96	1.98	2.10	2.15	2.27	2.37	2.44	2.85	2.98
Waupaca	1.14	1.16	1.13	1.11	1.09	1.12	1.10	1.09	1.10	1.05	.91	.83
Waushara	.66	.65	.65	.65	.66	.65	.63	.60	.58	.55	.49	.45
Winnebago	2.46	2.54	2.54	2.60	2.68	2.66	2.70	2.82	2.94	2.96	3.06	3.12
Wood	1.04	1.03	1.01	1.02	.99	1.02	.98	.94	.82	.78	.62	.54
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

TABLE XX.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY—REAL ESTATE.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$6,604,454	$6,256,440	$4,006,722	$3,866,137
Ashland	13,933,752	12,620,588	9,168,133	9,074,454
Barron	19,203,831	18,114,483	11,888,669	10,995,813
Bayfield	13,796,229	12,880,537	7,802,263	7,428,415
Brown	45,927,771	43,263,765	25,644,276	25,740,025
Buffalo	15,342,019	14,660,065	11,409,911	11,0[illegible]2.908
Burnett	5,228,516	5,025,208	2,862,455	2,529,319
Calumet	22,357,584	21,627,444	17,693,123	17,418,595
Chippewa	24,123,772	22,440,866	13,237,406	13,314,466
Clark	24,854,165	23,749,089	18,117,306	17,834,861
Columbia	37,816,204	36,592,348	27,393,629	27,227,622
Crawford	11,440,154	10,822,750	6,179,445	6,158,252
Dane	114,858,778	108,544,664	71,168,098	68,972,182
Dodge	69,388,234	67,011,440	41,486,369	40,898,630
Door	14,540,602	13,644,238	6,957,037	6,677,195
Douglas	42,722,888	35,053,938	23,407,831	22,470,653
Dunn	19,303,182	18,595,230	9,224,659	9,075,260
Eau Claire	22,780,309	22,024,615	14,329,462	14,128,919
Florence	3,970,412	3,687,646	1,830,881	1,866,423
Fond du Lac	58,244,500	57,304,042	40,697,172	40,338,523
Forest	11,054,074	10,145,260	6,311,030	6,209,657
Grant	45,593,961	43,835,235	29,128,863	29,087,481
Green	38,251,114	36,360,136	21,407,942	21,044,350
Green Lake	19,010,184	18,641,590	11,261,924	11,062,422
Iowa	33,181,968	32,061,588	19,183,635	19,067,872
Iron	6,928,180	6,649,854	2,933,489	2,863,176
Jackson	13,734,586	13,574,036	8,663,817	8,649,513
Jefferson	45,613,426	44,164,408	27,655,448	27,416,859
Juneau	15,041,410	14,826,642	8,125,887	8,135,876
Kenosha	34,006,004	31,837,724	24,104,339	23,356,259
Kewaunee	17,255,988	16,334,316	10,053,848	9,725,861
La Crosse	30,165,406	29,232,072	23,253,238	22,893,454
Lafayette	34,794,292	33,463,170	20,351,960	18,539,204
Langlade	16,312,354	15,233,272	11,333,278	11,419,847
Lincoln	15,023,778	13,992,056	8,905,245	9,054,378
Manitowoc	47,009,993	45,684,510	30,687,781	30,249,949
Marathon	41,442,923	39,475,083	20,070,162	19,520,822
Marinette	21,098,185	20,646,745	10,307,771	10,261,598
Marquette	10,007,292	9,805,626	5,657,993	5,639,122
Milwaukee	427,118,590	406,544,370	384,774,346	229,074,060
Monroe	23,231,197	22,144,603	14,415,624	14,257,571
Oconto	17,987,018	17,523,616	8,896,443	8,917,136
Oneida	10,912,862	10,450,370	4,783,468	4,808,305
Outagamie	46,843,930	44,972,102	34,140,585	32,795,354
Ozaukee	19,780,526	19,338,314	14,959,360	14,722,655
Pepin	5,657,016	5,475,703	2,853,028	2,881,906
Pierce	17,887,178	17,381,758	10,130,466	9,453,878
Polk	16,885,059	15,930,637	8,894,657	8,660,002
Portage	19,326,740	18,418,020	10,969,481	10,564,867
Price	11,220,675	10,558,051	6,098,398	6,057,793
Racine	54,997,642	51,873,878	35,918,935	34,208,796
Richland	19,174,130	17,847,922	10,147,550	9,911,015
Rock	65,430,608	63,219,614	41,941,701	41,464,242
Rusk	10,103,915	9,382,188	5,204,474	5,039,226
St. Croix	22,647,754	21,734,184	12,686,519	12,510,924

TABLE XX.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY—REAL ESTATE.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	37,478,340	35,748,242	20,528,020	20,078,460
Sawyer	9,398,476	8,670,184	4,405,658	4,544,906
Shawano	23,541,018	22,529,095	12,326,626	11,884,713
Sheboygan	49,954,230	48,040,584	35,117,455	34,437,085
Taylor	11,635,376	11,252,044	6,870,978	6,557,206
Trempealeau	20,033,280	19,207,722	11,667,754	11,562,590
Vernon	23,875,261	22,885,290	13,188,287	13,098,679
Vilas	7,871,437	7,979,211	2,215,847	2,164,699
Walworth	48,761,898	46,450,444	29,117,096	28,842,980
Washburn	6,525,208	6,129,976	3,054,109	3,046,463
Washington	30,201,326	29,147,538	21,737,505	21,355,490
Waukesha	46,856,694	45,447,096	24,634,437	24,127,547
Waupaca	27,048,970	25,767,930	18,074,141	17,657,072
Waushara	15,647,937	15,027,205	10,323,166	8,776,439
Winnebago	54,302,582	52,257,356	41,745,174	40,477,077
Wood	23,997,264	23,007,310	15,278,035	14,741,631
Total	$2,308,301,611	$2,202,225,226	$1,541,001,820	$1,359,777,232

TABLE XXI.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY—TOTAL PERSONAL PROPERTY.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$1,089,063	$1,667,736	$828,488	$338,390
Ashland	4,035,789	5,221,938	3,957,861	3,141,602
Barron	3,897,659	6,420,153	2,984,666	3,082,322
Bayfield	2,463,281	3,497,945	2,227,666	2,635,092
Brown	10,378,823	14,474,716	6,777,223	5,962,371
Buffalo	3,582,614	4,714,632	2,611,945	2,575,895
Burnett	892,758	1,371,503	526,799	568,745
Calumet	3,764,453	5,073,517	3,043,331	2,920,484
Chippewa	5,861,655	9,074,407	3,746,601	3,974,685
Clark	4,956,966	6,906,375	3,534,676	3,598,630
Columbia	8,958,881	10,877,801	5,782,635	6,026,755
Crawford	3,162,104	4,451,698	1,785,395	1,808,643
Dane	21,741,963	29,956,879	12,946,187	12,609,432
Dodge	11,466,579	15,978,107	5,130,724	5,009,051
Door	2,508,396	3,916,282	1,520,973	1,532,243
Douglas	9,465,224	11,387,448	4,770,263	4,512,897
Dunn	4,507,671	6,738,719	2,481,904	2,630,699
Eau Claire	6,268,581	9,976,945	4,649,728	4,598,801
Florence	282,660	415,007	150,392	143,594
Fond du Lac	11,889,931	17,913,596	8,543,460	8,277 845
Forest	1,422,726	1,316,070	944,755	702,489
Grant	9,258,475	12,766,060	6,096,727	6,103,922
Green	7,501,313	9,853,926	5,345,164	5,446,189
Green Lake	3,317,999	4,737,293	2,016,568	2,008,831
Iowa	6,073,563	7,863,380	4,263,973	4,265,681
Iron	696,956	1,470,641	426,372	465,845
Jackson	2,870,339	4,323,971	2,128,094	2,296,097
Jefferson	9,568,024	12,741,941	5,967,793	5,719,538
Juneau	2,663,216	4,112,328	1,667,356	1,673,550
Kenosha	13,161,786	11,178,012	9,518,286	8,849,964
Kewaunee	3,110,725	4,501,600	1,803,696	1,737,155
La Crosse	10,533,661	15,188,392	9,375,815	9,160,596
Lafayette	6,123,965	8,242,209	4,183,110	4,064,035
Langlade	3,072,843	3,748,218	1,955,522	1,840,643
Lincoln	3,761,202	5,857,530	2,780,084	2,906,803
Manitowoc	9,354,943	13,708,948	6,120,066	5,715,276
Marathon	8,971,570	13,950,289	4,397,073	4,191,715
Marinette	6,516,899	9,202,927	3,785,769	3,628,691
Marquette	1,742,364	2,531,329	1,119,105	1,090,386
Milwaukee	121,485,529	172,171,384	103,496,290	63,125,679
Monroe	5,201,956	7,570,437	3,571,628	3,567,583
Oconto	3,760,469	6,385,810	2,243,672	2,313,098
Oneida	3,005,741	3,755,938	1,625,744	1,517,181
Outagamie	10,257,964	13,973,134	6,506,177	6,098,452
Ozaukee	3,400,730	4,586,097	2,334,742	2,208,931
Pepin	1,265,831	1,916,093	731,559	759,893
Pierce	4,102,108	5,716,959	2,449,140	2,551,620
Polk	4,662,912	6,498,724	3,112,161	2,925,001
Portage	4,533,052	6,128,616	2,734,274	2,757,723
Price	1,303,900	2,655,712	971,826	1,169,292
Racine	23,116,873	23,976,406	9,841,020	9,456,146
Richland	4,262,611	6,026,708	2,707,887	2,646,909
Rock	16,794,579	21,722,967	9,416,853	9,011,320
Rusk	1,533,837	2,248,160	797,308	810,309
St. Croix	5,817,862	8,482,625	3,139,340	3,198,712

TABLE XXI—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY—TOTAL PERSONAL PROPERTY.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	6,904,820	10,286,042	5,076,575	5,014,323
Sawyer	816,321	1,294,659	357,004	344,296
Shawano	4,468,127	6,231,134	2,712,861	2,592,826
Sheboygan	13,205,818	16,861,601	9,639,379	9,073,201
Taylor	1,818,949	2,891,438	1,281,074	1,314,921
Trempealeau	4,587,787	6,640,298	3,252,908	3,433,251
Vernon	5,231,027	8,053,672	3,379,819	3,456,397
Vilas	853,930	1,316,765	366,616	359,144
Walworth	7,641,906	12,523,550	5,594,042	5,606,471
Washburn	760,751	1,114,107	344,429	337,165
Washington	5,439,960	7,238,453	3,972,932	3,831,025
Waukesha	6,636,088	11,285,186	4,003,723	3,909,801
Waupaca	5,304,082	8,289,963	4,123,461	3,995,519
Waushara	3,070,190	4,206,576	2,285,119	2,046,823
Winnebago	15,627,912	22,518,115	9,773,939	10,191,795
Wood	5,557,563	7,239,819	3,130,582	2,993,730
Total	*$533,328,805	$739,187,616	$366,870,379	$321,034,154

* State 1912 does not include "Moneys and credits," "Watches, Pianos, Organs, Bicycles," or one-half "All other personal property," these items being exempt under chap. 687, laws of 1911.

TABLE XXII.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF HORSES AND MULES.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	5,283	5,309	4,813	4,837
Ashland	2,551	2,532	2,216	2,200
Barron	10,805	10,805	9,315	9,463
Bayfield	2,566	2,400	2,584	2,416
Brown	12,829	12,944	9,969	10,058
Buffalo	11,355	10,957	10,110	9,757
Burnett	3,155	3,155	2,766	2,766
Calumet	8,682	8,682	7,882	7,991
Chippewa	11,383	11,383	9,781	9,815
Clark	12,179	12,042	11,405	11,276
Columbia	16,720	16,611	14,157	14,063
Crawford	9,836	9,201	7,033	6,580
Dane	32,041	32,259	24,349	24,512
Dodge	22,859	22,083	16,222	15,675
Door	7,273	7,273	6,410	6,548
Douglas	2,296	2,199	1,971	1,887
Dunn	12,178	12,081	10,748	10,662
Eau Claire	10,276	10,488	8,695	8,874
Florence	616	668	528	573
Fond du Lac	18,937	19,050	16,100	16,196
Forest	1,027	930	881	798
Grant	25,486	24,797	22,315	21,707
Green	14,164	13,509	11,349	10,825
Green Lake	7,057	6,920	5,854	5,741
Iowa	14,480	14,157	12,264	11,990
Iron	833	810	715	695
Jackson	8,991	8,758	7,844	7,640
Jefferson	13,989	13,687	12,056	11,794
Juneau	8,137	8,156	6,938	6,954
Kenosha	7,676	7,878	6,574	6,747
Kewaunee	7,639	7,364	6,839	6,593
La Crosse	8,920	8,814	7,814	7,721
Lafayette	14,555	14,039	11,839	11,418
Langlade	4,235	4,235	3,447	3,634
Lincoln	3,727	3,745	3,198	3,213
Manitowoc	14,744	14,734	13,866	13,857
Marathon	13,672	13,672	10,063	10,520
Marinette	5,951	5,440	5,107	4,668
Marquette	5,922	5,660	5,264	5,031
Milwaukee	19,626	20,140	18,601	19,087
Monroe	12,919	12,766	11,419	11,284
Oconto	7,907	8,121	6,785	6,968
Oneida	2,273	2,273	1,493	1,951
Outagamie	13,692	13,381	12,296	12,015
Ozaukee	6,160	6,047	5,530	5,428
Pepin	3,703	3,656	3,142	3,102
Pierce	11,513	11,393	9,379	9,280
Polk	9,779	9,672	8,462	7,993
Portage	9,996	9,965	9,084	9,056
Price	2,670	2,598	2,292	2,230
Racine	9,374	9,903	7,376	7,792
Richland	10,487	10,487	9,245	9,427
Rock	20,735	20,757	16,956	16,973
Rusk	2,474	2,263	2,123	1,942
St. Croix	13,161	13,161	10,135	10,442

TABLE XXII—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF HORSES AND MULES.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	16,289	16,289	14,014	14,161
Sawyer	1,177	1,177	869	1,010
Shawano	10,293	10,128	9,632	9,476
Sheboygan	13,468	13,943	12,284	12,718
Taylor	3,653	3,698	3,316	3,357
Trempealeau	13,419	13,419	12,066	12,279
Vernon	14,964	14,804	12,495	12,360
Vilas	705	725	605	622
Walworth	15,527	15,980	13,095	13,437
Washburn	2,533	2,525	2,174	2,167
Washington	10,942	10,977	10,227	10,256
Waukesha	14,062	14,679	12,595	13,147
Waupaca	12,579	12,579	11,331	11,364
Waushara	9,219	8,908	8,091	7,818
Winnebago	11,683	11,638	10,896	10,854
Wood	8,545	8,545	7,083	7,104
Total	710,552	705,979	606,372	604,795

TABLE XXII—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF HORSES AND MULES.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$475,470	$530,900	$304,955	$304,197
Ashland	265,304	291,180	182,479	165,485
Barron	1,069.695	1,188,550	694,848	709,116
Bayfield	266,864	276,000	204,291	184,192
Brown	1,295,729	1,449,728	719,842	720,696
Buffalo	1,226,340	1,314,840	930,015	905.412
Burnett	283,950	315,500	152,302	151,192
Calumet	876,882	972.384	742,981	721,397
Chippewa	1,126,917	1,252,130	638,047	653,661
Clark	1,230,079	1,348,704	831,377	807,003
Columbia	1,655,280	1,827,210	1,175,550	1,147,337
Crawford	885,240	920,100	506,921	505,754
Dane	3,332,264	3,709,785	2,034,952	1,960,134
Dodge	2,308,759	2,473,856	1,156,849	1,094,010
Door	734,573	814,576	396,625	397,661
Douglas	238,784	252,885	99,226	97,055
Dunn	1,266,512	1,389,315	691,687	701,543
Eau Claire	1,109,808	1,258,560	722,282	695,129
Florence	64,064	76,820	30,965	34,715
Fond du Lac	1,912,637	2,133,600	1,357,287	1,330,072
Forest	106,808	106,950	59,045	55,475
Grant	2,421,170	2,603,685	1,463,699	1,452,816
Green	1,473,056	1,553,535	905,034	886,888
Green Lake	762,156	830,400	468,095	450,430
Iowa	1,404.560	1,528,956	936,134	917,451
Iron	86,632	93,150	36,785	37,810
Jackson	890,109	963,380	577,926	595,754
Jefferson	1,412,889	1,532,944	881,112	859,202
Juneau	732,330	815,600	411,783	407,317
Kenosha	798,304	905,970	501,850	518,422
Kewaunee	771,539	824,768	486,553	484,318
La Crosse	963,360	1,057,680	698,809	700,710
Lafayette	1,411,835	1,516,212	858,550	774,838
Langlade	440,440	487,025	254,290	261,447
Lincoln	368,973	411,950	229,328	242,482
Manitowoc	1,489,144	1,650,208	1,077,780	1,051,502
Marathon	1,380,872	1,531,264	642,046	632,463
Marinette	589,149	598,400	199,474	200,276
Marquette	532,980	566,000	356,007	338,211
Milwaukee	2,217,738	2,517,500	1,591,340	1,192,342
Monroe	1,278,981	1,404,260	883,607	861,555
Oconto	782,793	893,310	354,120	352,760
Oneida	236,392	261,395	75,386	78,168
Outagamie	1,382,892	1,498,672	1,073,287	999,461
Ozaukee	622,160	677,264	503,023	488,320
Pepin	385,112	420,440	221,473	222,396
Pierce	1,197,352	1,310,195	700,773	725,585
Polk	968,121	1,063,920	557,782	509,202
Portage	989,604	1,096,150	644,727	642,679
Price	264,330	285,780	121,899	130,808
Racine	974,896	1,138,845	588,330	631,575
Richland	996,265	1,101,135	637,253	600,444
Rock	2,094,235	2,324,784	1,334,617	1,345,734
Rusk	244,926	248,930	105,475	92,777
St. Croix	1,368,744	1,513,515	668,469	691,266

TABLE XXII—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF HORSES AND MULES.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	1,612,611	1,791,790	1,111,370	1,086,056
Sawyer	122,408	135,355	40,579	41,349
Shawano	1,039,593	1,134,336	620,115	596,586
Sheboygan	1,360,268	1,561,616	1,049,610	993,745
Taylor	361,647	406,780	194,586	185,286
Trempealeau	1,449,252	1,610,280	985,063	1,032,005
Vernon	1,481,436	1,628,440	869,670	852,921
Vilas	73,320	83,375	28,515	33,940
Walworth	1,676,916	1,911,600	982,983	964,386
Washburn	227,970	252,500	72,031	77,164
Washington	1,105,142	1,229,424	908,345	870,983
Waukesha	1,420,262	1,644,048	777,086	791,111
Waupaca	1,270,479	1,408,848	915,823	900,882
Waushara	875,805	935,340	654,052	559,981
Winnebago	1,179,983	1,303,456	1,082,355	1,010,842
Wood	811,775	897,225	399,810	385,095
Total	$71,734,865	$79,065,208	$45,421,335	$44,100,867

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF NEAT CATTLE.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	13,403	13,847	12,386	12,795
Ashland	5,029	5,033	3,597	3,600
Barron	32,967	38,716	30,379	35,677
Bayfield	4,128	4,273	3,987	4,127
Brown	37,240	37,791	28,656	29,084
Buffalo	34,617	36,098	33,229	34,652
Burnett	11,037	12,361	9,850	11,032
Calumet	27,843	28,268	24,767	26,084
Chippewa	32,300	35,449	28,948	31,774
Clark	46,530	49,758	42,999	45,984
Columbia	42,407	44,101	39,286	40,859
Crawford	32,597	33,751	28,260	29,261
Dane	115,450	99,220	109,737	85,781
Dodge	89,390	83,438	64,036	59,772
Door	18,974	20,342	17,593	18,876
Douglas	4,405	4,527	3,207	3,294
Dunn	37,087	41,297	33,964	37,820
Eau Claire	21,756	23,136	18,907	20,109
Florence	1,110	1,059	658	628
Fond du Lac	61,613	60,761	55,455	54,688
Forest	1,230	1,062	1,230	1,062
Grant	75,620	77,675	71,843	73,797
Green	61,550	63,018	57,437	58,806
Green Lake	22,123	21,919	19,439	19,262
Iowa	61,617	64,729	60,214	63,260
Iron	1,323	1,247	1,323	1,247
Jackson	25,098	26,937	23,142	24,837
Jefferson	57,415	58,061	50,249	50,816
Juneau	23,573	24,277	21,066	21,697
Kenosha	23,627	22,752	20,261	19,511
Kewaunee	26,150	24,999	22,850	21,846
La Crosse	29,218	29,582	26,669	26,998
Lafayette	61,405	61,171	57,987	57,772
Langlade	11,017	11,726	9,338	10,933
Lincoln	8,069	8,060	7,472	7,464
Manitowoc	49,404	48,899	45,924	45,455
Marathon	47,704	51,088	37,552	40,215
Marinette	15,340	13,441	10,603	9,285
Marquette	16,356	17,184	15,201	15,969
Milwaukee	13,816	14,155	10,425	10,652
Monroe	41,744	44,992	38,754	41,773
Oconto	24,254	24,618	20,841	21,156
Oneida	2,578	2,601	1,958	1,975
Outagamie	46,877	45,441	41,701	40,426
Ozaukee	21,715	21,793	19,605	19,675
Pepin	9,528	9,955	8,845	9,283
Pierce	31,888	35,608	29,208	32,617
Polk	35,667	40,090	31,339	35,226
Portage	25,104	27,310	21,207	23,072
Price	6,632	6,932	5,905	6,170
Racine	24,587	25,412	22,157	22,876
Richland	42,734	44,058	39,599	40,828
Rock	55,747	56,928	50,809	51,886
Rusk	5,885	5,691	4,728	4,572
St. Croix	35,955	45,731	30,643	38,947

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF NEAT CATTLE—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	53,871	55,412	50,429	51,876
Sawyer	1,689	1,652	1,510	1,477
Shawano	38,255	38,660	33,557	23,863
Sheboygan	52,152	51,489	48,499	47,829
Taylor	11,115	11,672	10,276	10,793
Trempealeau	38,367	43,496	37,926	43,003
Vernon	42,750	54,060	43,939	50,560
Vilas	645	597	645	597
Walworth	54,130	56,120	47,259	49,009
Washburn	5,609	6,050	5,009	5,403
Washington	34,044	34,216	31,924	32,089
Waukesha	44,612	44,722	37,889	37,983
Waupaca	43,504	44,352	39,749	40,526
Waushara	23,949	24,171	20,877	21,069
Winnebago	35,844	36,893	33,430	34,407
Wood	26,828	28,912	23,220	25,019
Total	2,219,797	2,284,842	1,993,563	2,032,746

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF NEAT CATTLE.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$335,075	$318,481	$227,270	$234,294
Ashland	120,696	110,726	61,784	68,217
Barron	824,175	890,468	552,779	615,643
Bayfield	99,072	94,006	75,508	77,757
Brown	1,154,440	1,058,148	509,628	506,154
Buffalo	969,276	902,450	631,080	651,823
Burnett	264,888	271,942	132,685	143,852
Calumet	918,819	848,040	669,679	669,772
Chippewa	839,800	850,776	435,416	470,623
Clark	1,302,840	1,243,950	843,028	877,805
Columbia	1,314,617	1,234,828	808,504	832,325
Crawford	912,716	843,775	518,207	557,565
Dane	4,040,750	3,175,040	1,918,599	1,867,106
Dodge	3,128,650	2,670,016	1,289,139	1,212,217
Door	531,272	508,550	263,343	276,112
Douglas	123,340	113,175	56,907	56,876
Dunn	1,038,436	1,032,425	500,074	550,885
Eau Claire	609,168	578,400	318,170	338,702
Florence	26,640	23,298	12,995	12,490
Fond du Lac	2,156,455	1,944,352	1,397,682	1,378,111
Forest	29,520	23,364	24,521	23,316
Grant	2,344,220	2,174,900	1,453,114	1,475,285
Green	2,523,550	2,331,666	1,497,775	1,573,173
Green Lake	730,059	657,570	367.840	374,892
Iowa	2,094,978	2,006,599	1,533,035	1,602,102
Iron	31,752	27,434	23,833	22,585
Jackson	627,450	619,551	381,560	405,116
Jefferson	2,124,355	1,974,074	1,273,186	1,264,765
Juneau	612,898	582,648	315,231	310,496
Kenosha	921,453	796,320	467,957	448,381
Kewaunee	810,650	699,972	352,140	355,494
La Crosse	818,104	739,550	553,245	551,546
Lafayette	2,210,580	2,018,643	1,458,954	1,458,887
Langlade	264,408	257,972	148,324	161,624
Lincoln	193,656	177,320	123,138	129,230
Manitowoc	1,630,332	1,466,970	1,006,471	976,428
Marathon	1,335,712	1,277,200	516,826	546,960
Marinette	368,160	295,702	128,720	124,026
Marquette	408,900	395,232	247,921	250,700
Milwaukee	580,272	537,890	240,639	242,521
Monroe	1,168,832	1,124,800	719,182	773,338
Oconto	582,096	541,596	272,304	277,737
Oneida	61,872	57,222	36,053	35,715
Outagamie	1,453,187	1,272,348	924,377	896,945
Ozaukee	738,310	675,583	504,863	473,371
Pepin	266,784	248,875	122,157	133,079
Pierce	892,864	890,200	470,908	540,825
Polk	891,675	922,070	511,855	560,374
Portage	627,600	628,130	365,609	406,100
Price	159,168	152,504	77,080	82,515
Racine	983,480	914,832	512,860	530,044
Richland	1,410,222	1,321,740	867,839	870,468
Rock	2,174,133	1,992,480	1,175,607	1,159,949
Rusk	141,240	125,202	70,463	65,197
St. Croix	1,006,740	1,143,275	496,194	589,079

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF NEAT CATTLE.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	1,670,001	1,551,536	1,085,619	1,068,764
Sawyer	40,536	36,344	23,475	23,482
Shawano	918,120	850,520	501,051	485,143
Sheboygan	1,825,320	1,647,648	1,429,714	1,385,108
Taylor	266,760	256,784	154,792	159,545
Trempealeau	1,074,276	1,087,400	671,520	769,993
Vernon	1,197,000	1,351,500	786,168	853,059
Vilas	15,480	13,134	11,778	10,509
Walworth	2,165,200	2,020,320	1,191,645	1,245,999
Washburn	134,616	133,100	51,568	62,510
Washington	1,191,540	1,094,912	805,704	784,882
Waukesha	1,650,644	1,520,548	851,383	820,815
Waupaca	1,218,112	1,108,800	763,015	772,726
Waushara	598,725	555,933	437,952	393,600
Winnebago	1,182,852	1,106,790	894,661	884,132
Wood	670,700	664,976	391,955	387,481
Total	$69,750,219	$64,784,525	$40,516,258	$41,198,349

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF SHEEP AND LAMBS.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	1,761	1,957	1,515	1,684
Ashland	1,094	1,110	847	860
Barron	9,038	11,501	8,170	10,395
Bayfield	1,835	1,433	1,417	1,107
Brown	1,824	2,338	1,595	2,045
Buffalo	16,514	17,020	15,381	15,852
Burnett	1,938	2,598	1,650	2,212
Calumet	2,742	2,599	2,742	3,357
Chippewa	7,050	8,343	6,424	7,602
Clark	6,377	8,742	5,752	7,886
Columbia	28,644	26,261	25,161	23,058
Crawford	10,450	11,117	8,590	9,141
Dane	26,880	26,827	20,329	20,289
Dodge	12,536	11,347	8,587	7,773
Door	3,121	4,580	2,728	4,004
Douglas	1,146	985	853	733
Dunn	12,635	14,258	11,235	12,683
Eau Claire	6,045	6,050	5,380	5,385
Florence	607	635	261	273
Fond du Lac	22,517	23,673	20,199	21,235
Forest	63	21	63	21
Grant	31,756	30,465	29,115	27,930
Green	9,882	9,103	9,021	8,309
Green Lake	13,179	13,984	11,375	12,071
Iowa	13,687	13,243	12,378	11,975
Iron	35	60	35	60
Jackson	6,033	7,794	6,033	7,794
Jefferson	3,261	3,436	2,878	3,035
Juneau	8,576	10,518	7,318	8,976
Kenosha	7,131	8,015	6,094	6,849
Kewaunee	5,150	5,880	4,211	4,808
La Crosse	5,113	6,242	4,618	5,638
Lafayette	17,687	19,040	15,979	17,200
Langlade	1,478	1,891	1,344	1,720
Lincoln	1,902	2,424	1,627	2,073
Manitowoc	7,427	5,234	6,552	4,618
Marathon	10,055	13,874	8,779	12,113
Marinette	2,475	2,817	1,653	682
Marquette	6,087	6,312	5,819	6,034
Milwaukee	201	314	143	223
Monroe	12,200	15,241	11,198	13,991
Oconto	2,467	2,880	2,125	2,481
Oneida	255	236	223	206
Outagamie	5,302	6,272	4,762	5,633
Ozaukee	388	694	337	603
Pepin	5,226	5,212	4,748	4,735
Pierce	18,978	23,458	16,633	20,557
Polk	7,626	8,691	6,835	7,790
Portage	3,269	3,505	2,821	3,025
Price	607	676	573	638
Racine	6,786	7,215	6,526	6,939
Richland	27,646	30,977	25,021	28,037
Rock	19,298	18,699	16,754	16,234
Rusk	2,186	2,116	1,410	1,365
St. Croix	12,847	17,497	10,617	14,464

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF SHEEP AND LAMBS.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	16,554	18,276	14,311	15,799
Sawyer	159	443	159	443
Shawano	9,138	11,143	7,212	8,792
Sheboygan	1,515	1,771	1,343	1,570
Taylor	928	1,094	839	989
Trempealeau	24,623	28,272	22,740	26,109
Vernon	26,264	30,380	24,298	28,105
Vilas	187	144	177	136
Walworth	12,547	15,354	12,547	15,354
Washburn	2,316	1,993	2,022	1,740
Washington	6,498	7,168	5,454	6,016
Waukesha	13,447	15,126	11,742	13,205
Waupaca	5,488	7,070	4,970	6,403
Waushara	2,583	3,075	2,410	2,869
Winnebago	9,815	9,984	8,999	9,154
Wood	2,175	3,469	1,897	3,025
Total	585,250	642,172	515,554	566,108

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF SHEEP AND LAMBS.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$7,396	$8,807	$3,914	$4,594
Ashland	4,595	4,994	1,896	1,953
Barron	37,960	51,755	19,358	24,997
Bayfield	7,707	6,449	3,381	2,689
Brown	7,661	10,521	4,709	5,256
Buffalo	69,359	76,590	46,579	57,830
Burnett	8,140	11,691	3,618	4,554
Calumet	11,516	11,695	8,466	10,658
Chippewa	29,610	37,544	16,782	20,447
Clark	26,783	39,339	17,886	23,706
Columbia	120,305	118,174	72,848	75,222
Crawford	43,890	50,027	25,437	28,223
Dane	112,896	120,721	64,869	72,635
Dodge	52,651	51,062	21,805	21,173
Door	13,108	20,610	6,015	9,030
Douglas	4,813	4,432	1,300	1,472
Dunn	53,067	64,161	25,054	32,747
Eau Claire	25,389	27,225	14,522	16,820
Florence	2,549	2,858	522	546
Fond du Lac	94,571	106,528	53,847	63,455
Forest	265	95	130	47
Grant	133,375	137,092	89,270	99,724
Green	41,504	40,964	31,053	35,934
Green Lake	55,352	62,928	22,711	24,677
Iowa	57,485	59,593	47,717	52,112
Iron	147	270	78	124
Jackson	25,339	35,073	15,813	22,561
Jefferson	13,696	15,462	7,623	7,716
Juneau	36,019	47,331	21,038	24,900
Kenosha	29,950	36,068	18,564	20,841
Kewaunee	21,630	26,460	10,545	12,421
La Crosse	21,475	28,089	14,639	19,908
Lafayette	74,285	85,680	67,927	73,544
Langlade	6,208	8,509	3,122	3,943
Lincoln	7,988	10,908	3,849	6,101
Manitowoc	31,193	23,553	18,077	12,797
Marathon	42,231	62,433	19,603	23,830
Marinette	10,395	12,677	3,034	1,760
Marquette	25,565	28,404	13,661	14,892
Milwaukee	844	1,413	627	889
Monroe	51,240	68,584	36,230	46,832
Oconto	10,361	12,960	4,387	4,853
Oneida	1,071	1,062	451	492
Outagamie	22,268	28,224	16,019	19,282
Ozaukee	1,630	3,123	1,281	2,091
Pepin	21,949	23,454	12,935	13,039
Pierce	79,708	105,561	43,170	59,225
Polk	32,029	39,110	17,553	22,461
Portage	13,730	15,772	7,488	8,052
Price	2,549	3,042	1,217	1,320
Racine	28,501	32,468	15,216	17,063
Richland	116,113	139,396	72,891	94,673
Rock	81,052	84,146	65,006	67,407
Rusk	9,181	9,522	4,009	3,628
St. Croix	53,957	78,736	29,361	41,059

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF SHEEP AND LAMBS.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	69,527	82,242	43,255	48,095
Sawyer	668	1,994	348	1,040
Shawano	38,380	50,143	14,619	18,297
Sheboygan	6,363	7,970	4,169	4,765
Taylor	3,898	4,923	1,909	2,266
Trempealeau	103,417	127,224	68,019	86,560
Vernon	110,309	136,710	75,755	89,685
Vilas	785	648	418	365
Walworth	52,697	69,093	32,464	48,307
Washburn	9,727	8,968	3,028	3,067
Washington	27,292	32,256	19,165	22,579
Waukesha	56,477	68,067	25,410	33,051
Waupaca	23,050	31,815	14,362	20,179
Waushara	10,849	13,838	5,174	6,195
Winnebago	41,223	44,928	27,966	28,046
Wood	9,135	15,610	4,263	6,425
Total	$2,458,048	$2,889,774	$1,489,457	$1,757,167

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF SWINE.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	3,825	3,307	2,829	2,443
Ashland	951	842	773	684
Barron	7,335	6,011	5,201	4,262
Bayfield	827	425	691	355
Brown	9,002	8,794	5,169	5,050
Buffalo	20,472	19,529	14,046	13,714
Burnett	2,034	1,704	1,579	1,323
Calumet	10,425	10,368	6,691	6,654
Chippewa	9,658	8,379	6,605	5,730
Clark	11,580	9,225	8,381	6,677
Columbia	35,308	32,226	20,511	18,720
Crawford	13,589	13,589	9,552	7,840
Dane	61,918	62,501	34,310	34,635
Dodge	52,380	46,500	19,183	17,031
Door	6,806	5,781	4,084	3,907
Douglas	890	480	371	200
Dunn	15,635	15,606	10,889	10,869
Eau Claire	10,572	10,155	5,252	5,044
Florence	223	129	71	41
Fond du Lac	30,671	28,869	17,133	16,127
Forest	375	308	375	308
Grant	55,425	51,490	41,339	38,411
Green	40,841	38,543	25,301	23,874
Green Lake	13,669	13,669	7,683	8,066
Iowa	23,396	22,631	16,228	15,699
Iron	387	245	387	245
Jackson	11,405	9,096	8,290	6,611
Jefferson	17,831	18,042	9,268	9,377
Juneau	7,176	6,514	4,865	4,416
Kenosha	8,612	9,198	3,610	3,856
Kewaunee	9,222	8,481	6,329	5,821
La Crosse	11,290	11,094	7,931	7,792
Lafayette	36,370	34,591	25,782	24,520
Langlade	3,151	2,594	2,375	1,955
Lincoln	2,811	2,265	1,409	1,135
Manitowoc	15,447	12,939	11,846	9,921
Marathon	10,922	9,836	7,282	6,558
Marinette	7,218	4,871	2,573	1,736
Marquette	7,225	6,475	3,893	3,489
Milwaukee	4,257	3,732	1,791	1,570
Monroe	13,264	12,190	9,290	8,481
Oconto	7,494	6,898	4,973	4,578
Oneida	607	618	437	445
Outagamie	27,083	24,612	14,387	13,073
Ozaukee	5,939	5,590	3,928	3,697
Pepin	5,421	5,155	3,957	3,763
Pierce	13,055	12,257	7,154	6,713
Polk	9,808	8,682	5,709	4,826
Portage	9,191	8,245	5,571	4,998
Price	803	587	616	450
Racine	9,340	11,634	4,093	5,098
Richland	24,789	23,283	17,971	16,881
Rock	39,336	40,099	25,393	25,884
Rusk	1,654	967	1,020	596
St. Croix	14,085	13,762	6,813	6,658

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF SWINE.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	29,055	29,255	18,443	18,573
Sawyer	443	324	379	277
Shawano	18,079	16,617	9,275	8,523
Sheboygan	17,495	14,527	12,823	10,649
Taylor	1,707	1,564	1,408	1,290
Trempealeau	12,490	11,683	8,747	8,181
Vernon	15,823	14,740	10,884	10,139
Vilas	140	117	101	84
Walworth	24,435	24,806	15,526	15,764
Washburn	2,083	1,497	1,361	978
Washington	16,472	14,553	11,083	9,789
Waukesha	15,126	13,173	7,374	6,422
Waupaca	12,380	11,535	7,675	7,152
Waushara	10,358	9,492	5,425	4,972
Winnebago	15,938	14,607	9,958	9,127
Wood	6,113	5,040	3,992	3,291
Total	971,137	909,143	597,644	558,021

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF SWINE.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$34,425	$36,377	$19,691	$22,392
Ashland	7,608	8,420	3,811	4,292
Barron	66,015	66,121	32,204	32,870
Bayfield	6,616	4,250	4,768	2,771
Brown	81,018	96,734	28,535	29,086
Buffalo	204,720	234,348	87,751	109,529
Burnett	16,272	17,040	8,330	8,784
Calumet	93,825	114,048	47,527	57,466
Chippewa	86,922	92,169	35,222	34,728
Clark	104,220	101,475	51,038	53,491
Columbia	353,080	386,712	153,729	189,581
Crawford	135,890	163,068	57,929	69,955
Dane	619,180	750,012	281,198	357,560
Dodge	523,800	558,000	108,666	110,850
Door	54,448	57,810	15,731	16,532
Douglas	7,120	4,800	2,009	1,290
Dunn	140,715	171,666	57,353	78,045
Eau Claire	95,148	111,705	31,776	38,520
Florence	1,784	1,290	635	345
Fond du Lac	306,710	346,428	118,416	147,258
Forest	3,000	3,080	2,374	2,221
Grant	554,250	617,880	277,484	321,792
Green	408,410	462,516	151,291	209,321
Green Lake	136,690	164,028	47,313	63,690
Iowa	233,960	271,572	122,400	153,463
Iron	3,096	2,450	1,839	1,265
Jackson	102,645	100,056	42,548	53,547
Jefferson	178,310	216,504	75,049	97,818
Juneau	64,584	71,654	30,517	31,833
Kenosha	86,120	110,376	24,501	29,775
Kewaunee	73,776	84,810	23,189	24,159
La Crosse	112,900	133,128	64,949	78,280
Lafayette	363,700	415,092	203,740	215,223
Langlade	25,208	25,940	12,586	12,523
Lincoln	22,488	22,650	7,494	6,763
Manitowoc	139,023	142,329	65,492	60,556
Marathon	87,376	98,360	27,544	26,059
Marinette	57,744	48,710	8,579	7,475
Marquette	65,025	71,225	22,714	27,143
Milwaukee	42,570	44,784	10,913	10,521
Monroe	132,640	146,280	63,942	82,146
Oconto	59,952	68,980	18,715	18,917
Oneida	4,856	6,180	2,109	3,204
Outagamie	243,747	270,732	85,811	97,910
Ozaukee	59,390	67,080	26,554	29,902
Pepin	54,210	61,860	21,168	26,988
Pierce	117,495	134,827	47,339	56,752
Polk	88,272	95,502	33,854	37,564
Portage	82,719	90,695	35,921	39,058
Price	6,424	5,870	2,836	3,297
Racine	93,400	139,608	32,757	46,523
Richland	247,890	279,396	84,397	108,446
Rock	393,360	481,188	182,263	237,118
Rusk	13,232	9,670	5,479	3,207
St. Croix	126,765	151,382	37,023	46,584

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF SWINE.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	290,550	351,060	146,921	175,549
Sawyer	3,544	3,240	1,943	1,677
Shawano	144,632	166,170	41,764	41,787
Sheboygan	174,950	174,324	73,382	77,543
Taylor	13,656	15,640	7,647	7,176
Trempealeau	124,900	140,196	64,637	83,984
Vernon	158,230	176,880	73,285	86,462
Vilas	1,120	1,170	560	517
Walworth	244,350	297,672	113,886	172,142
Washburn	16,664	14,970	5,149	4,411
Washington	164,720	174,636	74,652	90,403
Waukesha	151,260	153,076	45,707	51,048
Waupaca	111,420	126,885	49,600	65,239
Waushara	93,222	104,412	33,972	41,154
Winnebago	143,442	160,677	77,927	90,336
Wood	55,017	55,440	22,525	18,353
Total	$9,316,420	$10,560,315	$3,885,560	$4,634,174

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF WAGONS, CARRIAGES AND SLEIGHS.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	5,840	5,840	3,727	3,891
Ashland	2,853	2,785	1,805	1,762
Barron	11,386	11,886	7,729	8,578
Bayfield	2,640	2,640	2,580	2,648
Brown	14,051	14,238	8,752	8,868
Buffalo	12,451	12,053	6,322	6,119
Burnett	3,471	3,471	2,732	3,126
Calumet	9,484	9,550	8,017	8,072
Chippewa	12,521	12,521	7,785	7,977
Clark	13,585	13,246	11,072	10,795
Columbia	18,971	18,272	9,488	9,137
Crawford	11,031	10,121	2,955	2,714
Dane	35,485	35,485	15,873	16,135
Dodge	24,297	24,297	10,924	11,104
Door	8,472	8,000	6,975	6,585
Douglas	2,405	2,419	1,277	1,284
Dunn	13,181	13,289	8,151	8,216
Eau Claire	11,537	11,537	7,033	7,327
Florence	766	735	626	600
Fond du Lac	20,894	20,955	14,591	14,630
Forest	1,127	1,023	780	708
Grant	27,277	27,277	10,133	10,295
Green	14,860	14,860	6,228	6,503
Green Lake	7,612	7,612	4,114	4,191
Iowa	17,035	15,573	6,482	5,924
Iron	973	891	578	439
Jackson	9,632	9,634	6,714	6,716
Jefferson	15,105	15,056	8,335	8,308
Juneau	9,003	8,972	4,367	4,352
Kenosha	8,672	8,666	3,859	3,856
Kewaunee	8,100	8,100	7,534	7,570
La Crosse	9,901	9,695	5,990	5,865
Lafayette	16,304	15,443	5,343	5,168
Langlade	4,244	4,659	3,537	3,883
Lincoln	4,602	4,120	4,113	3,682
Manitowoc	16,465	16,207	16,436	16,177
Marathon	14,944	15,039	8,644	9,323
Marinette	6,782	5,984	3,884	3,427
Marquette	6,517	6,226	3,267	3,121
Milwaukee	21,010	22,154	15,384	16,220
Monroe	14,003	14,043	8,313	8,337
Oconto	9,546	8,933	4,929	4,613
Oneida	2,503	2,500	1,474	1,472
Outagamie	16,047	14,719	11,775	10,800
Ozaukee	6,652	6,652	4,697	5,070
Pepin	4,022	4,022	2,066	2,342
Pierce	12,532	12,532	4,997	5,318
Polk	11,090	10,639	7,112	6,822
Portage	11,330	10,962	8,547	8,268
Price	2,955	2,858	2,379	2,301
Racine	9,404	10,893	4,278	4,955
Richland	11,289	11,536	5,317	5,433
Rock	23,201	22,833	10,400	10,237
Rusk	2,467	2,489	1,584	1,598
St. Croix	14,477	14,477	5,730	6,044

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL NUMBER OF WAGONS, CARRIAGES AND SLEIGHS.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	18,261	17,918	10,541	10,342
Sawyer	1,478	1,295	709	621
Shawano	12,728	11,141	9,829	8,603
Sheboygan	15,212	15,337	14,047	14,159
Taylor	4,334	4,068	4,500	4,223
Trempealeau	14,652	14,761	8,850	8,915
Vernon	17,643	16,284	8,224	7,590
Vilas	881	798	488	442
Walworth	16,768	17,523	6,733	7,036
Washburn	2,954	2,778	1,455	1,369
Washington	12,075	12,075	10,763	11,128
Waukesha	15,480	16,147	9,665	10,082
Waupaca	15,279	13,837	11,501	10,415
Waushara	11,353	9,799	6,698	5,782
Winnebago	13,687	12,802	9,227	8,629
Wood	9,699	9,400	6,551	6,349
Total	789,488	776,582	467,518	464,591

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF WAGONS, CARRIAGES AND SLEIGHS.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$81,760	$81,760	$44,372	$45,087
Ashland	57,060	55,700	34,003	37,366
Barron	170,790	178,290	88,987	97,874
Bayfield	44,880	47,520	28,373	31,019
Brown	309,122	313,236	169,560	178,415
Buffalo	224,118	216,954	78,982	76,798
Burnett	52,065	45,123	22,913	27,466
Calumet	199,164	200,550	136,921	136,610
Chippewa	225,378	225,378	98,057	104,820
Clark	230,945	225,182	136,737	138,973
Columbia	417,362	401,984	148,902	149,182
Crawford	198,558	182,178	43,003	41,176
Dane	887,125	887,125	269,587	278,366
Dodge	583,128	607,425	167,332	169,392
Door	135,552	128,000	80,820	81,748
Douglas	60,125	60,475	27,974	26,254
Dunn	237,258	225,913	81,179	84,051
Eau Claire	265,351	265,351	114,648	115,046
Florence	11,490	11,025	9,390	8,595
Fond du Lac	522,350	523,875	248,779	252,997
Forest	16,905	15,345	14,588	13,291
Grant	545,540	545,540	157,821	161,774
Green	326,920	326,920	106,141	107,068
Green Lake	167,464	167,464	57,817	64,157
Iowa	340,700	311,460	104,713	105,142
Iron	15,568	14,256	8,804	7,829
Jackson	144,480	144,510	78,019	80,432
Jefferson	362,520	361,344	158,732	155,485
Juneau	135,045	134,580	47,972	49,208
Kenosha	216,800	259,980	67,933	70,077
Kewaunee	162,000	145,800	87,154	88,001
La Crosse	247,525	271,460	132,995	134,825
Lafayette	326,080	324,303	88,902	87,669
Langlade	72,148	79,203	53,972	63,134
Lincoln	78,234	70,040	57,505	62,425
Manitowoc	362,230	372,623	234,223	232,072
Marathon	298,880	285,741	111,281	116,220
Marinette	122,076	107,712	48,063	47,676
Marquette	104,272	93,390	38,212	37,530
Milwaukee	945,450	996,930	710,613	571,403
Monroe	252,054	238,731	105,756	109,322
Oconto	162,282	151,861	51,788	55,718
Oneida	42,551	42,500	22,124	22,866
Outagamie	369,081	338,537	193,083	171,080
Ozaukee	152,996	152,996	92,570	103,735
Pepin	72,396	72,396	21,604	25,428
Pierce	225,576	225,576	71,603	76,507
Polk	166,350	159,585	80,041	81,270
Portage	203,940	197,316	122,631	125,755
Price	44,325	42,870	21,827	26,259
Racine	235,100	326,790	86,230	104,051
Richland	203,202	207,648	67,952	61,264
Rock	580,025	593,658	211,188	212,754
Rusk	39,472	39,824	15,940	17,458
St. Croix	260,586	260,586	68,940	73,094

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL VALUE OF WAGONS, CARRIAGES, AND SLEIGHS.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	365,220	340,442	166,577	164,996
Sawyer	23,648	20,720	8,706	7,835
Shawano	216,376	189,397	106,774	94,284
Sheboygan	349,876	383,425	228,531	231,034
Taylor	69,344	65,088	40,814	41,695
Trempealeau	263,736	265,698	110,730	117,154
Vernon	317,574	293,112	100,737	102,711
Vilas	13,215	11,970	5,187	4,948
Walworth	368,896	420,552	132.097	136,624
Washburn	44,310	36,114	9,605	9,736
Washington	277,725	277,725	171,045	169,660
Waukesha	356,040	387,528	134,805	135,642
Waupaca	275,022	249,066	167,670	159,711
Waushara	181,648	156,784	105,239	91,902
Winnebago	342,175	332,852	203,771	198,143
Wood	164,883	159,800	81,151	79,451
Total	$16,544,042	$16,552,792	$7,402,695	$7,348,750

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL BANK STOCK.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$10,314	$10,058	$10,200	.....
Ashland	434,619	406,707	319,000	$275,691
Barron	238,356	224,142	174,119	189,600
Bayfield	145,740	123,702	103,025	99,725
Brown	1,073,101	1,017,320	946,636	900,465
Buffalo	151,996	140,999	107,350	92,350
Burnett	60,770	56,215	33,000	33,000
Calumet	210,762	183,835	141,380	132,322
Chippewa	578,178	567,412	502,700	478,510
Clark	324,973	319,065	281,285	287,250
Columbia	564,870	527,236	514,825	509,120
Crawford	193,058	155,622	90,800	81,700
Dane	2,833,976	2,765,043	2,167,265	2,254,170
Dodge	723,231	604,370	376,639	374,997
Door	104,705	103,733	76,500	66,250
Douglas	643,300	565,170	348,100	327,700
Dunn	243,602	233,213	162,516	162,516
Eau Claire	570,722	576,819	550,625	548,995
Florence	21,365	20,375	7,500	7,500
Fond du Lac	1,373,497	1,233,013	1,119,825	1,071,734
Forest	32,890	29,870	30,000	30,000
Grant	654,839	561,323	405,750	344,600
Green	750,157	754,777	657,075	645,035
Green Lake	366,068	349,829	264,250	270,200
Iowa	352,346	284,416	249,675	252,433
Iron	81,616	79,015	3,000	3,000
Jackson	178,291	173,495	94,838	96,306
Jefferson	1,210,075	1,035,790	861,955	739,680
Juneau	225,446	193,967	164,050	164,050
Kenosha	357,573	344,371	299,500	299,500
Kewaunee	224,560	151,125	113,300	91,500
La Crosse	1,500,615	1,447,329	1,361,116	1,275,580
Lafayette	497,780	460,581	349,100	328,575
Langlade	233,651	240,766	200,840	177,800
Lincoln	282,680	292,846	209,000	209,000
Manitowoc	618,888	525,924	446,724	348,344
Marathon	944,782	882,965	473,662	467,469
Marinette	502,676	496,069	357,099	351,227
Marquette	82,509	75,765	45,610	43,610
Milwaukee	17,424,184	16,926,439	16,052,191	11,031,758
Monroe	277,829	221,373	190,700	186,605
Oconto	239,487	198,539	129,550	133,250
Oneida	169,124	167,797	104,000	101,500
Outagamie	1,234,046	1,158,438	920,505	1,006,835
Ozaukee	222,330	202,864	174,100	156,100
Pepin	72,934	62,290	50,000	50,000
Pierce	243,841	146,799	183,025	173,639
Polk	251,220	231,967	170,200	172,562
Portage	303,711	289,530	262,850	242,550
Price	78,727	71,384	70,400	70,400
Racine	1,780,871	1,670,246	1,176,658	1,200,596
Richland	146,015	139,711	104,125	92,575
Rock	1,525,726	1,445,029	1,032,856	1,025,952
Rusk	95,499	48,862	25,075	36,147
St. Croix	367,758	394,450	255,986	254,189

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL BANK STOCK.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910
Sauk	485,529	486,516	392,415	369,825
Sawyer	38,184	39,613	7,000	7,000
Shawano	288,920	261,380	188,870	182,110
Sheboygan	765,270	1,289,139	1,166,167	1,146,015
Taylor	118,602	115,818	84,792	88,962
Trempealeau	273,651	262,296	230,475	229,089
Vernon	230,975	193,739	184,392	154,660
Vilas	8,977	7,001	6,000	3,600
Walworth	838,148	802,859	543,885	518,945
Washburn	72,157	60,979	56,450	38,500
Washington	296,644	268,126	204,450	196,700
Waukesha	632,214	599,835	373,519	367,248
Waupaca	417,088	3 2,883	392,500	353,250
Waushara	137,018	128,039	108,450	117,000
Winnebago	1,778,663	2,540,646	1,576,602	1,806,778
Wood	563,373	555,739	517,342	504,815
Total	$50,977,342	$49,584,598	$41,555,364	$36,050,659

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL MONEYS, ACCOUNTS, NOTES, BONDS, MORTGAGES, ETC.

County.	State—1912.*	State—1911.	Local—1911.	Local—1910.
Adams		$291,630	$29,675	$30,845
Ashland		930,450	3,055	23,025
Barron		1,233,300	30,790	46,073
Bayfield		507,900	5,104	8,633
Brown		3,437,250	130,725	143,050
Buffalo		779,700	74,797	77,667
Burnett		267,645	14,690	23,492
Calumet		1,131,900	171,335	157,636
Chippewa		1,768,125	116,100	109,550
Clark		1,273,950	19,835	31,690
Columbia		2,241,450	494,107	524,453
Crawford		896,850	56,740	42,250
Dane		6,888,300	946,294	944,850
Dodge		3,616,950	100,390	139,405
Door		713,385	800	7,800
Douglas		2,048,850	.....	100
Dunn		1,338,030	69,564	79,072
Eau Claire		1,940,700	435,266	420,601
Florence		85,935	.....	.....
Fond du Lac		4,153,650	675,766	746,735
Forest		114,930	5,296	100
Grant		2,643,750	438,742	497,874
Green		1,925,100	663,335	748,425
Green Lake		1,050,255	45,015	77,300
Iowa		1,524,900	159,500	180,743
Iron		246,240	.....	.....
Jackson		723,240	44,482	58,343
Jefferson		2,616,000	167,605	149,765
Juneau		829,050	53,503	68,868
Kenosha		2,231,250	2,431,600	2,359,625
Kewaunee		1,066,890	16,290	16,450
La Crosse		3,354,450	1,979,969	1,875,523
Lafayette		1,530,900	161,647	191,215
Langlade		650,550	3,550	3,335
Lincoln		1,009,575	100	198
Manitowoc		3,144,750	36,220	47,634
Marathon		3,265,500	73,594	107,572
Marinette		1,718,550	31,006	37,924
Marquette		500,475	9,700	5,750
Milwaukee		33,028,500	11,006,890	6,907,060
Monroe		1,712,250	168,630	166,953
Oconto		970,575	2,050	3,000
Oneida		387,000	.....	.....
Outagamie		3,328,050	90,225	56,450
Ozaukee		1,305,600	55,600	75,525
Pepin		369,090	3,800	7,400
Pierce		1,028,550	104,045	114,510
Polk		905,100	49,794	52,707
Portage		1,311,000	61,122	74,312
Price		350,625	10,589	3,200
Racine		4,378,500	700,930	663,825
Richland		1,115,550	111,883	137,321
Rock		4,941,000	422,048	332,565
Rusk		283,650	1,975	3,550
St. Croix		1,371,900	37,605	46,870

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

TOTAL MONEYS, ACCOUNTS, NOTES, BONDS, MORTGAGES, ETC.—Continued.

County.	State—1912.*	State—1911.	Local—1911.	Local—1910.
Sauk	.....	2,227,800	300,558	278,160
Sawyer	.....	136,563	.....	.....
Shawano	.....	1,008,630	12,285	21,570
Sheboygan	.....	3,836,700	411,324	508,049
Taylor	.....	404,475	.....	.....
Trempealeau	.....	1,214,100	156,980	142,528
Vernon	.....	1,667,250	244,640	210,554
Vilas	.....	93,225	4,020	.....
Walworth	.....	2,822,700	667,475	(695,349
Washburn	.....	208,290	655	600
Washington	.....	1,813,500	253,407	275,077
Waukesha	.....	3,457,425	405,982	581,198
Waupaca	.....	1,944,150	108,380	155,433
Waushara	.....	799,950	43,431	45,596
Winnebago	.....	5,262,300	618,322	947,497
Wood	.....	1,554,300	41,115	59.335
Total	.....	$150,930,603	$25,791,947	$22,349,805

* Exempted under chapter 687, laws of 1911.

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF WATCHES, PIANOS, ORGANS AND BICYCLES.

County	State—1912.*	State—1911.	Local—1911.	Local—1910.
Adams		$19,875	$9,180	$6,545
Ashland		70,947	101,160	110,420
Barron		70,747	46,529	49,499
Bayfield		49,400	36,115	34,260
Brown		215,310	253,590	239,045
Buffalo		59,382	29,399	23,455
Burnett		16,427	5,550	5,810
Calumet		64,967	57,785	46,042
Chippewa		115,571	52,587	47,690
Clark		93,530	51,576	47,408
Columbia		148,797	121,460	115,003
Crawford		50,004	18,875	16,710
Dane		365,493	94,537	175,311
Dodge		175,513	112,965	100,301
Door		47,713	26,480	26,325
Douglas		204,389	83,520	73,000
Dunn		81,085	24,823	22,804
Eau Claire		122,704	86,076	83,842
Florence		3,922	4,055	4,060
Fond du Lac		233,793	181,380	178,390
Forest		11,936	13,750	7,470
Grant		176,312	124,793	113,584
Green		108,854	76,850	74,055
Green Lake		59,021	29,335	25,070
Iowa		106,186	70,400	61,012
Iron		16,197	7,305	7,350
Jackson		47,639	29,199	26,620
Jefferson		161,924	190,470	175,290
Juneau		51,662	51,545	46,345
Kenosha		176,170	17,425	19,045
Kewaunee		54,380	25,085	26,990
La Crosse		210,741	157,735	151,820
Lafayette		104,591	60,450	49,090
Langlade		44,532	45,780	42,249
Lincoln		76,447	57,212	60,735
Manitowoc		174,065	129,235	100,166
Marathon		164,611	85,075	79,060
Marinette		112,256	42,177	43,770
Marquette		28,356	19,085	16,547
Milwaukee		2,278,564	1,027,930	921,996
Monroe		96,751	70,199	55,403
Oconto		74,847	23,227	24,664
Oneida		43,742	37,510	33,630
Outagamie		195,426	167,623	139,900
Ozaukee		58,903	50,035	49,600
Pepin		22,958	10,120	9,035
Pierce		69,107	43,265	42,270
Polk		73,716	19,568	21,145
Portage		77,053	47,155	42,538
Price		29,659	21,625	22,705
Racine		306,070	56,995	56,395
Richland		69,781	32,837	26,005
Rock		282,133	178,712	172,515
Rusk		26,003	15,325	14,395
St. Croix		104,158	51,585	49,922

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF WATCHES, PIANOS, ORGANS AND BICYCLES.—Continued.

County	State—1912.*	State—1911.	Local—1911.	Local—1910.
Sauk		129,504	127,676	125,010
Sawyer		13,809	6,940	6,750
Shawano		83,634	40,460	36,011
Sheboygan		260,169	209,590	181,200
Taylor		37,104	13,375	11,670
Trempealeau		82,082	50,087	44,499
Vernon		100,093	33,470	29,630
Vilas		18,377	6,620	8,090
Walworth		141,851	113,780	109,340
Washburn		12,786	7,690	6,193
Washington		95,374	80,783	76,030
Waukesha		137,270	88,250	84,219
Waupaca		100,641	87,943	76,024
Waushara		51,370	33,065	29,570
Winnebago		280,764	142,435	133,350
Wood		88,079	75,558	72,575
Total		$9,537,227	$5,601,986	$5,244,467

* Exempted under chapter 687, laws 1911.

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF MERCHANTS' AND MANUFACTURERS' STOCK AND LEAF TOBACCO.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$71,580	$71,391	$37.570	$38,372
Ashland	1,729,255	1.471.600	1.349.332	987.987
Barron	1,172,596	1,435.800	860.401	771.828
Bayfield	317,147	343,300	213.653	215.312
Brown	4,649,367	4,503,500	2,324 684	2 218,790
Buffalo	537,029	465,130	295.414	270 857
Burnett	147,740	169,680	73.870	76,000
Calumet	1,112,626	831,700	556,313	521,486
Chippewa	1,592,680	1.864,100	796 340	918,545
Clark	1,235,416	1,281,200	690 619	745,871
Columbia	1,932,070	1,880,000	966.009	1 010.640
Crawford	660,645	650.300	300.036	291,318
Dane	6,762,500	6,079,100	2.794,200	2.722 944
Dodge	3,203,800	2,861,400	1.057,266	1.025.578
Door	683,600	720,670	273,440	270,555
Douglas	5,868,700	4,283,000	2,347.487	1.918,651
Dunn	950,334	946,950	379.516	381,794
Eau Claire	2,334,900	2,641,100	1,230 168	1,183.265
Florence	132,340	137,060	66.170	55,263
Fond du Lac	4,570,075	3,633,800	1,828,032	1,790,422
Forest	162,820	313,340	81,410	168,460
Grant	1,915,446	1,944,000	957,723	957.783
Green	1,519,546	1,588,800	759,773	782,851
Green Lake	776,800	779,600	349,575	349,245
Iowa	1,218,018	1,001,600	609,009	538,347
Iron	233,805	359,470	81,835	112,715
Jackson	402,075	546,850	281,449	293,962
Jefferson	3,444,800	3,082,000	1.550.175	1,518.595
Juneau	706,624	765,110	353.312	342,706
Kenosha	9,850,760	4,992,000	4,925,380	4,248,835
Kewaunee	762,790	726,260	343,259	325.341
La Crosse	5,075,322	4,342,600	2,537,661	2,528,998
Lafayette	939,024	912,780	469.512	449,736
Langlade	849,072	784.480	424,536	421,762
Lincoln	1,551,018	2,446,300	930,622	1,424,615
Manitowoc	3,493,566	3,066.500	1,572,099	1,511,060
Marathon	2,389,724	2,917,200	979.795	914,753
Marinette	888,230	1,185,500	470,755	477,945
Marquette	390,710	430,690	195,355	192.940
Milwaukee	74,997,850	66,330,000	41 248,934	23,760,220
Monroe	1,589,826	1,609,500	786,143	776,461
Oconto	1,314,123	2,161,500	854,186	871.405
Oneida	519,640	587,000	259,820	236,644
Outagamie	3,862,800	2,754,900	1,545,121	1,481,100
Ozaukee	1,131,050	733,930	452,395	427,397
Pepin	296,124	355,600	148,062	159,280
Pierce	991,200	960,620	446,032	430,300
Polk	730,300	768,850	328,612	344,389
Portage	1,744,013	1,363,700	697,603	671,851
Price	262,667	381,780	157,595	171,015
Racine	16,164,000	10,247,000	4,849,280	4,590,257
Richland	941,712	915,520	470,856	410,082
Rock	6,628,900	4,950,000	2,651.577	2.539,943
Rusk	359,074	459,620	179,537	164,689
St. Croix	1,091,162	1,205,700	545,581	485,749

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF MERCHANTS' AND MANUFACTURERS' STOCK AND LEAF TOBACCO.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	1,657,480	1,653,000	828,740	814,510
Sawyer	85,528	172,920	42,764	46,479
Shawano	1,091,468	1,297,000	545,734	580,977
Sheboygan	7,253,000	4,876,100	2,901,185	2,859,540
Taylor	276,327	541,750	199,079	242,696
Trempealeau	1,059,276	1,062,600	529 638	523,568
Vernon	1,432,690	1,634,700	644.743	731,761
Vilas	101,770	138,400	35 620	37 195
Walworth	1,574,836	1,911,000	866 133	855.990
Washburn	213,520	262,010	96,081	93,529
Washington	1,796,612	1,296,600	719 1?5	607 105
Waukesha	1,555,300	1,552,300	622 105	625,747
Waupaca	1,635,427	1,847,200	1,079,031	992 850
Waushara	918,208	815,600	459,104	438,451
Winnebago	8,075,100	6,852,200	3,230 032	3,376,480
Wood	2,009,050	1,706,700	803,683	764,516
Total	$219,594,583	$191,861,161	$105,537,926	$96,178,242

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY,

VALUE OF LOGS, TIMBER, ETC.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$3,928	$3,928	$3,871	$2,357
Ashland	962,000	897,084	865,769	397,084
Barron	59,460	250,050	43,410	150,050
Bayfield	1,352,000	1,646,246	1,216,811	1,646,246
Brown	50,465	34,525	32,295	18,990
Buffalo	15,063	8,015	8,285	5,210
Burnett	17,286	36,240	8,643	18,121
Calumet	18,240	16,245	9,120	11,371
Chippewa	699,400	987,200	368,162	542,974
Clark	198,920	129,430	111,205	84,124
Columbia	18,160	15,132	9,080	9,080
Crawford	13,152	16,335	6,576	8,168
Dane	4,800	.....	2,400	.....
Dodge	5,000	.....	2,500	.....
Door	37,670	15,675	18,835	7,054
Douglas	425,192	445,900	212,596	222,975
Dunn	135,040	221,950	60,757	99,874
Eau Claire	609,400	725,280	321,008	362,638
Florence	4,800	16,133	2,400	7,260
Fond du Lac	19,000	6,669	7,600	3,338
Forest	947,520	586,280	473,760	351,803
Grant	60,862	32,170	30,491	17,694
Green	750	24,600	375	13,530
Green Lake	15,600	.....	7,800	.....
Iowa	60,708	47,100	30,354	28,262
Iron	54,970	203,800	19,237	71,328
Jackson	22,290	30,683	11,145	13,413
Jefferson	17,446	.....	7,850	.....
Juneau	6,698	10,551	3,349	5,276
Kenosha	440	.....	220	.....
Kewaunee	63,350	53,830	28,505	26,918
La Crosse	2,960	1,146	1,480	745
Lafayette	64	82	32	45
Langlade	777,884	554,000	388,942	332,426
Lincoln	905,900	479,300	606,981	311,577
Manitowoc	203,640	114,080	96,985	62,750
Marathon	2,161,750	1,521,300	1,080,875	912,832
Marinette	2,734,000	2,819,701	1,449,414	1,527,225
Marquette	2,000	3,818	1,000	1,900
Milwaukee	10,728	6,000	5,900	2,400
Monroe	60,104	68,240	30,052	40,948
Oconto	353,600	581,700	229,832	261,774
Oneida	1,810,564	1,836,000	905,282	826,206
Outagamie	926,880	464,900	370,737	278,990
Ozaukee	167,900	88,720	67,150	57,675
Pepin	4,038	12,687	2,019	6,344
Pierce	101,760	112,230	45,804	56,114
Polk	85,000	88,580	38,253	44,295
Portage	61,486	61,480	24,595	33,817
Price	344,800	825,900	275,858	412,956
Racine	16,000	41,000	8,000	20,500
Richland	26,932	104,930	13,466	52,461
Rock	.....	.....	.....	.....
Rusk	564,828	758,700	282,414	334,778
St. Croix	50,232	102,570	25,116	46,161

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF LOGS, TIMBER, ETC.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	36,042	20,577	18,021	11,317
Sawyer	450,300	534,800	180,130	160,455
Shawano	458,826	431,200	229,413	205,004
Sheboygan	81,240	63,740	40,620	41,420
Taylor	642,600	797,166	462,737	470,738
Trempealeau	2,778	6,660	1,389	3,663
Vernon	45,240	47,783	20,358	23,893
Vilas	599,700	784,000	209,891	203,941
Walworth	909	.....	500	.....
Washburn	16,510	38,102	7,430	15,241
Washington	22,680	14,750	9,070	8,850
Waukesha	7,613	15,110	3,045	6,800
Waupaca	21,904	53,850	14,456	32,314
Waushara	4,888	4,458	2,444	2,675
Winnebago	229,000	169,660	91,600	93,305
Wood	879,500	682,600	351,755	341,313
Total	$20,775,390	$20,771,971	$11,517,395	$11,376,133

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

PROPERTY AND FRANCHISES OF WATER AND LIGHT COMPANIES.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams				
Ashland	$269,122	$375,000	$435,110	$431,200
Barron	85,082	7,940	53,500	3,500
Bayfield	146,387	102,392	99,000	100,000
Brown	1,295,640	127,033	686,894	53,574
Buffalo	19,943	9,907	8,365	7,256
Burnett	1,037	773	400	480
Calumet	18,349	20,079	14,700	14,700
Chippewa	476,280	402,622	258,750	234,750
Clark	55,920	73,994	47,827	61,456
Columbia	2,261,807	914,400	870,225	820,225
Crawford	27,965	5,961	12,710	3,500
Dane	1,901,322	1,325,520	528,550	562,500
Dodge	462,530	400,080	237,575	210,300
Door				
Douglas	1,537,450	1,540,300	575,000	480,000
Dunn	202,357	209,314	99,050	91,500
Eau Claire	272,275	260,975	156,000	156,000
Florence	6,448		2,500	
Fond du Lac	154,786	246,970	522,000	479,900
Forest				
Grant	213,623	82,415	55,200	53,000
Green	143,596	14,721	39,300	9,400
Green Lake	96,546	86,084	45,000	45,000
Iowa	77,688	32,373	19,600	18,800
Iron	12,000	16,850	1,750	250
Jackson	298,940	388,000	261,563	336,295
Jefferson	290,413	206,300	127,975	112,475
Juneau	27,560	37,461	25,000	25,000
Kenosha	543,950	370,726	265,010	297,700
Kewaunee				
La Crosse	1,264,190	1,261,313	985,544	990,857
Lafayette	18,597	14,237	7,500	7,600
Langlade	275,394	229,847	200,700	180,400
Lincoln	194,235	203,714	189,000	150,000
Manitowoc	684,467	640,974	366,895	308,695
Marathon	104,413		66,080	
Marinette	1,037,219	948,990	700,980	529,499
Marquette	33,623	19,776	16,375	5,000
Milwaukee	15,230,123	13,974,108	12,224,525	6,547,625
Monroe	124,710	59,113	57,294	46,492
Oconto	180,337	226,638	166,326	138,052
Oneida	88,731		55,000	
Outagamie	79,523	809,877	173,575	347,715
Ozaukee	7,974		5,000	
Pepin	20,700	14,000	6,000	6,000
Pierce	61,522	32,615	24,300	14,200
Polk	1,262,855	1,495,872	1,032,635	832,555
Portage	239,549	223,139	137,530	126,500
Price	71,180	46,930	24,000	24,000
Racine	2,315,211	1,742,889	1,283,130	1,006,500
Richland		1,174		450
Rock	2,127,888	1,894,040	1,084,575	1,067,700
Rusk	4,175	10,263	6,000	5,000
St. Croix	1,283,224	1,244,193	623,300	590,515

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

PROPERTY AND FRANCHISES OF WATER AND LIGHT COMPANIES.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	262,840	167,998	141,500	140,600
Sawyer	25,025	18,130	8,000	8,600
Shawano	29,504	27,532	14,050	13,000
Sheboygan	295,401	221,800	178,000	60,500
Taylor	15,275	.....	5,460	.....
Trempealeau	12,457	16,202	10,904	14,019
Vernon	53,903	38,210	17,500	17,000
Vilas	.....	.....	.....	.....
Walworth	133,954	207,185	89,650	117,150
Washburn	.....	537	.....	320
Washington	24,735	16,147	9,600	8,800
Waukesha	258,263	209,451	96,200	89,000
Waupaca	45,600	25,100	18,000	11,500
Waushara	13,157	.....	7,650	.....
Winnebago	1,821,044	1,807,292	834,700	823,030
Wood	102,000	36,780	25,200	25,200
Total	$40,632,119	$35,860,046	$26,441,262	$18,856,635

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF AUTOMOBILES AND OTHER MOTOR VEHICLES.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$5,000	$2,800	$1,875	$650
Ashland	25,210	34,300	23,395	13,875
Barron	50,770	39,100	29,315	24,440
Bayfield	12,570	5,600	6,185	725
Brown	126,680	188,200	110,995	77,985
Buffalo	27,640	11,100	12,270	5,775
Burnett	6,000	1,600	1,575	.....
Calumet	87,710	51,550	53,875	31,675
Chippewa	105,630	106,000	52,640	41,025
Clark	54,770	43,800	29,680	23,785
Columbia	145,490	104,000	95,775	66,205
Crawford	20,210	13,200	6,600	5,415
Dane	492,610	647,000	234,470	139,943
Dodge	288,480	191,700	126,580	83,470
Door	45,210	27,400	25,841	8,235
Douglas	70,280	60,350	43,925	25,925
Dunn	75,490	55,025	33,570	18,230
Eau Claire	105,490	126,800	94,871	59,810
Florence	6,000	6,500	2,900	2,475
Fond du Lac	326,750	385,900	307,875	206,740
Forest	4,140	2,800	2,150	600
Grant	138,410	106,900	89,190	4,945
Green	128,340	79,100	86,165	39,335
Green Lake	80,140	57,250	49,565	40,050
Iowa	57,780	48,625	30,755	14,850
Iron	5,000	2,000	575	325
Jackson	30,000	13,600	12,110	6,685
Jefferson	204,740	142,650	110,270	63,065
Juneau	25,140	12,700	8,300	5,175
Kenosha	160,560	267,800	106,600	67,400
Kewaunee	60,280	28,525	29,425	14,835
La Crosse	200,770	301,100	234,795	183,790
Lafayette	72,640	45,250	37,965	13,850
Langlade	30,210	32,600	22,440	24,040
Lincoln	45,280	59,200	69,325	35,155
Manitowoc	164,060	201,300	106,050	56,380
Marathon	108,340	186,000	85,720	53,465
Marinette	60,210	84,450	35,300	22,275
Marquette	25,350	15,100	10,600	9,425
Milwaukee	2,021,770	3,544,200	1,745,120	1,059,055
Monroe	57,780	43,525	43,910	26,620
Oconto	27,710	25,800	12,980	9,065
Oneida	18,000	24,200	22,220	16,750
Outagamie	161,540	192,900	110,570	52,745
Ozaukee	60,210	50,600	23,350	11,275
Pepin	22,500	20,100	14,050	5,025
Pierce	55,420	31,800	25,175	13,315
Polk	47,850	22,200	21,375	14,050
Portage	78,970	36,900	26,725	20,125
Price	12,640	9,300	4,214	5,910
Racine	354,690	513,600	189,145	157,525
Richland	67,500	33,975	30,855	7,400
Rock	362,030	402,300	224,231	158,373
Rusk	22,710	8,800	6,560	4,315
St. Croix	80,770	50,100	44,315	18,855

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF AUTOMOBILES AND OTHER MOTOR VEHICLES.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	155,420	153,300	114,691	73,515
Sawyer	3,500	3,600	350	300
Shawano	58,060	28,000	29,210	17,340
Sheboygan	242,730	298,600	244,190	130,550
Taylor	12,780	10,900	6,275	3,735
Trempealeau	52,990	30,200	31,350	16,550
Vernon	30,070	17,625	16,500	8,175
Vilas	500	400	3,350	810
Walworth	261,470	290,550	145,705	102,210
Washburn	7,710	5,600	3,125	1,825
Washington	125,630	84,500	65,990	36,670
Waukesha	245,230	269,300	95,575	66,515
Waupaca	110,650	61,675	5[illegible],75[illegible]	44,6[illegible]3
Waushara	57,570	29,400	33,350	22,735
Winnebago	345,650	516,400	211,570	153,695
Wood	76,190	61,600	70,730	62,913
Total	$8,917,620	$10,651,825	$6,098,018	$[illegible],8[illegible]4,812

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF STEAM VESSELS AND ALL OTHER PERSONAL PROPERTY.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Adams	$64,115	$291,729	$135,915	$149,057
Ashland	160,320	564,830	577,067	625,007
Barron	122,760	783,890	358,426	363,832
Bayfield	64,298	291,180	231,452	231,763
Brown	335,600	2,023,211	859,130	870,865
Buffalo	137,130	495,127	301,658	291,933
Burnett	34,610	161,627	69,223	75,994
Calumet	216,560	626,524	433,249	409,349
Chippewa	170,860	805,080	375,798	347,352
Clark	192,100	732,756	422,583	416,038
Columbia	175,840	1,077,878	351,671	588,232
Crawford	70,780	504,278	141,561	156,859
Dane	754,540	3,243,740	1,509,316	1,363,913
Dodge	186,500	1,758,735	373,018	457,388
Door	168,258	758,160	336,513	344,961
Douglas	483,120	1,803,722	972,219	1,281,509
Dunn	164,860	769,672	296,756	327,708
Eau Claire	270,930	1,341,326	574,316	579,353
Florence	5,180	29,791	10,360	10,405
Fond du Lac	453,100	2,265,618	724,971	628,713
Forest	118,858	108,080	237,731	49,706
Grant	276,740	1,140,003	553,510	603,051
Green	185,484	642,373	370,997	321,174
Green Lake	131,124	472,864	262,252	224,120
Iowa	175,340	640,000	350,681	340,964
Iron	172,370	409,509	241,331	201,264
Jackson	148,720	537,294	297,442	302,063
Jefferson	308,780	1,396,949	555,791	575,662
Juneau	90,872	560,014	181,756	192,376
Kenosha	195,876	686,981	391,746	410,353
Kewaunee	160,150	638,780	288,251	270,728
La Crosse	326,440	2,039,806	652,878	668,014
Lafayette	209,380	813,858	418,831	413,763
Langlade	98,220	352,794	196,440	155,960
Lincoln	110,650	606,280	296,530	268,522
Manitowoc	535,400	2,185,672	963,815	946,892
Marathon	117,490	1,757,715	234,972	311,023
Marinette	147,040	774,210	311,168	257,613
Marquette	71,430	303,098	142,865	146,729
Milwaukee	8,014,000	31,985,056	17,630,668	10,877,889
Monroe	207,960	777,030	415,983	394,908
Oconto	47,728	477,504	124,207	161,903
Oneida	52,940	341,840	105,789	162,006
Outagamie	522,000	1,660,130	835,244	550,039
Ozaukee	236,780	569,434	378,821	333,940
Pepin	49,084	232,343	98,171	95,884
Pierce	135,370	668,879	243,701	218,378
Polk	139,240	632,252	250,639	232,427
Portage	187,730	732,751	300,318	314,356
Price	57,090	450,068	182,686	214,867
Racine	170,724	2,524,558	341,489	431,292
Richland	106,760	596,752	213,533	185,320
Rock	827,230	2,332,209	794,173	691,330
Rusk	39,500	219,114	79,056	65,168
St. Croix	127,924	862,060	255,865	265,369

TABLE XXII.—Continued.

LOCAL AND STATE ASSESSMENTS, GENERAL PROPERTY.

VALUE OF STEAM VESSELS AND ALL OTHER PERSONAL PROPERTY.—Continued.

County.	State—1912.	State—1911.	Local—1911.	Local—1910.
Sauk	299,600	1,330,277	569,232	658,517
Sawyer	22,980	177,571	36,769	39,929
Shawano	184,248	703,192	368,516	295,627
Sheboygan	851,400	2,240,370	1,702,897	1,473,662
Taylor	38,060	235,010	109,608	101,154
Trempealeau	171,054	735,360	342,116	369,639
Vernon	173,600	767,630	312,601	295,836
Vilas	39,063	165,065	54,657	55,229
Walworth	324,530	1,628,168	713,839	650,029
Washburn	17,567	80,151	31,617	24,069
Washington	407,240	840,503	651,586	593,281
Waukesha	302,780	1,266,228	484,656	457,407
Waupaca	175,330	948,250	462,931	410,738
Waushara	179,100	611,452	358,236	297,964
Winnebago	488,780	2,140,150	781,888	646,161
Wood	215,940	810,970	345,495	286,338
Total	$22,628,157	$96,137,571	$45,611,176	$38,124,094

TABLE XXIII.

TOTAL TAX LEVIES, STATE AND LOCAL, ASSESSMENTS AND POPULATION OF WISCONSIN, 1872-1911.

Year.	Tax Levies.				Assessments.		Population.
	Total.	State.	County.	Local	State.	Local.	
1872	$7,395,131	$781,774	$2,084,926	$4,578,431	$390,454,875	$337,997,854	('70)1,054,670
1873	7,789,075	727,202	1,946,694	5,115,179	.....	337,887,185	
1874	7,696,248	593,513	1,767,112	5,335,623	421,285,359	337,758,068	
1875	8,004,692	695,923	1,870,655	5,438,114	.....	351,468,391	1,236,729
1876	8,097,435	788,942	1,734,286	5,574,207	423,596,290	352,815,635	
1877	8,031,628	708,671	1,829,732	5,493,225	.....	346,062,373	
1878	7,969,859	681,589	2,072,696	5,215,574	413,102,976	455,340,582	
1879	7,577,768	457,453	1,906,046	5,124,269	438,971,801	406,303,185	
1880	9,098,418	662,059	2,061,489	6,374,870	445,582,720	425,680,143	1,315,497
1881	9,033,171	450,072	2,289,259	6,323,840	447,804,968	429,711,462	
1882	.....	710,221	.....	.....	456,325,171	446,760,585	
1883	9,985,353	332,031	2,425,283	7,228,039	.....	.....	
1884	.....	224,138	.....	.....	476,396,354	487,950,086	
1885	11,199,506	773,745	2,590,376	7,835,385	488,139,614	.....	1,563,413
1886	.....	783,159	.....	.....	496,507,152	503,085,254	
1887	11,644,897	878,581	3,016,326	7,749,990	573,229,855	.....	
1888	.....	1,069,542	.....	.....	581,264,749	530,794,192	
1889	12,490,530	873,888	3,388,724	8,257,918	577,092,815	.....	
1890	.....	891,660	.....	.....	592,890,719	579,839,542	1,686,880
1891	14,654,229	988,886	3,605,229	10,060,114	623,859,417	591,004,854	
1892	.....	1,018,720	.....	.....	654,000,000	603,609,173	
1893	15,744,659	1,018,720	3,873,228	10,852,711	654,000,000	624,707,113	
1894	.....	240,000	.....	.....	600,000,000	639,602,277	
1895	16,561,388	1,372,713	4,411,954	10,776,721	603,473,526	632,680,710	1,937,915
1896	16,338,856	1,195,070	4,373,889	10,769,897	600,000,000	633,347,607	
1897	16,996,177	1,995,070	4,185,276	10,815,831	600,000,000	629,735,508	
1898	16,891,266	1,492,570	4,049,168	11,349,528	600,000,000	628,504,011	
1899	17,212,876	1,340,570	4,113,779	11,758,527	625,000,000	630,721,497	

1900	19,376,442	1,345,570	4,386,823	13,644,049	630,000,000	746,022,932	2,069,042
1901	20,360,831	2,257,854	4,550,872	13,552,105	1,436,284,000	1,082,641,094	
1902	20,754,277	2,325,916	5,416,860	13,011,501	1,504,346,000	1,369,811,147	
1903	20,776,180	1,027,220	5,854,290	13,894,670	1,753,172,000	1,358,098,346	
1904	21,441,385	1,089,988	5,319,458	15,031,939	1,842,841,000	1,384,580,755	
1905	22,896,641	1,167,035	5,948,975	15,780,631	1,952,700,000	1,411,576,454	2,228,919
1906	23,267,646	643,680	5,709,100	16,914,866	2,124,800,000	1,468,922,432	
1907	26,382,190	2,656,637	5,978,651	17,746,902	2,256,300,000	1,531,909,825	
1908	28,332,045	2,875,723	6,461,609	18,994,713	2,478,561,786	1,565,884,559	
1909	29,287,107	3,607,939	6,813,232	18,865,936	2,602,549,798	1,613,427,747	
1910	30,667,894	4,587,636	6,772,183	19,308,075	2,743,180,404	1,680,811,386	2,333,860
1911	32,610,975	4,614,446	7,422,094	20,574,435	2,941,412,842	1,876,478,266	
1912	.....	.....	.....	.....	2,841,630,416		

TABLE XXIV.

TOTAL TAX AND AVERAGE TAX RATE BASED ON LOCAL AND STATE ASSESSMENT OF EACH COUNTY.

County.	Tax Levy of 1911.					Tax Levy of 1910.				
	Local ass'd. val. 1911.	State assessment, 1911.	Taxes levied 1911.	Average rates.		Local ass'd. val. 1910.	State assessment, 1910.	Taxes levied 1910.	Average rates.	
				Local ass'd. val.	State ass't.				Local ass'd. val.	State ass't.
Adams	$4,796,355	$7,924,176	$71,193.86	1.484	0.898	$4,704,527	$7,305,469	$68,566.01	1.458	0.938
Ashland	13,021,779	17,842,526	389,488 84	2.991	2.183	12,216,056	16,775,074	452,577.22	3.705	2.698
Barron	14,796,016	24,534,636	283,388.10	1.915	1.155	14,078,135	21,857,911	295,111.61	2.096	1.350
Bayfield	9,988,710	16,378,482	278,679.67	2.790	1.701	10,063,507	15,884,950	304,529.30	3.026	1.917
Brown	32,037,184	57,738,481	663,490.21	2.071	1.149	31,702,396	55,508,015	715,571.32	2.257	1.289
Buffalo	13,917,660	19,374,697	162,729.70	1.169	.840	13,658,798	18,390,895	148,692.91	1.089	.809
Burnett	3,369,014	6,366,711	97,348.25	2.889	1.522	3,098,064	5,908,191	94,813.57	3.061	1.605
Calumet	20,507,334	26,700,961	177,517.23	.866	.665	20,339,079	25,491,651	167,930.10	.826	.659
Chippewa	16,815,320	31,515,273	375,186.67	2.231	1.191	17,289,151	29,303,457	346,916.98	2.007	1.184
Clark	21,580,571	30,655,464	317,887.16	1.473	1,037	21,433,491	29,013,065	290,708.01	1.356	1.002
Columbia	32,560,747	47,470,149	433,220.70	1.331	.913	33,264,377	45,075,284	417,903.53	1.256	.927
Crawford	7,889,225	15,274,448	150,832.83	1.912	.988	7,966,895	13,722,509	151,187.98	1.898	1.102
Dane	83,073,454	138,501,543	1,185,703.92	1.427	.856	81,671,614	127,081,979	1,086,135.31	1.330	.855
Dodge	46,403,738	82,989,547	542,223.48	1.169	.653	45,907,711	75,321,953	509,143.33	1.109	.676
Door	8,450,730	17,560,520	185,465.18	2.195	1.056	8,209,438	16,134,569	167,640.84	2.042	1.039
Douglas	28,094,574	46,441,386	861,024.78	3.065	1.854	26,983,550	47,133,104	917,932.42	3.402	1.948
Dunn	11,612,171	25,333,949	272,236.29	2.344	1.075	11,705,959	23,197,434	261,313.36	2.233	1.127
Eau Claire	18,457,848	32,001,560	433,150.90	2.347	1.354	18,727,720	28,948,402	463,681.90	2.476	1.602
Florence	1,977,218	4,102,653	71,459.18	3.614	1.742	2,010,017	3,811,681	67,635.58	3.365	1.775
Fond du Lac	48,383,486	75,217,638	573,109.88	1.185	.762	48,616,368	72,443,420	583,326.45	1.200	.805
Forest	7,236,739	11,461,330	180,719.86	2.497	1.577	6,912,146	10,296,386	168,361.34	2.435	1.635
Grant	34,662,055	56,601,295	549,630.47	1.586	.971	35,191,403	54,150,761	489,875.98	1.392	.905
Green	26,012,921	46,214,062	353,926.31	1.361	.766	26,490,548	42,208,140	346,152.42	1.307	.820
Green Lake	13,204,142	23,378,883	184,818.66	1.400	.790	13,071,253	21,882,750	168,185.48	1.287	.769
Iowa	23,217,708	39,924,968	284,378.70	1.225	.712	23,333,553	37,832,965	264,857.73	1.135	.700
Iron	3,352,556	8,120,495	172,409.06	5,142	2,123	3,329,021	6,885,724	136,432.14	4.099	1.981
Jackson	10,718,230	17,898,007	210,491.93	1.964	1.176	10,945,610	16,160,613	193,587.15	1.767	1.198
Jefferson	33,265,166	56,906,349	457,033.83	1.374	.803	33,136,397	53,632,045	432,804.04	1.306	.807
Juneau	9,688,195	18,938,970	202,710.76	2.092	1.070	9,809,426	17,841,656	196,061.96	1.999	1.099
Kenosha	31,173,600	43,015,736	383,740.11	1.231	.892	32,206,223	41,601,703	357,540.86	1.110	.859

Kewaunee	11,816,169	20,835,916	168,302.88	1.424	.808	11,463,016	19,315,620	162,467.17	1.417	.841
La Crosse	30,491,349	44,420,464	740,588.49	2.429	1.667	32,054,050	42,233,185	600,745.07	1.874	1.423
Lafayette	24,312,973	41,705,379	292,219.17	1.202	.701	22,603,339	39,180,679	265,806.68	1.176	.678
Langlade	13,239,470	18,981,490	288,167.28	2.176	1.518	13,260,490	17,071,122	223,718.93	1.687	1.310
Lincoln	11,628,017	19,849,586	310,327.74	2.669	1.563	11,961,181	18,204,452	321,854.96	2.690	1.768
Manitowoc	36,642,392	59,393,458	585,756.49	1.599	.986	35,965,225	55,628,569	544,782.76	1.515	.979
Marathon	24,308,566	53,425,322	586,224.08	2.412	1.097	23,712,537	48,676,639	546,044.14	2.303	1.122
Marinette	14,020,357	29,849,672	446,869.56	3.187	1.497	13,890,289	27,666,322	314,469.24	2.264	1.137
Marquette	6,748,313	12,336,955	104,585.04	1.550	.848	6,729,508	11,162,595	93,229.30	1.385	.835
Milwaukee	476,235,816	578,715,754	7,987,548.85	1.677	1.380	292,199,739	540,484,848	7,439,539.96	2.546	1.377
Monroe	17,748,423	29,715,040	292,656.26	1.649	.985	17,825,154	27,229,736	305,067.96	1.711	1.120
Oconto	11,114,838	23,909,426	271,467.26	2.443	1.135	11,230,234	22,017,012	256,725.26	2.286	1.166
Oneida	6,371,702	14,206,308	249,105.61	3.909	1.754	6,325,486	12,497,753	234,569.74	3.708	1.877
Outagamie	40,388,914	58,945,236	658,048.40	1.629	1.116	38,893,806	56,830,402	625,474.60	1.608	1.101
Ozaukee	17,188,467	23,924,411	175,393.21	1.020	.733	16,931,586	22,641,427	174,444.57	1.030	.770
Pepin	3,570,667	7,391,796	75,115.49	2.104	1.016	3,641,804	6,650,631	68,321.97	1.876	1.027
Pierce	12,432,296	23,098,717	251,928.52	2.027	1.091	12,005,498	21,503,864	226,510.22	1.887	1.054
Polk	11,937,456	22,429,361	231,124.08	1.936	1.030	11,585,003	20,048,649	199,169.02	1.719	.993
Portage	13,595,478	24,546,636	297,104.87	2.185	1.210	13,322,590	22,622,298	257,343.91	1.932	1.138
Price	7,038,010	13,213,763	228,766.38	3.250	1.731	7,227,085	11,742,523	230,926.30	3.195	1.967
Racine	45,002,030	75,850,284	797,369.77	1.772	1.051	43,664,942	69,292,905	689,334.15	1.579	.995
Richland	12,710,717	23,874,630	256,457.02	2.018	1.074	12,557,924	21,288,469	238,463.47	1.899	1.120
Rock	50,757,794	84,942,581	754,732.32	1.487	.888	50,475,562	79,731,890	709,373.16	1.406	.890
Rusk	5,984,482	11,630,348	215,469.34	3.600	1.853	5,849,535	10,684,655	216,262.46	3.697	2.024
St. Croix	15,736,669	30,216,809	272,535.70	1,732	.902	15,709,636	27,963,067	269,760.70	1.717	.965
Sauk	25,176,361	46,034,284	429,772.43	1.707	.934	25,092,792	42,193,667	412,270.89	1.643	.977
Sawyer	4,755,722	9,964,843	198,452.14	4.173	1.992	4,889,202	9,117,080	195,128.95	3.991	2.140
Shawano	14,986,742	28,760,229	280,347.80	1.870	.975	14,477,539	26,729,662	274,242.05	1.894	1.026
Sheboygan	44,135,920	64,902,185	643,626.50	1.458	.992	43,510,283	63,775,953	539,304.12	1.240	.846
Taylor	8,138,677	14,143,482	215,028.99	2.642	1.520	7,872,127	13,249,678	214,907.40	2.730	1.622
Trempealeau	14,713,595	25,848,020	249,139.31	1.693	.964	14,995,841	23,685,535	230,093.13	1.534	.971
Vernon	16,289,996	30,938,962	277,276.28	1.702	.896	16,555,076	28,524,349	275,384.51	1.664	.965
Vilas	2,571,823	9,295,976	117,365.39	4.563	1.263	2,523,843	9,251,417	106,598.32	4.223	1.152
Walworth	33,929,883	58,973,994	472,701.16	1.393	.802	34,449,451	53,052,894	448,522.02	1.302	.845
Washburn	3,390,193	7,244,083	125,252.57	3.694	1.729	3,383,628	6,670,650	115,488.87	3.413	1.731
Washington	25,376,247	36,385,991	254,811.30	1.004	.700	25,186,515	34,595,319	220,174.12	.874	.636
Waukesha	28,143,928	56,732,282	481,178.24	1.710	.848	28,037,848	52,800,627	445,311.22	1.588	.843
Waupaca	22,001,279	34,057,893	351,656.57	1.600	1.033	21,652,591	31,040,437	332,968.22	1.538	1.073
Waushara	12,531,789	19,233,781	175,389.16	1.400	.912	10,823,262	17,896,731	162,883.40	1.505	.910
Winnebago	50,758,356	74,775,471	884,974.38	1.743	1.184	50,668,872	69,786,562	848,268.33	1.674	1.215
Wood	18,291,944	30,297,129	410,642.89	2.245	1.356	17,535,361	27,638,775	366,766.24	2.091	1.327
Total	$1,876,478,266	$2,941,412,842	$32,610,975.44	1.738	1.109	$1,680,811,386	$2,743,180,404	$30,667,894 32	1.824	1.118

APPENDIX A

Appraisal of the Physical Properties of Wisconsin Steam and Electric Railroads

For the Year ending June 30, 1912

A REPORT SUBMITTED TO THE WISCONSIN TAX COMMISSION

BY

W. D. PENCE, ENGINEER,

Professor of Railway Engineering, University of Wisconsin.

REPORT OF THE ENGINEER.

Madison, Wis., December 11, 1912.

WISCONSIN TAX COMMISSION,
MADISON, WISCONSIN.

DEAR SIRS:—I beg to submit herewith a report, in brief, covering the activities of the joint engineering staff during the year ending June 30, 1912, with reference to the valuation of the physical properties of the steam railroads, and the electric railway and associated lighting and power properties of the state of Wisconsin.

The results of this valuation work are submitted in the accompanying tables covering the following matters:

Table I. Summary of the Engineers' Valuation of the Physical Property of Twenty-six Electric Railways, exclusive of the Milwaukee City System (T., M. E. R. & L. Co.) and the Interurban Lines (M., L. H. & T. Co.) as of inventory date June 30, 1911.

Table II. Analysis of the Engineers' Valuations of the Physical Properties of the Twenty-six Electric Railways included in Table I.

Table III. Summary of the Engineers' Valuations of the Physical Property of the Thirteen Large Steam Roads of Wisconsin, as of inventory date June 30, 1910.

Table IV. Summary of the Engineers' Valuations of the Physical Property of All Steam Roads of the State, Fifty-two in number, as of inventory date June 30, 1910.

Table V. Summary of the Engineers' Valuations of the Physical Property of the Thirteen Large Steam Roads of Wisconsin, as of inventory date June 30, 1911.

Table VI. Summary of the Engineers' Valuations of the Physical Property of All Steam Roads of the State, Fifty-two in number, as of inventory date June 30, 1911.

Similar tabulated summaries of the steam and electric railroad valuations were submitted with the report of the engineer under date of April 8, 1911 (Report of the Wisconsin Tax Commission, 1910, pp. 185–231) to and including the inventory date June 30, 1909, for steam railways and June 30, 1910, for electric railways. The exhibits now submitted bring the figures up to date.

The above-mentioned report included discussions at some length of the basis of unit prices and the methods followed in the valuation of lands. The work of the past year now reported upon has followed substantially the same lines as in the previous year, except as to certain approximate valuations of public utilities properties located in more than one assessment district. These valuations were called for by the Tax Commission early in the year (1912) and were completed shortly before the conclusion of the fiscal year (June 30, 1912), a special field staff selected with reference to securing rapid and trustworthy results being organized from the regular staff for this work. These valuations included some thirty electric plants, one gas plant and two combined gas and electric plants; the aggregate valuation of the physical properties of the thirty-three plants was $10,900,613 cost new, and $9,222,740 present value.

The report of the engineering department submitted April 8, 1911, above referred to, included (Appendix C) a complete list of revised forms for the valuation of steam railroads, somewhat extensively revised from those followed in the initial railroad appraisals of 1903. During the past year there has also been some further revision in the classification schemes followed in the valuation of electric railways and public utilities, to conform to the uniform system of accounting prescribed by the Railroad Commission of Wisconsin. The general character of these revised separations of property is indicated by the items in Table II of the present report.

Among the extensions in the scope of the work of the engineering staff during the past year, under special instructions from the Tax Commission, has been the increased attention to separa-

tions of the physical property values with particular reference to the limits of assessment districts.

At the close of the fiscal year there was in progress a revaluation in full detail of the terminal property of the C., M. & St. P. Ry. Co. at Milwaukee. This revaluation was undertaken primarily for the use of the Railroad Commission in the pending terminal switching charge case, but the resulting figures when compiled will also be available for the use of the Tax Commission. A similar series of terminal property revaluations to be made for all railroad terminals in the state will yield results available for the joint use of the two commissions.

During the year the Tax Commission has called upon the engineering staff to detail men of special qualifications to coöperate in the reassessment work in the city of Janesville.

Respectfully submitted,

W. D. PENCE,
Engineer.

TABLE I.

ELECTRIC RAILWAYS OF WISCONSIN.

Exclusive of T. M. E. R. & L. and M. L. H. & T. Companies.

TABLE SHOWING VALUATION OF 26 ROADS AS OF JUNE 30, 1911.

NOTE:—Following figures are for railway property only and do not include values of associated lighting properties.

Company.	Mileage.		Mileage equivalent.	Total Value.			Value per Mile of Main Line.	
	Main line.	Total.		Cost new.	Cond. per cent.	Present value.	Cost new.	Present value.
1. Ashland Light, Power & Street Railway	7.356	7.842	1.066	$231,881	48	$111,496	$31,521	$15,156
2. Bay Shore Street Railway	1.693	1.756	1.037	24,880	91	22,535	14,695	13,311
3. Beloit Traction	5.488	5.516	1.005	84,667	85	72,281	15,428	13,170
4. Chicago & Milwaukee Electric Ry.	6.920	7.000	1.012	293,856	80	235,196	42,464	33,989
5. Chippewa Valley Railway, Light & Power	18.015	19.660	1.091	639,680	73	468,783	35,510	26,023
6. Duluth Street Railway	21.969	23.394	1.065	717,538	68	487,236	32,659	22,179
7. Eastern Wisconsin Railway & Light	20.999	24.252	1.155	643,416	75	479,373	30,640	22,828
8. Grand Rapids Street Railroad	7.852	8.315	1.059	134,708	93	125,734	17,158	16,015
9. Green Bay Traction	37.250	41.049	1.102	1,069,011	70	749,331	28,698	20,116
10. Janesville Traction	4.213	5.056	1.050	108,639	53	57,200	22,572	11,885
11. Kenosha Electric Railway	7.220	7.680	1.064	306,631	69	212,636	42,468	29,458
12. La Crosse & Onalaska Street Railway	2.352	2.451	1.042	27,980	55	15,135	11,896	6,345
13. La Crosse City Railway	14.460	14.597	1.009	423,402	66	280,327	29,282	19,386
14. Manitowoc & Northern Traction Company	8.758	9.287	1.061	212,151	65	138,388	24,224	15,802
15. Menominee & Marinette Light & Traction	7.203	8.038	1.116	280,603	69	193,680	38,956	26,888
16. Merrill Railway & Lighting	1.600	1.730	1.081	63,419	74	46,635	39,638	29,146
17. Milwaukee & Fox River Valley Railway	7.370	7.880	1.069	149,738	80	119,684	20,319	16,241
18. Milwaukee Northern Railway	55.904	64.527	1.154	2,098,609	88.5	1,852,623	37,515	33,139
19. Rockford & Interurban Railway	14.540	15.082	1.037	491,904	69	336,775	33,824	23,162
20. Sheboygan Railway & Electric	25.191	26.838	1.065	714,398	65	462,448	28,360	18,358
21. Southern Wisconsin Railway	11.947	12.732	1.066	424,268	68	289,034	35,512	24,192
22. Twin City General Electric	2.198	2.255	1.026	49,093	56	27,335	22,334	12,437
23. Waupaca Electric Light & Railway	4.770	5.210	1.092	83,137	63	52,737	17,428	11,055
24. Wausau Street Railway	8.058	8.826	1.096	244,814	83	203,033	30,389	25,201
25. Wisconsin Electric Railway	38.717	41.869	1.081	987,661	59	586,708	25,511	15,152
26. Wisconsin Traction, Light, Heat & Power	19.158	20.038	1.046	838,121	72	601,557	43,748	31,398
Total	361.201	392.880	1.088	$11,344,205	73	$8,227,950	$31,407	$22,779

TABLE II.

ELECTRIC RAILWAYS OF WISCONSIN.

Exclusive of T. M. E. R. & L. and M. L. H. & T. Companies

ANALYSIS OF VALUATION, JUNE 30, 1911.

Total mileage..... 392.880
Main line mileage.. 351.201
Mileage equivalent. 1,083

NOTE:—The following figures are for railway property only and do not include values of associated lighting properties.

Item.	Cost of reproduction, new.	Cond. per cent.	Present value.	Per Cent of Total.		Val. mi. Main Line.	
				New.	Present.	New.	Present.
A. Land	$441,328	100	$441,328	3.890	5.364	$1,222	$1,222
B. Transmission and Distribution	609,092	77	695,658	8.015	8.455	2,517	1,926
C. Buildings and Miscellaneous Structures	518,918	90	466,789	4.574	5.673	1,437	1,292
D. Plant Equipment	1,214,086	80	969,794	10.704	11.787	3,361	2,685
E. General Equipment	1,594,126	69	1,104,473	14.054	13.424	4,413	3,057
G. Roadway	4,550,631	67	3,059,275	40.109	37.181	12,598	8,479
Total	$9,228,181	.....	$6,737,317	.....	.....	.....	.....
Add 12% (see note below)	$1,107,370	.....	808,480	9.762	9.826	$3,066	$2,238
Total	$10,335,551	.....	$7,545,797	.....	.....	.....	.....
H. Materials and Supplies	123,760	100	123,759	1.091	1.504	343	343
F. Paving	853,196	63	535,750	7,521	6,511	2,362	1,483
J. Non-operating	31,698	72	22,645	0.280	0.275	88	63
Total	$11,344,205	73	$8,227,951	100.000	100.000	$31,407	$22,779

TABLE III.

STEAM ROADS OF WISCONSIN.

TABLE SHOWING VALUATION OF PHYSICAL PROPERTIES JUNE 30, 1910.

Large Roads of the State (13).

Miles 1st main track..... 6,587.70
" total track.... .... 10,027.16
Mileage equivalent..... 1.52

Item.	Cost of reproduction new.	Cond. per cent.	Present value.	Per Cent of Total.		Value per Mile of Main Track.	
				New.	Present.	New.	Present.
1. Land for right of way, yards and terminals	$42,829,594	100	$42,829,594	13.87	17.14	$6,501	$6,501
2. Real estate							
3. Grading	45,649,914	100	45,634,834	14.79	18.26	6,929	6,929
4. Tunnels	808,561	96	772,909	0.26	0.31	123	117
5. Bridges, trestles and culverts	23,977,173	73	17,576,580	7.77	7.03	3,640	2,668
6. Ties	15,128,610	55	8,339,915	4.90	3.34	2,296	1,266
7. Rail	32,068,876	77	24,546,029	10.39	9.82	4,868	3,726
8. Frogs and switches	1,523,050	60	920,155	0.49	0.37	231	140
9. Track fastenings and other material	5,374,312	69	3,693,109	1.74	1.48	816	561
10. Ballast	8,007,953	80	6,415,433	2.59	2.57	1,216	974
11. Track laying and surfacing	5,478,729	82	4,487,994	1.77	1.80	832	681
12. Roadway tools	148,406	60	89,203	0.05	0.04	22	14
13. Fencing and cattle guards	1,979,675	55	1,090,613	0.64	0.44	301	166
14. Crossings and signs	470,728	58	271,895	0.15	0.11	71	41
15. Interlocking and other signal apparatus	1,023,234	87	892,860	0.33	0.36	155	136
16. Telegraph and telephone lines	214,934	65	139,575	0.07	0.06	33	21
17. Station buildings and fixtures	4,945,065	63	3,126,486	1.60	1.25	751	475
18. General office buildings and fixtures	57,944	48	27,750	0.02	0.01	9	4
19. Shops, engine houses and turntables	4,409,250	72	3,159,042	1.43	1.26	669	480
20. Shop machinery and tools	1,721,114	68	1,163,085	0.56	0.47	261	177
21. Water stations	1,397,502	54	757,308	0.45	0.30	212	115
22. Fuel stations	485,784	61	297,198	0.16	0.12	74	45
23. Grain elevators	819,666	50	406,377	0.27	0.16	124	62
24. Storage warehouses	375,769	53	200,637	0.12	0.08	57	31
25. Dock and wharf property	5,459,361	61	3,307,449	1.77	1.32	829	502

26. Light and power plants	32,634	54	17,553	0.01	0.01	5	3
27. Power transmission							
28. Miscellaneous structures	1,530,904	55	841,539	0.50	0.33	232	128
29.							
30. Engineering, superintendence and legal expenses	9,266,342	83	7,695,251	3.00	3.08	1,407	1,168
31. Locomotives	14,980,286	67	10,022,217	4.85	4.01	2,274	1,521
32. Passenger train cars	6,766,990	70	4,749,762	2.19	1.90	1,027	721
33. Freight train cars	38,517,169	75	28,880,867	12.47	11.56	5,847	4,382
34. Miscellaneous equipment	855,062	63	539,359	0.28	0.21	130	82
35. Inspection and general expenses	611,194	80	487,683	0.20	0.20	93	74
36. Interest, organization and contingencies	27,691,611	81	22,338,027	8.97	8.94	4,204	3,391
37. Stores and supplies on hand for use in Wisconsin	4,145,327	100	4,136,475	1.34	1.66	629	628
Total	$308,752,733	81	$249,854,763	100.00	100.00	$46,868	$37,930

TABLE IV.

STEAM ROADS OF WISCONSIN.

TABLE SHOWING VALUATION OF PHYSICAL PROPERTY JUNE 30, 1910.

All Roads of the State (52)

Miles 1st main line..... 7,425.03
Miles total track..... 10,812.57
Mileage equivalent... 1.46

Item.	Cost of reproduction new.	Cond. per cent.	Present Value.	Per Cent of Total.		Value per Mile Main Track.	
				New.	Present.	New.	Present.
1. Land for right of way, yards and terminals	$43,987,157,	100	$43,986,819	13.77	17.03	$5,924	$5,924
2. Real estate							
3. Grading	47,007,420	100	46,992,340	14.73	18.19	6,330	6,330
4. Tunnels	803,561	96	772,609	0.25	0.30	109	104
5. Bridges, trestles and culverts	24,412,627	73	17,874,637	7.64	6.92	3,288	2,406
6. Ties	15,820,224	55	8,714,243	4.95	3.37	2,131	1,174
7. Rail	34,145,207	79	26,097,861	10.69	10.11	4,599	3,515
8. Frogs and switches	1,612,610	61	978,800	0.50	0.38	217	132
9. Track fastenings and other material	5,686,614	69	3,912,003	1.78	1.52	766	527
10. Ballast	8,259,647	80	6,625,859	2.59	2.57	1,112	892
11. Track laying and surfacing	5,823,753	82	4,785,720	1.82	1.85	784	645
12. Roadway tools	154,780	60	92,984	0.05	0.04	21	13
13. Fencing and cattle guards	2,033,872	55	1,128,392	0.64	0.44	274	152
14. Crossings and signs	477,752	58	275,777	0.15	0.11	65	37
15. Interlocking and other signal apparatus	1,057,217	87	921,596	0.33	0.36	142	124
16. Telegraph and telephone lines	238,769	65	155,906	0.07	0.06	32	21
17. Station buildings and fixtures	5,009,547	64	3,183,981	1.57	1.23	674	429
18. General office buildings and fixtures	58,871	48	28,390	0.02	0.01	8	4
19. Shops, engine houses and turntables	4,486,614	72	3,217,225	1.40	1.25	604	433
20. Shop machinery and tools	1,738,600	67	1,172,686	0.54	0.45	234	158
21. Water stations	1,418,650	55	773,571	0.44	0.30	191	104
22. Fuel stations	466,473	61	303,005	0.16	0.12	67	41
23. Grain elevators	819,666	50	406,377	0.26	0.16	110	55
24. Storage warehouses	378,769	54	203,427	0.12	0.09	51	27
25. Dock and wharf property	5,486,281	61	3,330,389	1.72	1.29	739	448

26. Light and power plants	342,844	87	297,147	0.11	0.12	46	40
27. Power transmission	193,447	74	142,404	0.06	0.06	26	19
28. Miscellaneous structures	1,549,780	55	854,070	0.49	0.33	209	115
29.							
30. Engineering, superintendence and legal expenses	9,607,759	83	7,975,303	3.01	3.09	1,294	1,074
31. Locomotives	15,615,514	66	10,325,681	4.89	4.00	2,108	1,391
32. Passenger train cars	7,007,778	70	4,932,927	2.19	1.91	944	664
33. Freight train cars	38,970,652	75	29,140,208	12.21	11.28	5,249	3,925
34. Miscellaneous equipment	1,162,530	66	769,291	0.36	0.30	157	104
35. Inspection and general expenses	627,564	79	497,445	0.20	0.19	84	67
			23,086,942	8.97	8.94	3,860	3,111
36. Interest, organization and contingencies	28,649,787	81	4,207,024	1.32	1.63	568	568
37. Stores and supplies on hand for use in Wisconsin	4,215,945	100					
Total	$319,363,291	81	$258,163,339	100.00	100.00	$43,012	$34,773

TABLE V.

STEAM ROADS OF WISCONSIN.

TABLE SHOWING VALUATION OF PHYSICAL PROPERTY JUNE 30, 1911,

Large Roads of the State (13).

Miles 1st main line..... 6,798.69
" total track 10,180.59
Mileage equivalent..... 1.497

Item.	Cost of reproduction new.	Cond. per cent.	Present value.	Per Cent of Total.		Value per Mile 1st Main Track.	
				New.	Present.	New.	Present.
1. Land for right of way, yards and terminals	$43,114,163	100	$43,114,163	13.66	17.05	$6,342	$6,342
2. Real estate							
3. Grading	45,904,032	100	45,894,960	14.55	18.15	6,752	6,751
4. Tunnels	808,561	96	772,169	.26	.31	119	114
5. Bridges, trestles and culverts	25,960,366	73	18,991,980	8.23	7.51	3,818	2,794
6. Ties	15,536,265	55	8,545,018	4.92	3.38	2,285	1,257
7. Rails	33,823,933	74	25,006,765	10.71	9.90	4,975	3,678
8. Frogs and switches	1,589,114	59	937,573	.50	.37	234	138
9. Track fastenings and other material	5,367,830	70	3,734,476	1.70	1.48	790	549
10. Ballast	8,279,994	80	6,627,554	2.62	2.62	1,218	975
11. Track laying and surfacing	5,695,493	80	4,556,491	1.80	1.80	838	670
12. Roadway tools	144,197	60	86,522	.05	.03	21	13
13. Fencing and cattle guards	1,970,482	55	1,083,667	.62	.43	290	159
14. Crossings and signs	562,424	60	338,970	.18	.13	83	50
15. Interlocking and other signal apparatus	1,094,840	88	966,416	.35	.38	161	142
16. Telegraph and telephone lines	216,409	61	132,134	.07	.05	32	19
17. Station buildings and fixtures	5,232,386	64	3,337,640	1.66	1.32	770	491
18. General office buildings and fixtures	57,037	42	24,328	.02	.01	8	4
19. Shops, engine houses and turntables	4,599,391	70	3,231,912	1.46	1.28	677	475
20. Shop machinery and tools	1,757,359	65	1,149,053	.56	.45	258	169
21. Water stations	1,416,415	53	754,632	.45	.30	208	111
22. Fuel stations	492,497	58	285,770	.16	.11	72	42
23. Grain elevators	789,666	47	375,108	.25	.15	116	55
24. Storage warehouses	376,439	51	193,501	.12	.08	55	28
25. Dock and wharf property	5,526,219	55	3,046,208	1.74	1.20	813	448

26. Light and power plants	20,000	68	13,600	.01	.01	3	2
27. Power transmission							
28. Miscellaneous structures	1,568,127	57	887,852	.50	.35	231	131
29.							
30. Engineering, superintendence and legal expenses	9,535,662	82	7,833,983	3.02	3.10	1,403	1,152
31. Locomotives	16,184,367	66	10,661,543	5.13	4.22	2,381	1,568
32. Passenger train cars	8,140,275	73	5,924,624	2.58	2.34	1,197	871
33. Freight train cars	35,967,668	74	26,704,276	11.40	10.56	5,290	3,928
34. Miscellaneous equipment	848,004	62	527,080	.27	.21	125	78
35. Inspection and general expenses	611,403	72	438,175	.19	.17	90	64
36. Interest, organization and contingencies	28,319,102	80	22,617,817	8.97	8.94	4,165	3,327
37. Stores and supplies on hand for use in Wisconsin	4,063,260	100	4,062,632	1.29	1.61	598	598
Total	$315,573,380	80	$252,858,622	100.00	100.00	$46,418	$37,193

Note:—The above does not include the Milwaukee, Sparta & North Western—under construction.
Total expenditures of this road to June 30, 1911 was reported as $8,070,718.

TABLE VI.

STEAM ROADS OF WISCONSIN.

TABLE SHOWING VALUATION OF PHYSICAL PROPERTY JUNE 30, 1911.

All Roads of the State (52).

Miles 1st main track..... 7,271.09
" total track..... 10,880.97
Mileage equivalent..... 1.496

Item.	Cost of reproduction new.	Cond. per cent.	Present value.	Per Cent of Total.		Value per Mile of 1st Main Track.	
				New.	Present.	New.	Present
1. Land for right of way, yards and terminals	$44,267,492	100	$44,267,492	13.56	16.94	$6,088	$6,088
2. Real estate							
3. Grading	47,289,162	100	47,278,501	14.49	18.09	6,504	6,502
4. Tunnels	808,561	96	772,169	.25	.30	111	106
5. Bridges, trestles and culverts	26,422,760	73	19,293,700	8.08	7.38	3,633	2,654
6. Ties	16,289,250	55	8,957,792	4.99	3.43	2,240	1,232
7. Rails	35,721,835	74	26,454,496	10.94	10.12	4,913	3,638
8. Frogs and switches	1,683,188	59	993,345	.52	.38	231	137
9. Track fastenings and other material	5,663,183	70	3,946,183	1.73	1.51	779	543
10. Ballast	8,575,312	80	6,872,550	2.62	2.63	1,179	945
11. Track laying and surfacing	6,048,116	80	4,839,369	1.85	1.85	832	666
12. Roadway tools	151,230	60	90,933	.05	.03	21	12
13. Fencing and cattle guards	2,029,862	55	1,121,379	.62	.43	279	154
14. Crossings and signs	574,534	60	345,728	.18	.13	79	47
15. Interlocking and other signal apparatus	1,134,758	88	1,003,262	.35	.38	156	138
16. Telegraph and telephone lines	245,892	61	150,718	.08	.06	34	21
17. Station buildings and fixtures	5,309,383	64	3,403,679	1.63	1.30	731	468
18. General office buildings and fixtures	62,284	45	28,166	.02	.01	9	4
19. Shops, engine houses and turntables	4,711,096	70	3,314,846	1.44	1.27	648	456
20. Shop machinery and tools	1,775,789	65	1,159,151	.54	.44	244	160
21. Water stations	1,447,428	54	774,757	.44	.30	199	107
22. Fuel stations	507,571	58	293,744	.16	.11	70	40
23. Grain elevators	789,666	48	375,103	.24	.14	109	52
24. Storage warehouses	383,029	52	197,385	.12	.08	53	27
25. Dock and wharf property	5,553,139	55	3,068,109	1.70	1.17	764	422

26. Light and power plants	330,210	86	283,446	.10	.11	45	39
27. Power transmission	193,447	66	127,650	.06	.05	27	18
28. Miscellaneous structures	1,605,976	57	913,622	.49	.35	221	126
29.							
30. Engineering, superintendence and legal expenses	9,880,833	82	8,114,729	3.03	3.11	1,358	1,116
31. Locomotives	16,837,791	65	10,994,797	5.16	4.21	2,316	1,512
32. Passenger train cars	8,387,197	73	6,109,234	2.57	2.34	1,153	840
33. Freight train cars	36,385,129	74	26,932,344	11.15	10.31	5,003	3,704
34. Miscellaneous equipment	1,302,194	66	859,383	.40	.33	179	118
35. Inspection and general expenses	629,123	71	448,958	.19	.17	87	61
36. Interest organization and contingencies	29,299,639	80	23,378,672	8.98	8.95	4,030	3,215
37. Stores and supplies	4,159,433	100	4,158,805	1.27	1.59	572	572
Total	$326,455,462	80	$261,324,202	100.00	100.00	$44,897	$35,940

Note:—The above does not include the Milwaukee, Sparta & North Western—under construction.
Total expenditures of this road to June 30, 1911 was reported as $8,070,718.

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BIENNIAL REPORT

OF THE

Dairy and Food Commissioner

OF WISCONSIN

For the Period Ending June 30, 1912

J. Q. EMERY
Dairy and Food Commissioner
Ex-officio
State Superintendent of Weights and Measures

MADISON, WIS.
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1912

DAIRY AND FOOD COMMISSIONERS OF WISCONSIN

H. C. THOM ..... May 29, 1889, to May 28, 1891

D. L. HARKNESS ..... May 28, 1891, to June 11, 1894

THOMAS LUCHSINGER ..... June 27, 1894, to Feb. 7, 1895

H. C. ADAMS ..... Feb. 7, 1895, to May 1, 1902

J. Q. EMERY ..... Dec. 24, 1902, to .....

ORGANIZATION OF THE COMMISSION

J. Q. EMERY,
Dairy and Food Commissioner,
Ex Officio State Superintendent of Weights and Measures
RICHARD FISCHER, Ph. D.,
Associate Director of Chemical Laboratory
U. S. BAER,
Assistant Commissioner
H. C. LARSON,
Second Assistant Commissioner
HARRY KLUETER, Ph. G.,
Chemist (from August 7, 1911)
Assistant Chemist (to August 7, 1911)
A. E. KUNDERT, M. S.,
Chemist (to August 7, 1911)
Assistant Chemist (from August 7, 1911, to March 9, 1912)
FRED P. DOWNING, A. B.,
Assistant Chemist (to July 11, 1911)
Chief Inspector of Weights and Measures (from July 11, 1911)
FLORENCE Q. NORTON,
Secretary
ETHEL D. THOMAS,
Stenographer, Office of Weights and Measures (from Sept. 18, 1911)
Stenographer and Confidential Clerk (to Sept. 18, 1911)
M. LORAINE WALTER,
Stenographer and Confidential Clerk (from Oct. 2, 1911)
W. A. BRANNON, M. A.,
Assistant Chemist (resigned July 3, 1911; reappointed April 1, 1912)
IRVING R. HOWLETT,
Assistant Chemist (from Sept. 21, 1911)
*_____ _____,
Assistant Chemist
F. M. BUZZELL,
Chief Food Inspector
F. E. CARSWELL,
Cheese Factory, Dairy and Food Inspector
E. L. ADERHOLD,
Cheese Factory, Dairy and Food Inspector
J. D. CANNON,
Cheese Factory, Dairy and Food Inspector
FRED MARTY,
Cheese Factory, Dairy and Food Inspector
P. A. LARSON,
Creamery, Dairy and Food Inspector (resigned April 20, 1911)
JAMES VAN DUSER,
Cheese Factory, Dairy and Food Inspector
W. F. SCOTT,
Food Inspector
R. B. SOUTHARD,
Cheese Factory, Dairy and Food Inspector
S. J. DUFNER,
Creamery, Dairy and Food Inspector
W. A. VOIGT,
Sealer of Weights and Measures (from Nov. 6, 1911)
Creamery, Dairy and Food Inspector (to Nov. 6, 1911)
P. W. GUSE,
Creamery, Dairy and Food Inspector
J. B. LINZMEYER,
Cheese Factory, Dairy and Food Inspector
WILLIAM WINDER,
Sealer of Weights and Measures (from Nov. 6, 1911)
S. B. COOK,
Creamery, Dairy and Food Inspector (from Nov. 6, 1911)
J. E. BOETTCHER,
Sealer of Weights and Measures (from Nov. 6, 1911)
H. L. BORNHEIMER,
Sealer of Weights and Measures (from Nov. 6, 1911)
GEORGE WARNER,
Sealer of Weights and Measures (from Nov. 6, 1911)
W. J. KRAMER,
Sealer of Weights and Measures (from Jan. 25, 1912)
*_____ _____,
No appointment made to fill this position

LETTER OF TRANSMITTAL

His Excellency, FRANCIS E. MCGOVERN,

Governor of Wisconsin.

SIR:—I have the honor to submit herewith, in compliance with law, the report of the dairy and food commissioner for the biennial period ending June 30, 1912.

J. Q. EMERY,

Dairy and Food Commissioner,

Ex-officio State Superintendent

of Weights and Measures.

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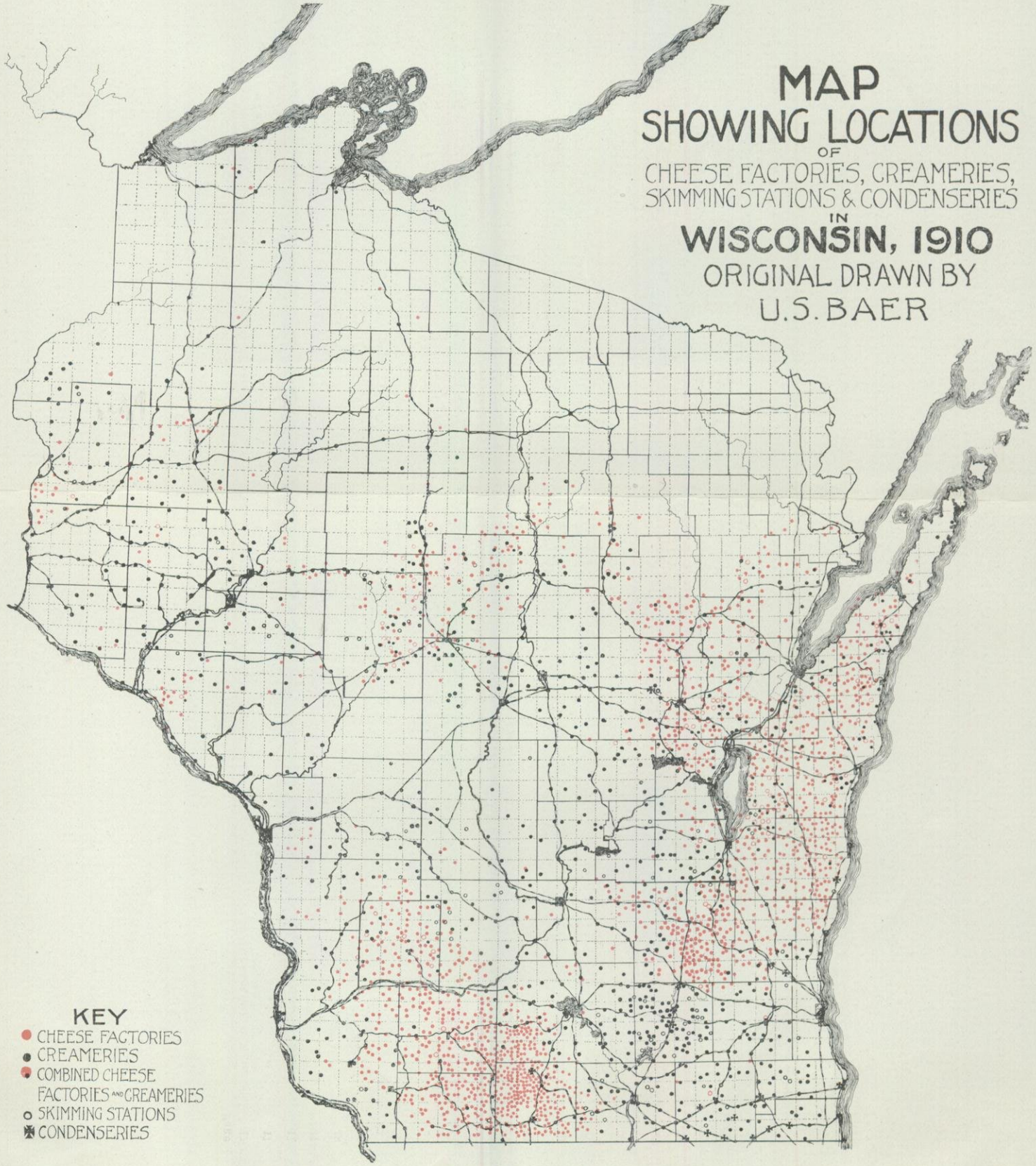

MAP
SHOWING LOCATIONS
OF
CHEESE FACTORIES, CREAMERIES,
SKIMMING STATIONS & CONDENSERIES
IN
WISCONSIN, 1910
ORIGINAL DRAWN BY
U.S. BAER
KEY
CHEESE FACTORIES
CREAMERIES
COMBINED CHEESE
FACTORIES AND CREAMERIES
SKIMMING STATIONS
CONDENSERIES

REPORT OF COMMISSIONER.

This report covers the period from June 30, 1910 to June 30, 1912. The law requires that in each even numbered year, within sixty days after June 30, the dairy and food commissioner shall make a report to the Governor and give therein an itemized statement of all expenditures incurred by him and of all fines collected, with such statistics and other information and suggestions as he may regard of value.

The following is a summary of analyses, inspections, etc.:

Food samples		
Milk and cream tests at creameries, cheese factories, etc.	4,213	
Milk and cream tests, city supplies	1,527	
Chemist's analyses	1,614	
Total		7,354
Sanitary inspections of groceries, meat markets, etc		9,565
Cheese factory inspections		1,526
Creamery inspections		1,236
Cream route inspections		34
Dairy inspections		1,317
City milk supplies		180
Prosecutions		255
Convictions		246
Per cent of prosecutions resulting in convictions		96.08

The inspection work of this department under existing laws extends to more than 3,000 cheese factories, creameries and skimming stations, and their 123,000 patrons or more; 8,000 groceries and general stores; over 2,000 meat markets; upwards of 2,000 drug stores, and other places where foods, including beverages, are manufactured, stored, offered or exposed for sale, estimated at 12,000, and totals 150,000 units of inspection; and like the compound eye of the fly, each of these units comprises a large number of smaller units.

To attempt to give the percentage of adulterated or misbranded samples would be impracticable. Such percentage would not represent the conditions of the food market of the

state, for as a rule only samples suspected of being adulterated or misbranded are sent to the chemists for analysis. No complete inspection has been made covering the entire state on any particular kind of food. In many cases only specified adulterants have been suspected and looked for. In many other cases suspected misbranding as to percentage of ingredients has been the object of investigation. For a proper understanding of the work done in the chemical laboratory of this department, the report of the chemist, Mr. Harry Klueter, should be studied. For more detailed information relative to the various lines of work carried on by the department, the reports of Assistant Commissioners U. S. Baer and H. C. Larson and of the different inspectors published elsewhere in this report should be consulted, all of which reports contain matters of much interest and importance.

What was stated in the last biennial report of the dairy and food commissioner as a brief summary of what has been accomplished by the department in the past decade is as applicable and appropriate in this report as it was in the former report:

"During the decade terminating with this biennial period, food laws have been enacted and enforced in Wisconsin whereby the cloak of fraud and deception in the sale of a multitude of food products has been removed and the statement of the truth on the label has been compelled.

As a result of the work done by the inspectors of the dairy and food department among the cheese factories and creameries of the state and their patrons and in the city and village milk supplies, the health of the consuming public has been safeguarded and many thousands of dollars have been annually conserved.

The masquerading of oleomargarine in the garb of butter has been practically stopped and the selling of oleomargarine for what it is and at oleomargarine prices has been compelled as the universal practice.

The sale of glucose, a product made by treating starch with hydrochloric acid, as and for sorghum, pure Louisiana molasses, fancy table syrup, honey, honey drips, etc., has been halted.

The sale as and for maple syrup of a product that never formed any part of a maple tree, a practice once common, is now almost entirely done away.

The fraudulent sale of a product consisting of glucose and the extracted juice of cores and skins of apples rejected in drying, artificially colored with coal tar dyes to resemble genuine fruit products and sold as fruit jellies, jams and preserves, has been throttled.

The fact that drugs below standard were being sold as genuine has been exposed to public scorn, and offenders have been prosecuted and fined.

Saccharin, a coal tar derivative, and a fraudulent substitute for sugar in beverages and other food products, has been driven from its hiding.

Pure pepper has been given the place on the Wisconsin market formerly occupied with a product adulterated with fifty to eighty per cent of ground olive pits, cocoanut shells, mustard hulls, or cereals.

Laws have been enacted and enforced that have squeezed the kerosene oil out of linseed oil and the barites and other adulterants out of white lead and zinc white.

Notwithstanding the opposition of special interests formed into great state and national organizations, food laws making wrongdoing hard and right-doing easy have been enacted and enforced, having as their object the only legitimate purpose of such legislation, viz., the protection of the consuming public against the harmful consequences of the manufacture and sale of adulterated or misbranded articles of food.

Food products loaded with poisonous or deleterious chemical preservatives have been almost completely driven from the Wisconsin market."

This latter statement means in part, that salts of copper, acid, lead and decayed substances have been eliminated from canned goods; that red lead and chromate of lead are no longer ingredients of cayenne pepper; that artificial essences and dyes and chemical preservatives no longer masquerade in the garb of jams, jellies and preserves; that aniline dyes and impure essence of almond are not common constituents of ice cream; that caustic lime is no longer used to whiten lard; that chromate of lead, sulphate of lime, Martius yellow, gypsum, and terra alba are no longer deleterious adulterants of mustard; that boric acid, borax, salicylic acid and formaldehyde are no longer milk adulterants; that sodium sulphite, borax and aniline dyes are eliminated from chopped meats and sausages; that salts of copper are no longer constituents of canned peas; that sand and red clay have been expelled from black pepper; that poisonous colors and flavors, terra alba, talc, barytes, chrome yellow, arsenic, sulphate of copper, prussic acid, fusel oil and aniline dyes have been driven from candy; that salts of tin, salts of lead, terra alba, sand and gypsum have been driven from sugars; that sulphuric, hydrochloric, and pyroligneous acids are no longer constituents of vinegar; that artificial flavors, coal tar dyes, chemical preservatives, salicylic acid and hydrofluoric acid and saccharin have been driven from ciders; that saccharin and salicylic acid have been expelled from pops; that poisonous wood alcohol is no longer found in Jamaica ginger, lemon and other extracts and in tinctures; that boric acid and borax are no longer used to embalm fish and oysters. In short, it means that the health of the people of the state of Wisconsin has been greatly conserved.

Elsewhere in this report is included a statement made at some length by the dairy and food commissioner, under date of December 20, 1911, to the Secretary of the State Board of Public Affairs, relating to the "Inception, Growth and Work of the Dairy and Food Department". In this connection, it may be stated that it is there shown that the work of the dairy and food department, in safeguarding the public against adulterations and frauds in food products, has resulted in a saving to the purchasing public of the state for the past considerable number of years of upwards of $6,000,000 annually.

Likewise, it is there shown that the dairy and food department has by its work saved to the users of linseed oil upwards of $112,000 annually for the past several years.

Statistics for 1911, obtained by the same method as was used in obtaining the figures for 1909 in the statement before mentioned, conclusively show that the work of this department in improving the sanitary conditions of creameries, cheese factories and places where milk and cream are produced, saved to the producers of butter and cheese approximately $3,000,000 or an average of $24 for each cheese factory and creamery patron in the state.

In this connection attention is called to the following statistics published in the Yearbook of the Department of Agriculture, Washington, D. C., for 1911:

AVERAGE PRICE RECEIVED FOR BUTTER BY FARMERS ON THE FIRST OF EACH MONTH OF 1911.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois.....	27	22	21	22	21	19	20	22	23	23	25	27
Michigan.....	28	24	22	22	20	19	19	20	22	23	25	28
Wisconsin..	**30**	**27**	**24**	**24**	**22**	**21**	**22**	**23**	**25**	**25**	**28**	**31**
Minnesota	29	24	22	23	21	20	20	22	24	24	27	30
Iowa.....	27	22	21	21	20	19	19	22	23	24	25	28
United States.	27.8	24.1	22.7	22.6	21.4	20.3	20.4	21.7	23.1	23.8	25.2	27.4

Averages of these monthly figures indicate that the patrons of Wisconsin creameries received 1⅓ cents a pound more for their butter during the year 1911 than did the patrons of Minnesota creameries; 2¼ cents a pound more than did the patrons of Michigan creameries; 2½ cents a pound more than

did the patrons of the creameries of Iowa and Illinois. They are confirmatory of the contention of the wholesale dealers in Wisconsin butter, that the producers of Wisconsin creamery butter are receiving considerably more a pound for their butter directly due to the work of this department in improving sanitary and other conditions under which it is produced than they otherwise would.

As the wholesale market price of butter is dependent upon quality, the statistics above quoted from the Yearbook of the U. S. Department of Agriculture for the year 1911, confirm the contentions repeatedly made in the reports from this department that the quality of Wisconsin commercial creamery butter excels that of her neighboring states.

In the first biennial report of the dairy and food commissioner of this state, in 1890, occurs the following statement under the subject "Cheese":

"Sixty million pounds of cheese is annually made in this state. There is not an article of commerce that requires greater skill in handling in order to secure favorable markets. No industry has been so perverted. No business exists that has been so falsely manipulated, and no article of food has been so degraded by counterfeiters. In no time has the honest manufacturer met with such dishonest competition. Matters have come to such a pass that the genuine article is under the ban of suspicion at home and abroad. The result has been that the subject has been thoroughly investigated by importers and steps have been taken to reduce the exportation of filled cheese from the United States."

In striking contrast with the foregoing statement are the following:

In 1909, at the National Dairy Show in Milwaukee, Wisconsin cheese won first, second and third premiums in all classes exhibited.

In 1910, at the National Dairy Show in Chicago, Wisconsin cheese won first, second and third premiums in all classes exhibited.

In 1911, at the National Dairy Show in Chicago, Wisconsin American cheese won first and second; Wisconsin Swiss cheese won first, second and third; and Wisconsin Brick cheese won first and second.

In 1911, at the International Dairy Show in Milwaukee, Wisconsin cheese won first, second and third premiums in all classes exhibited.

In 1911, at the nineteenth annual session of the Wisconsin Cheese Makers' Association at Milwaukee, Wisconsin cheese

won first, second and third premiums in all classes exhibited, six other states competing.

In 1912, at the twentieth annual session of the Wisconsin Cheese Makers' Association at Milwaukee, with five states competing, Wisconsin American Cheddar cheese won first, second and third premiums in all four classes; Wisconsin Brick cheese won first, second and third premiums; Wisconsin Swiss cheese won first, second and third premiums; and Wisconsin Limburger cheese won first, second and third premiums.

Wisconsin is now producing in great variety and in quality unexcelled anywhere, upwards of 164,000,000 pounds of cheese annually for which, including by-products, the producers are receiving upwards of $24,000,000.

Wisconsin's Rank as a Dairy State.

In the amount and value of her dairy products, Wisconsin now ranks first in the Union. In the quality of her cheese, she excels all other states, and in the quality of her commercial creamery butter and market milk, she is unsurpassed by any other state. The value of Wisconsin dairy products of all kinds for the year 1911 is conservatively estimated at $85,500,000.

In 1911, Wisconsin ranked second only to New York in the number of cows, the number in Wisconsin being 1,473,505, or 36,089 less than the number in the Empire state. In the same year there were in Wisconsin 449,489 calves or 11,365 more than in New York.

Estimated Value of Wisconsin Dairy Products for the Year 1911.

	Lbs.	Value.
Creamery and farm-made butter	133,995,426	$34,032,156
Other creamery products sold	.....	1,848,300
Factory and farm-made cheese	164,363,626	21,776,146
Other cheese factory products sold	.....	266,785
Milk condenseries	31,580,055	5,424,490
Milk produced other than that furnished cheese factories, creameries and condenseries	.....	9,807,000
Estimated value of milk and cream shipped to Chicago, St. Paul, Minneapolis, Dubuque and other points outside of Wisconsin	.....	2,854,500
Skim milk	.....	7,219,600
Whey	.....	2,329,000
Total		$85,557,967

The foregoing figures were obtained as follows: For the number of pounds of cheese produced in factories and of butter produced in creameries respectively, the U. S. census figures for 1909 were used, increased by a percentage corresponding with the average annual percentage of increase for the years 1905 to 1909 inclusive, as shown by the U. S. census, and the value estimated to correspond with the decrease in the price of butter and cheese in 1911 as compared with 1909.

The figures for the items "Other cheese factory products sold", "Other creamery products sold", "Estimated value of milk and cream shipped to Chicago, St. Paul, Minneapolis, Dubuque and other points outside of Wisconsin," "Skim milk", and "Whey" were obtained by adding the above designated percentage of increase to the amounts reported under the respective headings in the biennial report of the dairy and food commissioner for 1909–10. The figures for farm-made cheese and farm-made butter were those of the U. S. census as reported for the year 1909. The figures for milk condenseries were obtained directly from those establishments.

The figures for the item "Milk produced other than that furnished cheese factories, creameries or condenseries" are the same as those given for the year 1909 in the biennial report of the dairy and food commissioner for 1909–10. This item is estimated as the amount used for family consumption by the total population of the state. In estimating this amount, the data given by Major Alvord, former chief of the dairy division of the bureau of animal industry, U. S. Department of Agriculture, derived from the census of 1900, have been used. Major Alvord found that there were consumed 290.1 lbs. of milk per capita per annum.

In estimating the value of skim milk, the Gurler method, recommended by Prof. W. A. Henry as the most reliable method, has been used and is as follows: The value of skim milk when fed with corn is one-half as much per hundred pounds as shelled corn is per bushel; and the value of whey is one-half of skim milk.

Inception, Growth and Work of the Dairy and Food Department.

The following report was made in compliance with law by the dairy and food commissioner, December 20, 1911, to the

Secretary of the State Board of Public Affairs on his request, and is here published with the consent of that board:

The initiative for the establishment of the dairy and food department was taken by the Wisconsin Dairymen's Association at its fifteenth annual session in 1887, when the following resolution was adopted:

> "Resolved, That this association ask of the legislature a law with proper police authority, to prevent the manufacture and sale of any form of adulterated cheese, for the pure article. That any adulterated cheese shall be branded and sold for what it is. That any violation of this law shall incur a penalty of not less than $100 for the first offense. There must be a suppression of the practice of adulteration of cheese or the cheese industry of Wisconsin will suffer almost irreparable loss."

At the sixteenth annual session of the Wisconsin Dairymen's Association the following resolution was adopted:

> "Resolved, That in the opinion of this association, the time has arrived in the history of the state for the passage of a law similar to that in existence in Minnesota, Ohio, New York and other states, and the providing for a dairy commissioner, whose duty it shall be to ferret out and prosecute all adulterations of butter and cheese, and the sale of the same, as well as other foods, and we respectfully ask the next legislature to enact such a law and establish such a dairy commission."

At the seventeenth annual session of the Wisconsin Dairymen's Association held in 1889, the following preamble and resolution were adopted:

> "Whereas, Imitations of butter are being sold in Wisconsin in violation of laws, to the prejudice of honest goods. Cheese is being made in large quantities, robbed of its natural fat, filled with lard or other foreign fats, and not stamped as the law provides. Adulterated and impure milk floods the market of towns and cities, drugs are made useless, drinks made more poisonous and nearly every article of human food diminished in value by adulteration; therefore,
>
> Resolved, By the Dairymen's Association, that as dairymen and citizens we hereby earnestly express to the state legislature our unanimous request for the passage of bill No. 444, A., providing for the establishing the office of food and dairy commissioner, and for the execution of all laws aimed at adulteration."

In his message to the legislature in 1889, Governor W. D. Hoard urged the establishment by the legislature of a commission, clothed with the necessary power and means, for the suppression of the fraudulent manufacture and sale of imitation butter and cheese as well as the sale of adulterated, impure or diluted milk, and the widespread and rapidly increasing adulteration of the food of the people. He pointed out that the then existing laws on these subjects were practically inoperative, because there was no well established agency for their enforcement. He also called attention to the fact that the neighboring states were in advance of Wisconsin in this matter. He quoted facts and statistics to sustain his recommendation.

By chapter 452 of the laws of 1889, the legislature created the office of dairy and food commissioner for the state of Wisconsin and authorized the appointment of two assistants, one of them to be an analytical chemist.

It was made the duty of the commissioner to enforce all laws that then existed or that might thereafter be enacted, regarding the production, manufacture or sale of dairy products, or the adulteration of any article of food or drink or of any drug; and personally or by his assistants to inspect any article of milk, butter, cheese, lard, syrup, coffee or tea, or other article of food or drink or drug, made or offered for sale within this state which he might suspect or have reason to believe to be impure, unhealthful, adulterated, or counterfeit, and to prosecute, or cause to be prosecuted, any person or persons, firm or firms, corporation or corporations, engaged in the manufacture or sale of any adulterated or counterfeit article or articles of food or drink or drug, contrary to the laws of this state.

In 1897 the legislature provided for the appointment of an inspector at $3.00 a day and expenses, and for a stenographer and confidential clerk at a salary of $900, and reduced the salary of assistant commissioner to $1600.

EXTRACTS FROM MESSAGES OF GOVERNORS AND LEGISLATION IN RESPONSE.

In his message to the legislature in 1899, Governor Edward Scofield said:

> "While much attention is still devoted by this department to the dairy industry and the enforcement of the laws against the manufacture and sale of impure dairy products, more and more attention is coming to be paid to the general subject of food adulteration. There is a great field here for the department, and its work in the future will necessarily experience a large growth. The protection of the people against adulterated and deleterious food is a duty which may well claim serious attention from the state."

In his message to the legislature in 1901, Governor R. M. LaFollette made the following statement:

> "The importance of safeguarding the people of the state against the dangers of adulterated food products, as well as the wisdom of protecting the honest products of the state against competition with cheaply produced counterfeits, will warrant all reasonable provision to extend and improve the work of this bureau."

In 1903 Governor LaFollette in his message to the legislature, in referring to the dairy and food department, made the following statement:—

> "The work of this department has been greatly increased with the growth of the dairy interests in the state and by the multiplying demands for inspection of the deleterious and adulterated foods. Leaving out of consideration the commercial aspect of the question, the thorough inspection of creameries and cheese factories of the state, and the examination, analyses and branding of adulterated foods, may rightfully be urged as entitled to most serious consideration.
>
> "That adjoining states have passed Wisconsin in the quality of some of the products of the dairy can be accounted for upon no better ground than a more thorough inspection in the field. This is not chargeable to any want of diligence upon the part of Wisconsin officials, but is due to the fact that, where Wisconsin employs one, a neighboring state employs ten inspectors. While reluctant to encourage any increase in the number of employees of any branch of the public service, I do not hesitate to recommend that the law be amended to provide for the appointment

of at least two additional inspectors in the dairy and food department, and for an assistant to the state chemist.

Provision should also be made authorizing the dairy and food commissioner to publish a bulletin for distribution among the dealers in food products in which there may be printed, at least quarterly, a list of the condemned foods ascertained upon analysis to be adulterated. It is fair to dealers that they should be notified in seasonable time that foods officially found to be adulterated must not be offered for sale. The expense for such publication can be provided for in the same manner that the publication of bulletins from the Agricultural Experiment Station is now authorized."

The legislature of 1903 made provision for two additional inspectors at $3.00 per day, and an assistant chemist when needed at $50.00 a month.

In 1905, Governor LaFollette in his message to the legislature had the following to say:—

"The work of the dairy and food commission concerns every citizen of the state. Its function is upon the one hand, to promote our great dairy interests, and upon the other, to protect the consuming public against adulterated dairy and other food products. Its work being technical in character, it is a source of much gratification that the present membership, including its chief, and every other member of the commission, is strongly equipped, not only with the practical experience and knowledge but also with the expert technical skill for the special line of work each is required to do, and that the work of each in the public service is as faithful and conscientious as it is competent. I believe it but just to say that never before in the history of this department has its official force been so completely identified in practical and scientific training with the great industry which it so ably represents.

The total annual income from our dairy industry is estimated at upwards of fifty million dollars. The annual income from our cheese factories, creameries, and city milk supplies is estimated at more than twenty-eight million dollars. Suitable inspection of the three thousand cheese factories and creameries and of the milk delivered to them as well as of the milk supply of our cities is a wise and just concern of the state from the standpoint, both of promoting our dairy interests and of the public health. For it is well known that danger to health lurks in unclean or unsanitary milk.

It must be conceded that the expansion of the dairy and food commission, since its organization in 1889, has not been commensurate with the extent or the importance of the interests committed to it nor to the growth of other departments of our state government, nor has it kept pace with the growth of similar departments of our competing neighbors. In addition to the commissioner, the assistant commissioner, the chemist and assistant chemist, the Minnesota commission has fourteen inspectors, the Michigan commission has seven inspectors and the Illinois commission has six; Wisconsin has three. Yet Wisconsin has about three thousand creameries and cheese factories combined; Michigan, three hundred; Illinois, five hundred twenty-seven; Minnesota, eight hundred fifty. The Province of Ontario has one thousand cheese factories and sixteen traveling cheese instructors are provided. In the Province of Quebec, fifty traveling cheese instructors are provided and only about thirty factories are assigned to each instructor.

I recommend that the dairy and food commission be provided with a force sufficient to furnish adequate inspection for the cheese factories, creameries and city dairies and thus put Wisconsin second to none in the quality of her dairy products, and second to none in the protection afforded to her citizens against adulterated food products. The efficient inspection of cheese factories and creameries calls for expert knowledge and technical skill of a high order. Therefore, a law providing for this inspection should provide that to be eligible to the office, each cheese factory or creamery inspector should be an expert cheese maker or butter maker, a competent judge of cheese factory or creamery products, skilled in all the technical work of cheese factories or creameries and versed in modern scientific and practical dairy knowledge.

Some changes are needed in the food laws for the purpose, in some cases, of removing ambiguity; in others, of making them more workable; in others of removing doubt as to their constitutionality; and in still others to give added powers to the commission to protect the public against food adulteration. These will be ready for submission to the respective committees of the legislature by the dairy and food department at the pleasure of the committee."

The legislature of 1905 made provision for the appointment of a second assistant commissioner at a salary of $1600, and assistant chemist and eight inspectors, each at a salary of $1200.

Governor Davidson in his message to the legislature in 1907, considered the dairy and food department in the following language:

"Wisconsin ranks among the foremost dairy states in the Union. In the extent and variety of her dairy products she is excelled by none. They yield an annual income of upwards of $57,000,000 going to enrich the farmers of the state. The importance of this industry extends beyond the producers and affects the entire population. Suitable inspection of the methods and materials used in the manufacture of these products is a matter of concern to the state both from the standpoint of promoting the dairy industry and protecting the public. Not only is the inspection of dairy products absolutely necessary, but all foods during the last few years have been subject to adulterations, which in many instances have placed the health and the lives of our people in jeopardy. It is a matter of common knowledge that the simplest and plainest foods have been so treated with chemicals as to make it a matter of grave doubt whether the article purchased is in fact such as for which payment is being exacted. The extent of adulteration and the danger therefrom nas been greater than the public has ever suspected.

The legislature of 1905 gave evidence that this state was to adopt a broad and comprehensive food and dairy policy, adequate in some just sense to our needs. Ten officers were added to the department who were required to be experts in their field of dairy and food inspection. Not until the passage of the foregoing provisions by the legislature, and by amendments to previously existing statutes, did Wisconsin enter upon a comprehensive protective policy.

The report of the dairy and food commissioner for the last biennial period shows a result which must be most gratifying to the people of the state. A total of 16,187 samples of food products have been analyzed by the chemist of the commission; 12,986 samples of milk have been tested by the dairy experts; 4,200 in-

spections of cheese factories, creameries and skimming stations have been made; 6,000 meat markets, groceries and other places for the sale of foods were inspected; and the milk supply of sixty cities and villages was thoroughly examined. For the violation of the dairy and food laws 235 convictions were secured and fines imposed, which together with the inspections and other lines of work by the commission have resulted in a revolution in food matters in Wisconsin.

Needed amendments to existing food and dairy laws should be made, necessary new laws enacted and the commission so strengthened that the important duties entrusted to it may be so discharged as to give the largest measure of protection to the public."

The legislature of 1907 made provision for the appointment of an additional chemist at a salary of $1200, a secretary at a salary of $1200 and two additional inspectors at a salary of $1200 each.

In 1909 Governor Davidson, in his message to the legislature, made the following statements:—

"The object of the dairy and food laws and their enforcement is protection of the public health, and security to the consuming public against fraud and deception in the manufacture and sale of dairy and food products. Mere figures give but an imperfect idea of the beneficial work of that department. That there has been effective enforcement of these laws and great progress made in driving adulterated and misbranded food products from the market is common knowledge. Improvement in the quality of dairy products is such that investigation by United States officials for the year of 1907 shows that patrons of Wisconsin creameries received a higher price per pound for butter fat than those of any other state investigated. Wisconsin cheese of the best grades is the equal of such product in any market of the world and commands a corresponding price. The dairy industry of the state yields an annual estimated revenue of approximately sixty millions of dollars.

The bulletins and report of the commissioner will show the character, scope and volume of the work of the dairy and food commission. Fourteen thousand samples of food and drug products have been analyzed and tested by the food chemist and other experts. Three thousand inspections have been made of creameries and cheese factories and of the milk and cream supplied to them. Eight hundred inspections were made of barns where milk and cream are produced for family use in cities and villages and as food for children. The milk supply of nearly all of our cities and villages has been inspected. Of the four hundred fifty prosecutions brought for violations of the dairy and food and drug laws, there were four hundred thirty-six convictions. That is, of each hundred prosecutions, there were ninety-seven convictions. Thousands of complaints have been investigated and inspections of various kinds made that called for no prosecution.

Amendments to the dairy and food laws required to correct technical defects which experience has shown to be necessary should receive due consideration."

The legislature of 1909 made provision for the appointment of an additional assistant chemist at a salary of $1200.

In 1911, the message of Governor McGovern to the legislature contained the following:

"Investigations recently conducted in a number of the larger cities of the state show that nearly half the scales used in

weighing ordinary merchandise were wrong, in practically every instance giving short weight, while of the measures tested over one-fifth were condemned for like reason. The trouble with the present law is that responsibility for its enforcement is divided among a great many public officials and its administration is so hampered by defective provisions that little or nothing can be accomplished under it. For example, it contains the provision that in order to justify conviction the state must show that the person prosecuted *intended* to commit a fraud. Of course, this cannot be satisfactorily shown in one case in a hundred of underweighing or short measuring. An effective weights and measures law is needed, which, when impartially enforced will save the people many millions of dollars each year now lost in short weights and measures. Such frauds are especially to be condemned as the injury thereby perpetrated naturally falls most heavily on poor people who buy frequently in small quantities, precisely the class of persons who can least afford to be swindled in this way."

The legislature of 1911 made radical amendments to the law relating to weights and measures, made the dairy and food commissioner ex-officio state superintendent of weights and measures, provided for one chief inspector of weights and measures at a salary of $1600, one stenographer at a salary of $1200, and five additional dairy and food inspectors at a salary of $1200, and made assistant dairy and food commissioners and cheese factory, creamery, and dairy and food inspectors ex-officio state sealers of weights and measures when so designated and authorized by the state superintendent of weights and measures.

GROWTH OF THE DEPARTMENT.

It will thus be seen that established in 1889 with a force of only three officials, the dairy and food department was increased to five in the year of 1895, to eight in the year 1903, to eighteen in 1905, to twenty-two in 1907, to twenty-three in 1909 and to thirty in 1911.

The expansion of this department has not been merely accidental, but has been the result of deliberate consideration and determination on the part of the legislature, as experience and investigation have brought conditions to light, to provide the means for eradicating, or holding in check, or reducing to a minimum the harmful consequences of the widespread adulteration and counterfeiting of dairy and food products and of drugs.

SOME RESULTS OF THE WORK OF THE DEPARTMENT.

A statement of some of those conditions, as well as the result of the work of the dairy and food department in lessening these evils is called for.

OLEOMARGARINE.

Referring to the wide-spread sale of oleomargarine as butter, the first dairy and food commissioner of the state in his first annual report to the Governor in 1890, made the following statement: "No corner of the state is too remote for its presence; no table too humble, no dining room so grand, no lumber camp so rough, that oleomargarine will not walk upon and into, with a deceitful bow and a brazen smile, with the claim that its name is butter." He adds the following statement; "Ninety-nine out of every hundred pounds of oleomar-

garine that is consumed is so consumed under the supposition that it is honest butter."

National statistics show that in the year 1890, the year of his report, there was produced in this country 30,960,286 pounds of oleomargarine. As the population of Wisconsin was at that time 2.7% of the population of the United States, it is fair to estimate that 2.7% of the entire production of oleomargarine for that year, or 835,927 pounds, was marketed in the state of Wisconsin.

The average price of butter on the Elgin market for the year 1890 was 22⅝c. It seems a perfectly fair statement, that for oleomargarine palmed off in Wisconsin as butter during that year, there was a profit of 10c. a pound to one so disposing of it, and a cheat of the same amount to the consumers thereof. Assuming the correctness of the statement of the first dairy and food commissioner of the state in his report for 1890, that at that time 99% of the oleomargarine was consumed with the supposition that it was genuine butter, we have these figures: 827,567 pounds of oleomargarine palmed off as butter at a cheat of 10c. a pound, $82,756.

Wisconsin was one of the first states, if not the first state, to undertake to regulate by law the manufacture and sale of oleomargarine.

The first of such laws was enacted in 1881, but proved ineffective. In 1885, the legislature again grappled with the problem, but the resulting law proved ineffective in preventing the sale of oleomargarine as butter. In 1889, another ineffective effort was made by the legislature to enact a law that would prevent the fraudulent disposal of oleomargarine as butter. It was while this law was on the statute books, that the report of the first dairy and food commissioner of Wisconsin was made, as above quoted. Another effort by the legislature in 1891 also proved ineffective. Thus fourteen years of strenuous effort to drive the fraud out of the oleomargarine business had proven comparatively ineffective and oleomargarine continued to masquerade through the state as butter.

But in 1895, the legislature decided to make the color of oleomargarine its own open declaration as to its lawful or unlawful character. This law placed a ban upon oleomargarine that should be in "imitation of yellow butter," but legalized the sale of oleomargarine that should be free from coloration or ingredient that causes it to look like butter and in such form as to advise the consumer of its true character. A vigorous campaign for the enforcement of this law was inaugurated by Dairy and Food Commissioner H. C. Adams. Prosecutions were brought against violators of the law and convictions secured, which resulted in unmasking in a large measure the fraud that had been for years practiced in palming off upon the consumers oleomargarine as butter. The same vigorous campaign was continued by his successor, the present dairy and food commissioner, culminating in the Meyer and Nowack case which was carried to the Supreme Court. The decision of this case by the Supreme Court in 1908 resulted in a practical vindication of the contention of the dairy and food department as to the meaning of the law.

Resulting from this decision of the Supreme Court, there has since been a very general compliance with the provisions of the law, so that in his report for 1910, the dairy and food commissioner stated in striking contrast with what was said by the first dairy and food commissioner: "Under the Wisconsin law as enforced, the laboring man or any other man who wants oleomargarine, can now get it and at oleomargarine prices. And if he wants butter, he is practically sure to get butter and not oleomargarine at butter prices. This is the end sought by legislation on this subject."

The following gives added meaning to the foregoing statement: According to the government statistics, for the year 1910, there were produced in this country 136,263,444 pounds of oleomargarine. As the population of Wisconsin for that year, as shown by the United States census, was 2½% of the total population of the country, it is fair to estimate that 2½% of the total amount of oleomargarine produced in the country, or 3,406,586 pounds, found a market in Wisconsin. From the investigations and inspections made by the dairy and food department, it is believed that since the decision of the Wisconsin Supreme Court in the Meyer and Nowack oleomargarine case, the percentage of oleomargarine disposed of in this state as butter has been so small as to be almost negligible. Nevertheless, if it be conceded that 25% of this amount of oleomargarine was disposed of to the consumer as butter, there still remains 75% of that amount, or 2,554,938 pounds disposed of to Wisconsin consumers as oleomargarine.

The average price of butter on the Elgin market for the year 1910 was 29.8c.

Estimating the difference in the price of oleomargarine and butter at 10c. a pound, it is an extremely conservative estimate that the work of the dairy and food department in the enforcement of the state oleomargarine law, saved in 1910 to the consumers in Wisconsin, $255,493, an amount five and one-half times the cost of maintaining the dairy and food department for that year.

While I do not undertake to estimate the amount saved to consumers by the dairy and food department, during the entire time of its existence, the foregoing estimates indicate that such saving has been immense.

MARKET MILK.

In the biennial report of the dairy and food commissioner for 1909-10, an estimate is made of the market value of milk consumed in a year by the entire population of the state. It is estimated as $9,483,369. It is a conservative estimate that one-third of this amount, or $3,161,123, was paid by the citizens of the cities and villages of the state. It is also a conservative statement based upon our years of experience in inspecting, that the work of the dairy and food department in the enforcement of the dairy and food laws of the state, saved to these purchasers and consumers of milk in the cities and villages of Wisconsin at least 2½% of the market value of genuine milk, that otherwise would have been paid for worthless adulteration by watering and skimming. This amounts to $79,000, and is approximately one and three-fourths times the highest cost for the maintenance of the dairy and food department for any year of its existence, and approximately five times the average annual cost of the department from the time of its organization until June 30, 1911. This does not take into consideration the lives of infants that have been saved and the health that has been conserved by the elimination of chemical preservatives from milk and the very great improvement in the cleanliness and consequent sanitary condition.

FILLED CHEESE.

To eliminate the "filled cheese" fraud from Wisconsin was one of the objects especially set forth by Governor Hoard in his message, to be accomplished by establishing and maintaining the office of dairy and food commissioner. That fraud has been completely eliminated from the state. The dairy and food department has not found a pound of "filled cheese" manufactured or sold in Wisconsin during the past ten years.

STATISTICS.

Wisconsin has not been surpassed by any state in the Union in the vigor of her dairy laws and in the enforcement of these laws, with the result that Wisconsin is unsurpassed by any state in the Union in both the quality and quantity of her commercial dairy products.

In the biennial report of the dairy and food commissioner for 1909-10, page 4, there was published the following:

WISCONSIN DAIRY STATISTICS FOR THE YEAR 1909.

	Lbs.	Rec'd for or valued at
Cheese of all kinds produced in factories	145,171,235	$20,706,749
Other cheese factory products sold	.....	234,022
Cheese produced on farms	1,433,702	90,118
Butter produced in creameries	105,307,356	29,466,363
Other creamery products sold	.....	1,739,650
Farm-made butter	7,952,480	1,750,948
Products of milk condenseries	.....	3,771,600
Milk produced other than that furnished cheese factories, creameries or condenseries	.....	9,807,000
Estimated value of milk and cream shipped to Chicago, St. Paul, Minneapolis, Dubuque and other points outside of Wisconsin	.....	2,595,000
Skimmed milk	.....	6,795,600
Whey	.....	2,043,000
Total		$79,000,050

CHARACTER OF CHEESE FACTORY AND CREAMERY INSPECTIONS.

Following are sketches indicating the kind of work done by the dairy inspectors at creameries and cheese factories and with patrons of the same, and in relation to the city and village milk supplies, the particular kind of inspection made in each instance depending upon the conditions and necessities:

The inspector goes to the creamery or cheese factory to examine carefully, and inquire into, conditions present in that creamery or cheese factory. He goes early in the morning. He procures a list of the names of the patrons. He has bottles ready for taking a sample of each patron's milk as delivered. He examines the scales to ascertain that they are accurately balanced. He stands by the weigh cans and inspects the work of the man who receives the milk or cream, as well as the milk or cream and the condition of the cans containing the same. He scrutinizes the method of taking the samples of milk or cream for testing and how the composite samples are cared for. He observes carefully whether or not the man who takes in the milk or cream receives any unsanitary or otherwise unlawful product, and if unsanitary or otherwise unlawful milk or cream is offered by the patron and received by the creameryman or factoryman, he warns both alike concerning the unwise and unlawful practice. At times, he instructs the patron as to the proper way to wash and care for his cans and the proper method of caring for his milk or cream. He shows him how the quality of the product, and therefore the price, and hence the profits to the patrons are ulti-

FIGURE 1.—CURD FROM GOOD MILK

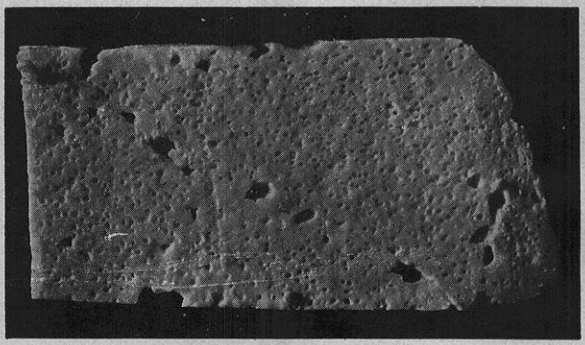


FIG. 2.—CURD FROM TAINTED MILK

FIG. 3.—CURD FROM FOUL MILK.

FIG. 4.—SEDIMENT TEST

mately dependent upon the clean and sanitary character of the milk furnished by each patron. He discloses to the patron how bad milks affect the flavors of the dairy products in quality and value, showing how a few may impose a loss upon all the patrons. In case of emergency, he requests the patrons to meet him at the factory late in the afternoon or early evening. With the samples taken, he proceeds to make the Babcock test for butter fat, the lactometer test for watering or skimming, and the Wisconsin curd test to determine the character of the milk of each patron as to its cleanliness or the kind of care it has received. When the patrons meet him later in the day, he makes known to them the per cent of milk fat found in each patron's milk. If he has reason to suspect watering or skimming of the milk by any patron, he furnishes a sample to the state chemist for analysis. He exhibits to the patrons the sample as shown by the Wisconsin curd test, which indicates the character of each patron's milk. Here they see from one patron's milk a curd that is of a fine velvety, firm texture, having a clean agreeable flavor. This demonstrates that the patron's milk from which this curd was formed was produced under clean conditions, quickly cooled and otherwise properly cared for. (See Figure 1.) He exhibits the curd from another patron's milk that has in it many gas holes or pin holes so-called, and has a tainted flavor. He explains that this peculiar texture and flavor are due to gas-forming bacteria that thrive in uncleanliness of some sort. (See Figure 2.) He shows them a curd from another patron's milk that is spongy in texture, and has a very offensive flavor or odor. He explains to them that this is due to conditions worse than those from which No. 2 resulted. (See Figure 3.) He explains to them that it is impossible to make the best quality of butter or cheese from such milk, and further explains to them the great loss that will be sustained by the butter or cheese factories due to such bad milk or to bad cream. He lets them see the curds produced from each patron's milk, that each may see and know for himself that there was a difference in the quality of the milk furnished by the different patrons, both as to butter fat content and cleanliness. He explains to them how the good milk and the unsanitary milk are each produced, and he warns them against the supplying of unsanitary milk as being unlawful and wrong and liable to lead to prosecution. Having taken samples of milk from the last gallon or two of the patrons' milk as delivered from the cans, and having passed that milk through filtrates of absorbent cotton or through filter papers, he exhibits to them the actual filth, if any, thus taken from their milk on the morning of his inspection. (See Figure 4.) He illustrates and explains the use and reliability of the Babcock test when skilfully used. He explains the requisite conditions for securing accuracy by that test. He has instruments which he uses to test the pipettes used by the butter maker or cheese maker to see if their pipettes are correct as to size. He tests the calibration of the bottles to determine their accuracy or inaccuracy. He applies his speed tester to the Babcock test to ascertain if the operator is running it at the rate of speed to give accurate results. He tests the sulphuric acid to find if it is of the correct strength. He ascertains at what temperature the operator reads the test and if he measures the fat column correctly. He tests the skim milk, buttermilk and whey for butter fat content. He ascertains if the scales and weights used for weighing the cream in testing are accurate. He inspects the weigh-cans, pipes, pumps, churns, vats, vat gates and everything connected with the factory to ascertain if they are kept clean and in good sanitary condition; and he does the same as to the floors and walls, as well as the surroundings. In his inspection of the surroundings he gives especial atten-

tion to the drainage, and where that is defective he suggests means for securing adequate drainage. If conditions are found unsanitary or otherwise unlawful, he warns the manager or maker that they must be changed within reasonable time, or that prosecution must necessarily follow, and he prosecutes if the change is not made. The Wisconsin curd test gives him a cue as to what patrons need his inspections at the barns, and so he goes to the premises of the patrons who furnish the most unsanitary milks and points out to them the changes that should be made. If he finds the milk at the factory below the legal standard of butter fat or otherwise unlawful, he visits the farm and takes samples there for testing. The discrepancy, if any, between the tests of the milk at the factory and those at the farm determines the course to be pursued.

PEN PICTURES OF COW BARNS BEFORE AND AFTER INSPECTION.

In the absence of photographs taken before and after barn inspection, I can do no better than furnish brief pen pictures. The following pictures cow barns before inspection or at first inspection: A building containing not a single window, consequently without light; the ceiling festooned with dusty cobwebs; the earth floor has no covering, it is not cleanable and contains sags in which liquid manure stands continually; or it may be a saturated, leaky plank floor, hiding a big mass of old filth underneath or literally floating on liquid manure which spurts up through the cracks as one walks across it. There are accumulations of manure over the floor and in the stalls, the latter being so arranged that the cows are compelled to lie in dung, of which they carry thick coats all the winter. (See Figure 5.) There being no provision for ventilating, the air is so charged with impurities and strong odors as to be stifling. The cows are compelled to breathe this air, and the milk on its way from the udder to the pail travels through this air, which adheres to the streams of milk and is carried beneath the surface of the milk in the pail and rises in minute bubbles. The milker in this case, sitting between two cows, has dung beneath him, behind him, in front of him and above him and manipulates a filthy surface above the milk pail.

This sort of cow barn and equipment was not designed to promote healthfulness and good sanitation. It was meant for shelter only.

The following pictures the barns after inspection and law enforcement: On two or more sides of the building, a number of large windows have been inserted; the ceiling and walls have been whitewashed; a good cement floor, containing gutters for manure, has been constructed. The stalls have been so arranged that they furnish clean beds for the cows; the latter are groomed and look sleek and clean. (See Figure 6.) The manure is all removed from the barn at least once daily, and suitable ventilators carry out the impure air, replacing it with fresh air. There are no disagreeable odors. The barn has a pleasing, healthful appearance. It is suitable for shelter and for a "food factory" as the dairy barn of today can rightfully be named.

PEN PICTURES OF CHEESE FACTORY CONDITIONS BEFORE AND AFTER INSPECTION.

Following is a pen picture of conditions more or less prevalent at cheese factories before the vigorous work of inspection, in recent years, of the dairy and food department was carried on:

Faulty systems of whey and sewage disposal constituted a prolific source of unsanitary conditions. The old style whey tanks

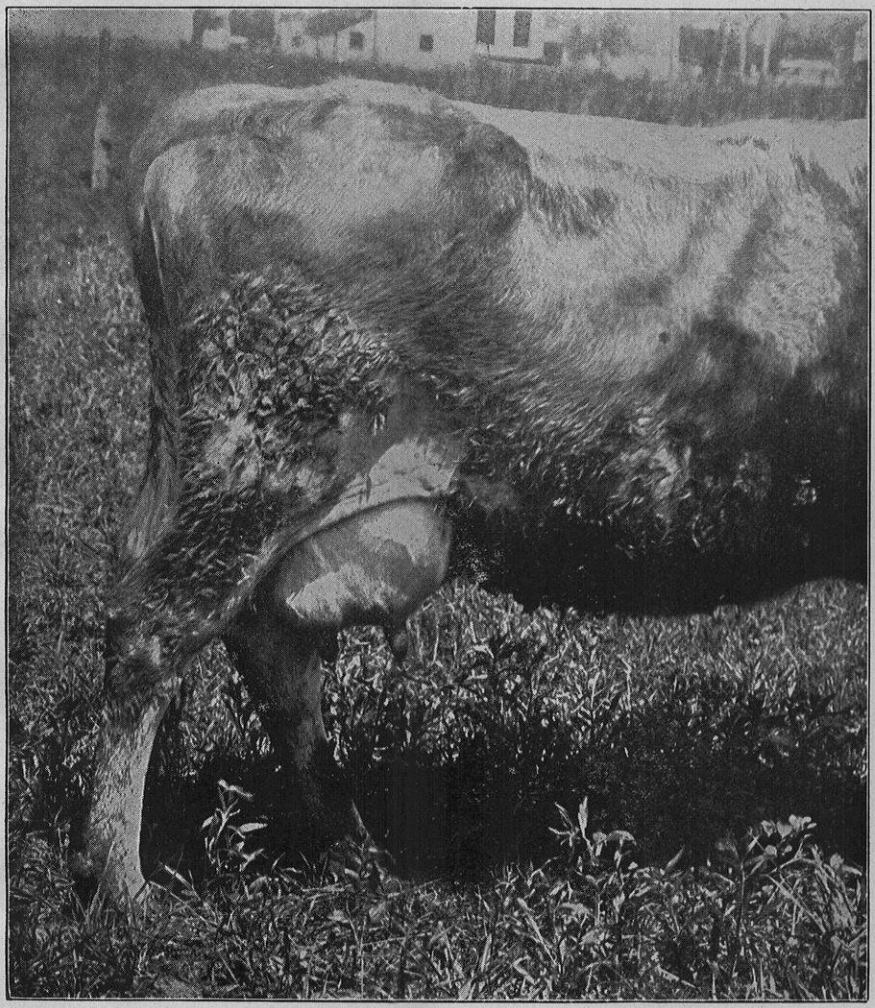


FIG. 5.—FILTHY COW.

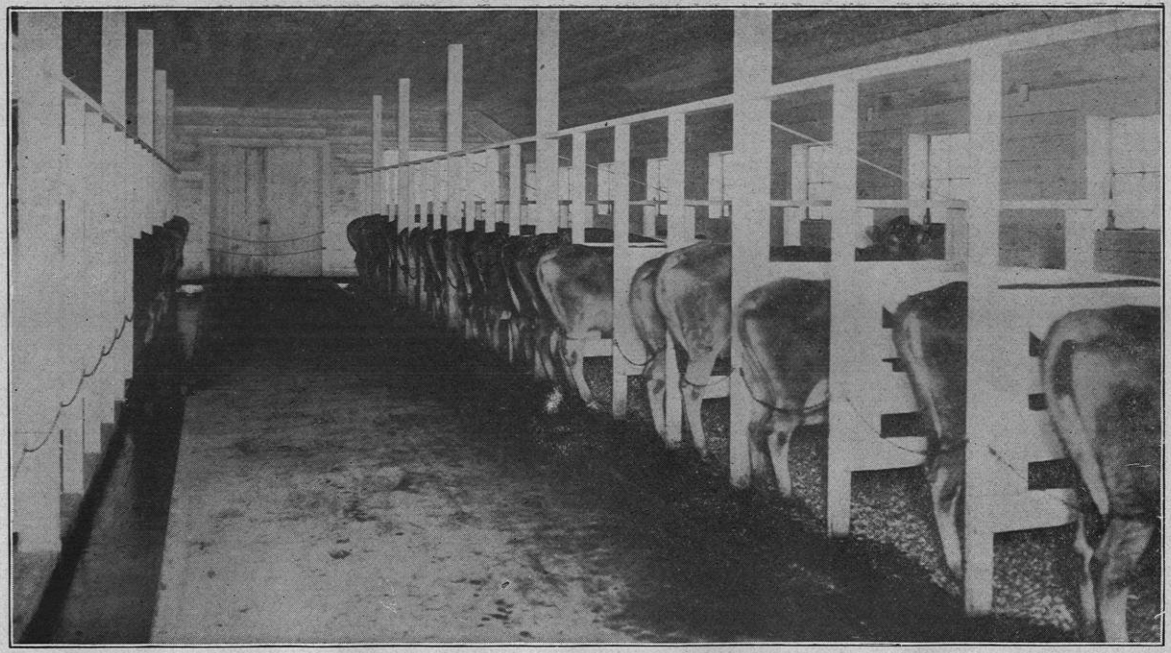


FIG. 6.—CLEAN COWS IN CLEAN BARN

which were placed about six feet deep in the ground and had no outlet were prevalent. So much time was required in cleaning them that it was seldom done by the regular factory help at the time of day when they were nearest empty. Often times maggots were found in the decaying organic matter which had accumulated therein and whey from these tanks was carried away in the same cans which conveyed the milk to the factories. Whey conductors that leaked under the buildings, and at various places on the way to the whey tank placed outside of cheese factory buildings, making putrid soil and a constant stench, were common. Other conductors consisted of tight pipes which entered the building, emitting foul odors from the decaying substances with which the inner walls of these pipes were coated. In many instances the milk patrons refused to take away all the whey and the surplus was allowed to overflow on the soil, causing a stench that was noticeable for a long distance.

The question of drainage had been largely ignored by many cheese makers, waste products being dumped on the soil. Some factories were connected with good sewers which, being unprovided with a trap, discharged the sewer gas into the building. The intake room, walls, presses, and jacket of milk vats were badly bespattered and greasy. The ceiling was blackened with fly specks, floor dirty and nearly all utensils unclean. Overalls and aprons of operators were not infrequently saturated and coated with dirt and filth. No efforts, in many instances, were made to keep flies out or to reduce the number inside, and some of them became tangled up in the milk and curd and were mixed up with the cheese. History records that at least one thrifty cheese maker kept a tame duck at his factory which, at the right time, he would pick up and put into the cheese vat filled with milk and allow it to swim around and gather the flies from the surface of the milk.

There were many and great losses caused by taints or changes in the milk, due to lack of proper knowledge or to neglect and carelessness on the part of milk producers supplying milk to cheese factories. Partial skimming and watering of the milk furnished the factories was all too common. It is reliably reported that the milk of a certain cheese factory patron, who had to cross a stream of water where it was his custom to stop, ostensibly to water his horses, was found more than once to contain a fish.

The average Wisconsin cheese factory of today, as a result of the campaign for cleanliness on the part of the dairy and food commission of this state, shows greatly improved conditions. The indifferent, negligent operator, who "couldn't afford it", "didn't have time", "thought it wasn't necessary", experienced a change of heart, became active, and fixing up and cleaning up was promptly begun. Many new whey tanks have been installed, good conductors and drains provided, and lime spread over putrid soil. Many cheese factory buildings have been repaired or remodeled and painted, windows and doors have been provided with screens, and things cleaned up in general until the aspect of the premises in hundreds of instances has been completely changed. In many cases an entirely new building has been constructed—the old building, an unsuitable and unsanitary affair, being entirely abandoned. The badly constructed and heedlessly managed cheese factories of former years are, in the main, things of the past, and the average Wisconsin cheese factory of today presents a more pleasing picture. Without, all is inviting. Most of the buildings are neatly painted, and in place of rubbish, flower beds frequently adorn the yard. Foul smells and bad drainage are inconspicuous. The whey tank, whether inside or outside the building, is scalded daily, and in many instances the whey is pasteurized and kept sweet for patron's use on the farm. Within,

there is neatness and cleanliness. The hot water and live steam connections in the modern factories insure cleanliness of utensils. The skimming and watering of milk has become exceedingly rare. In the main, the patrons' cans are clean and the milk itself delivered at the factory is clean. All this, together with the uncompromising war waged against all fraudulent products has effectively contributed to the present conditions where Wisconsin cheese has established and maintained for itself in the markets and in competitive contests a reputation unclaimed by any other state in this great country.

REALISTIC PEN PICTURES OF A CREAMERY BEFORE AND AFTER INSPECTION AND LAW ENFORCEMENT.

The creamery was poorly painted, a lot of weeds and rubbish around it, no adequate drainage and in consequence the sewage ran on the ground just outside of the building through which the patrons drove when delivering milk or cream to the creamery. Just outside, at one end of the creamery, were two large tanks, one for skim milk, and the other for buttermilk, both filthy. The pipes through which the milk was run to these tanks were also filthy, no attempt whatever being made to clean either the tanks or the pipes. At the place of loading the milk, a great deal of milk had been spilled on the ground, altogether making the surroundings filthy and the odor very bad. The creamery inside was in bad shape. The wood floor had rotted, and a part of the sewage soaked through and remained underneath to decay. The odor arising from that condition was very bad. The refrigerator, which was a part of the main creamery building, was in poor repair, moldy and damp. No screens were on the doors or windows, consequently there were plenty of flies in the creamery, also in the cream which was taken care of in an open vat. The butter maker, however, said he always strained the cream before churning, so that no flies got into the butter, not realizing the awfulness of the practice of soaking flies over night in a vat of cream from which a food for man was to be manufactured. The pump and pipes used for pumping the milk to the separators were rusty and unclean. Aside from that, the rest of the creamery apparatus used was passably clean though not in the best of repair. The steam connections to the engine and many unions and valves were leaking enough steam to run the entire plant. The milk and cream were tested twice a month. The samples for testing were cared for in tin-top sample jars, which permitted the evaporation of moisture. Part of the glassware was not correct, and the cream scales were not accurate.

All of these bad conditions were pointed out to the butter maker and to the owners and the law on the subject read to them. They promised to get busy at once and put the entire creamery and premises in good condition.

This creamery today is well painted; has adequate drainage; the surroundings are very materially cleaned up; an arrangement is made whereby little or no milk is spilled on the ground at the place of loading the same; the buttermilk tank is washed, and the pipes for conducting the milk to it are steamed out daily. The product received at the creamery now is in the form of hand separated cream, consequently there is no separating done and no use for a skim milk tank. A good new cement floor has been put in, but before this was done the owners said they had hauled away loads of filthy sewage and polluted earth from underneath the old wood floor. The refrigerator was repaired and is in first class condition; the doors and windows screened; new cream ripeners installed; all steam leaks

practically stopped; accurate glassware and cream scales provided, and the cream tested at each time of delivery. The entire creamery and apparatus are kept in a good and clean condition, and no bad odors are noticeable about the place.

Not all of such bad conditions were found at every creamery. In some cases the building was poor, and the apparatus and surroundings passably good and clean; at others, the building and apparatus were good and clean, but the surroundings were bad; and at still others, the buildings and surroundings were good and the apparatus very unclean. Wherever bad conditions were found, such bad conditions have been pointed out to the proper person, either the butter maker, manager or owner, and a request made to have conditions improved. If this failed, prosecutions followed, and as a result of such work there has been a marked improvement in the creameries throughout the state, so much so that the poorest creamery in the state today will compare favorably with the best creamery of five or six years ago.

It is by no means claimed that the millennium has been reached in the matter of sanitation in cheese factory, creamery and dairy conditions and products, for much yet remains to be accomplished. What is confidently asserted is that there have been revolutionary changes in all these matters.

SAVING TO PRODUCERS OF CHEESE AND BUTTER BY WORK OF THIS DEPARTMENT.

In answer to inquiries made of a representative number of leading wholesale dealers in cheese, who have for many years been familiar with Wisconsin conditions, they have stated that in their judgment it is very conservative to estimate that the improvement in the quality of Wisconsin cheese, due to the work of the Wisconsin dairy and food department in sanitary inspection and otherwise, has been such that the producers of Wisconsin cheese have realized upon an average at least 1 cent a pound more than they would have realized except for the work of this department.

The report of the dairy and food commissioner for the year 1909–10 shows that 145,171,231 pounds of cheese were produced by the Wisconsin cheese factories during the year 1909. Estimating that 1 cent a pound was saved to the producers of that cheese, it is shown that over $1,450,000 was saved for the year and is a conservative estimate of the annual amount saved to the producers during recent years.

In like manner, upon inquiry of a representative number of wholesale dealers in butter, who for many years have handled Wisconsin butter and have been familiar with Wisconsin conditions, it is found that the lowest estimate made by any of these dealers is that not less than one cent a pound has on an average been received by the producers of Wisconsin butter more than they would have received had it not been for the work of this department in improving the sanitary and other conditions in creameries and dairies. The answers given by a large number of these dealers place the saving much higher than one cent a pound.

In the report of the dairy and food commissioner for 1909–10 it is shown that 105,307,356 pounds of butter were produced for the year 1909. A saving of one cent a pound on this amounts to over $1,053,000. It thus appears as a conservative estimate that this department has caused an annual saving to the producers of cheese and butter in this state of more than $2,500,000. This represents an average annual saving to each patron of the Wisconsin cheese factories and creameries of a little more than $20.

Consumers have been benefited by being afforded an article of greatly improved quality. No state in the Union is now producing commercial cheese and butter of a higher quality than Wisconsin.

SAVING TO CONSUMERS OF LINSEED OIL.

Since 1899, there has been a law on the statute books, relating to the sale of adulterated linseed oil; but it was so defective in many particulars, that it was almost a dead letter until 1909, when the law was so amended and extended as to be enforcible and very effective in the suppression of adulteration and fraud in the sale of linseed oil, turpentine, white lead and zinc white. The dairy and food department is charged with the enforcement of that law.

According to reliable authority on the subject of the consumption of linseed oil in the United States, there is annually consumed, in recent years, in the country, 60,000,000 gallons. By the census of 1910, it is shown that the population of Wisconsin is approximately 3% of the population of the entire country. Upon the basis of population, therefore, Wisconsin should consume 3% of the total amount of linseed oil consumed in the entire country which amounts to 1,800,000 gallons. Based upon the results of our analyses of linseed oils in our laboratory and of our inspection of the linseed oil supply of the state, it is fair to say that 12½% of the total amount of linseed oil used in the state would be adulterated with mineral oil or with a mineral and rosin oil mixture, were it not for the law enforcement by this department.

The market value of these adulterants was for the years 1909 and 1910, fifty cents a gallon less than the market value of genuine linseed oil. In other words, the 12½% of the 1,800,000 gallons of reputed linseed oil, or 225,000 gallons of adulterations worth fifty cents a gallon less than linseed oil, would have been sold as linseed oil and at the price of linseed oil, except for the law enforcement by this department; 225,000 gallons at fifty cents a gallon amounts to $112,500, the estimated amount saved during the year 1910, to the ultimate consumers of linseed oil in this state, due to the law enforcement by this department. This estimate assumes that the painter makes an honest use of the product purchaseable on the Wisconsin market.

The immense loss of and damage to property caused by the use of adulterated linseed oil cannot be estimated and expressed in dollars and cents. That loss is immense and vastly exceeds the figures given above.

CONDITIONS SHOWING THE NEED OF FOOD LAWS.

I make the following quotation from the report of the dairy and food commissioner of Wisconsin for the years 1897–98, the Honorable H. C. Adams:

> "The first comprehensive general pure food law enacted in Wisconsin was passed by the legislature of 1897. The laws relating to the sale of adulterated dairy products were made reasonably stringent before that time. The only law under which the Dairy and Food Commission could prosecute dealers in adulterated food products, other than those of the dairy, was the law of 1879, which prohibited the false labeling of these products and provided for the prosecution of parties who *knowingly* violated the law. As it is practically impossible to prove the matter of intent, the law was a dead letter, and the work of adulteration went on without let or hindrance by the state. The present law as passed by the legislature of 1897 and made to take effect

January 1, 1898, embodies the main features of the pure food law now in force in Ohio, Massachusetts and other states, and which have been incorporated in the various pure food bills which have been presented to the attention of congress.

While the majority of the adulterations common in food products have not been injurious to the public health, all of them have taken money from the public pocket. Adulterations had become so common and widespread in many articles of food that it was deemed impossible by many sincere men in the grocery trade to eradicate them by any law that could be devised."

To make clear what has in part been accomplished by the dairy and food department of this state, it is necessary first to set forth the conditions existing at the time the pure food law was enacted. For this purpose I submit the following:

Soon after the late Hon. H. C. Adams, who had served as dairy and food commissioner of this state for seven and one-half years, had resigned that position and had been elected member of congress from the second district of Wisconsin, he made the following statement in a public and published address:

"Tea has been adulterated, coffee beans, made out of rye paste creased and colored to look like the real thing; flour, adulterated with white earth; candy, with the same material; common spirit vinegar, sold for cider vinegar; a riot of adulterations in all forms of spices; butter, adulterated with water, casein, lard and tallow; smoked hams, that smoke never touched and which obtained their color and flavor from a poisonous solution called "liquid smoke;" baking powders with labels written by the prince of liars; cream, colored artificially and preserved by rank poison; sausage made of stale meat unfit for human use, brightly colored by an injurious preservative; maple syrup made out of brown sugar and a beautiful label; New Orleans molasses, as nearly like the genuine as a decrepit negro would be like the Venus de Milo; milk, the special food of babies and invalids and the universal food of the people, diluted, skimmed, and poisoned; veal, from calves killed within forty-eight hours after birth; cheese robbed of butter fat and filled with hog fat; canned goods, full of water and injurious preservatives; adulterated beer, adulterated whiskey, adulterated wines, adulterated drugs; cottonseed oil sold for olive oil; honey mixed with glucose; lard, containing caustic, lime, starch, stearin and cottonseed oil; peas, colored with poisonous copper. Nearly everything which can be used for drink or food has been sold to the American people in recent years under the name of pure food products."

Referring to conditions that existed about the time our general food law was enacted, Dr. H. W. Wiley, Chief of the Bureau of Chemistry of the U. S. Department of Agriculture, made the following statements:

"What may a housewife expect who goes into a store where no food regulations, national, state or municipal exist? If she asks for butter, she may get oleomargarine or renovated butter; for honey, glucose or a mixture thereof; for pepper an article adulterated by the addition of starch and ground shells; for jelly, some fruit juice usually derived from apple cores and skins rejected in drying, mixed with glucose, preserved with salicylic acid and colored with some sort of aniline dye. The peas and beans may contain, especially if they are very green, considerable quantities of that poisonous substance, sulphate of copper; the prepared meat or sausage, boric acid and usually some color-

ing matter to intensify the real color of the meat; the codfish may be preserved with boric acid instead of old-fashioned common salt; the sardines purporting to be of French origin may have been caught off the coast of Maine, and instead of being packed in olive oil as one would expect, are often packed in cotton seed oil. She may get tub oysters highly dosed with borax; milk and cream containing formaldehyde; maple molasses made of glucose and melted brown sugar; olive oil that is wholly cotton seed oil or mixed with cotton seed, peanut or sesame oil; white wine almost saturated with sulphurous acid, red wine made partly of sugar and not wholly of the juice of the grape; Mocha and Java coffee from Brazil, yet bearing the false name; cream made of milk thickened with viscogen and artificially colored, and so on down the list."

Referring to conditions as they existed before the enactment and successful enforcement of food laws, Dr. E. F. Ladd, for a decade food commissioner of North Dakota, and one of the ablest and most vigorous food officials in the country, made the following statements:

"Jellies and jams were largely adulterated and misbranded, made from apple stock and waste fruit products, often containing starch paste and mucilage, colored with aniline dyes, preserved with salicylic acid, sweetened with glucose and saccharin and the whole falsely labeled. Our canned corn, almost without exception, was bleached with sulfites, preserved and sweetened with a coal tar product,—saccharin. Our peas and string beans frequently contained copper and alum salts and often contained chemical preservatives. Our meats were embalmed with chemicals, and some of the canned products contained little besides gristle, connective tissue and waste matters, seasoned and flavored, but sold as potted ham, chicken, etc. Our sorghum syrup came largely from glucose factories, while the maple syrup was almost wholly an imitation product, worth fifty cents a gallon and retailed for $1.50. Our strained honey was largely flavored syrups and glucose. Our candies were made from glucose, containing sulfites, to which further sulfites were added, colored with coal tar colors, many of which were known to be harmful, and flavored with chemicals or synthetic flavors. Our whiskies, brandies and wines, most generally sold even in the drug stores, the good Lord only knows what they did contain, but our chemists have shown that they seldom contained real whiskey. Our cider vinegars were unknown to the apple family. Our spices were but a semblance of the real thing, made as they were, from corn meal, cocoanut shells, olive stones and other waste products. Not a few of our drugs, drug preparations, extracts, etc., contained wood alcohol known to be a deadly poison. Cereals and chicory were the basis of much ground coffee. Lemon and vanilla extracts were largely imitation products and put up with wood alcohol. Many of the preparations dispensed at the drug stores varied from 25% to 150% of the U. S. P. strength; and fully 75% of the patent medicines were fakes, pure and simple."

The existence of extensive harmful adulterations of food products was early recognized by the New York Court of Appeals in the following language:

"It is notorious that the adulteration of food products has grown to proportions so enormous as to menace the health and safety of the people. Ingenuity keeps pace with greed and the careless and heedless consumers are exposed to increasing perils. To redress such evils is a plain duty but a difficult task.

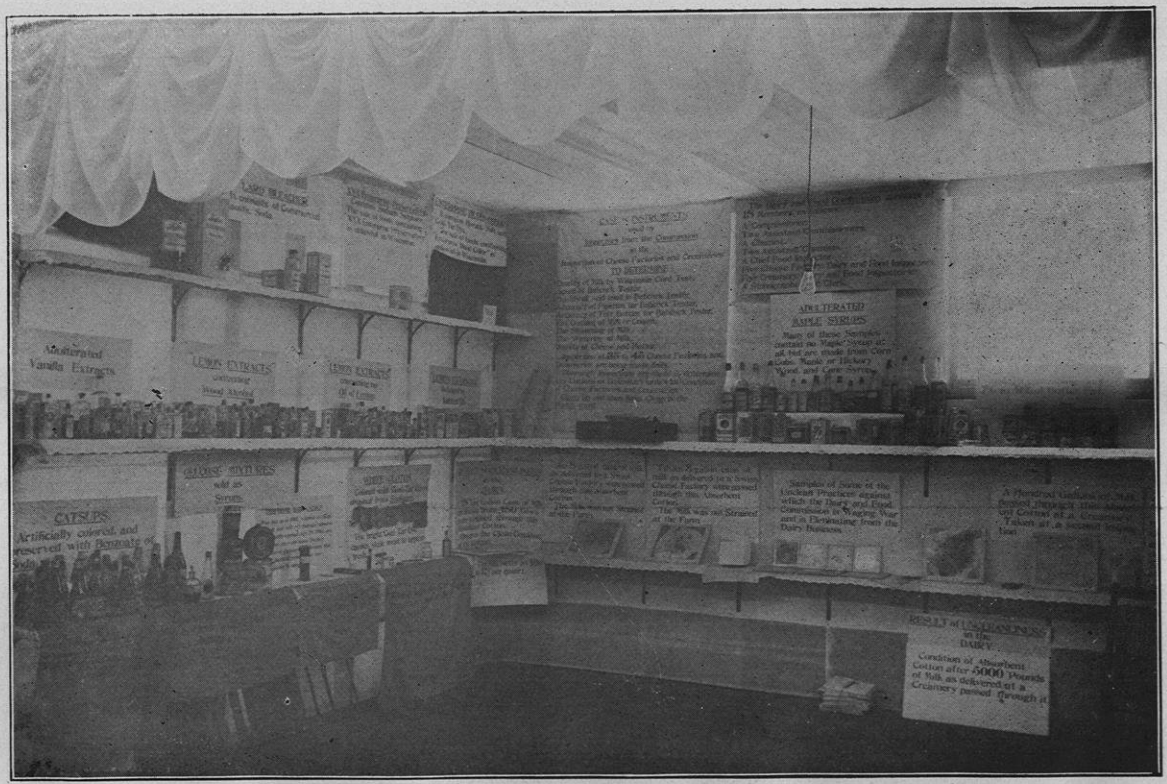


FIG. 7.—PART OF EXHIBIT OF ADULTERATED FOODS MADE BY DAIRY AND FOOD COMMISSION AT WISCONSIN STATE FAIR 1905.

Experience has taught the lesson that repressive measures which depend for their efficiency upon the proof of the dealer's knowledge and of his intent to deceive and defraud are of little use, and rarely accomplish their purpose. Such an emergency may justify legislation which throws upon the seller the entire responsibility for the purity and soundness of what he sells and compels him to know and be certain."

Following is a partial statement of adulterations found by the chemists in our laboratory.

BAKING MATERIALS:—
- Baking Powders:—Alum, with no statement of its presence on the label. Excessive amount of corn starch. Deficient in CO_2
- Flour:—Mixed with low grade flour and bleached with oxides of nitrogen.
- Buckwheat flour:—Low grade wheat and rye flour, corn starch, gypsum.
- Cream of Tartar:—Composed of calcium acid phosphate, calcium sulphate, alum, starch.

BEVERAGES:—
- Alcoholic Beverages:—
  - Wines:—Not the product of grapes, artificially colored solutions of glucose preserved with benzoic acid; white wine bleached with sulphur dioxide; cherry wine, a solution of sugar in water artificially colored and flavored, containing no alcohol. Sugar, water, tartaric acid, tannin, coal tar dye.
  - Blackberry Brandy:—Artificially colored and sweetened with saccharin.
- Non-Alcoholic Beverages:—
  - Apple Cider:—Diluted solutions of apple juice, sugar, water, tartaric acid, artificial flavors, coal tar dyes, preserved with chemical preservatives, salicylic acid and hydrofluoric acid, benzoate of soda, benzoic acid, saccharin.
  - Peach Cider:—Saccharin, benzoate of soda.
  - Raspberry and Orange Ciders:—Made from sugar, water, tartaric acid, saccharin, salicylic acid, coal tar dyes.
  - Cocoa:—Starch, oxide of iron.
  - Chocolate:—Starch, oxide of iron.
  - Grape Juice:—Sugar, water, tartaric acid, coal tar dye.
  - Pop:—Often contains saccharin, salicylic acid, coal tar dye.

CANDY:—Paraffin, clay, coatings of stearic acid, moldy and wormy nuts coated with shellac.

CONDIMENTS:—
- Catsup:—Canning factory refuse, tomato skins, seeds and trimmings, glucose. Highly colored with coal tar dyes and preserved with chemical preservatives and sweetened with saccharin.
- Meat Dressings:—Preserved with boric acid and borates.
- Vinegar:—
  - Cider Vinegar:—Not made from apples; artificially colored solutions of sugar in fermented apple solids or glucose with spirit vinegar.
  - Malt Vinegar:—Artificially colored solutions of spirit vinegar, sugar, glucose.
  - Wine Vinegar:—Not the product of grapes; spirit vinegar.
  - Spirit Vinegar:—Pyroligneous acid.
- Spices:—Starch, olive pits, cocoanut shells, pepper dust, pepper hulls, roasted cereals, oxide of iron, weed seeds, artificial coloring matter, mace.

DAIRY PRODUCTS:—
- Butter:—Water, foreign fats, deficient in butter fat, renovated butter, oleomargarine.
- Cheese:—Skimmed cheese sold for cream cheese or whole cheese, boric acid, borates, filled with foreign fats.
- Cream:—Boric acid, borax, formaldehyde, gelatin, artificial coloring matter, deficient in fat.
- Ice Cream:—Gums, gelatin, deficient in fat.
- Milk:—Added water, skimming, artificial color, formaldehyde, boric acid, borax, dirt.
- Evaporated and condensed milk:—Sold as evaporated or condensed cream.

DRUGS:
- Alcohol:—Diluted with water.
- Ammonia Water:—Deficient in the active principle.
- Elixir Simples:—Contained wood alcohol.
- Hammamelis Water:—Wood alcohol, formaldehyde, deficient in per cent of alcohol.
- Hydrogen Peroxide:—Deficient in the active principle.
- Jamaica Ginger:—Contained wood alcohol.
- Laudanum:—Deficient in morphine, one of the active principles.
- Lime Water:—Deficient in calcium hydroxide the active principle.
- Solution Liquor Potassium Arsenitus:—Deficient in the active principle.
- Spirit of Camphor:—Water, deficient in camphor, wood alcohol.
- Spirit of Nitrous Ether:—Deficient in the active principle, added water.
- Sulphur (Precipitated):—Calcium sulphate.
- Tincture of Cinnamon:—Contained wood alcohol.

Tincture of Digitalis, and tincture of Strophanthus:—Contained wood alcohol.
Tincture of Iodin:—Deficient in iodin, wood alcohol, prepared without potassium iodide.

FLAVORING EXTRACTS:—
Lemon Extract:—Wood alcohol, terpeneless lemon oil, robbed lemon oil, oil of lemon grass, artificial color, dilute alcohol.
Vanilla Extract:—Wood alcohol, tonka extract, vanillin, coumarin, prune juice, caramel, coal tar dyes.
Strawberry Extract:—Artificial preparations flavored with ethers and colored with coal tar dyes.
Raspberry Extract:—Artificial preparation flavored with ethers and colored with coal tar dyes.
Banana Extract:—Artificial preparation flavored with ethers and colored with coal tar dyes.

FISH:—
Fresh:—Boric acid, borax, partly decayed.
Dried:—Boric acid, borax, benzoate of soda.
Oysters:—Added water, boric acid, borax.

FRUITS:—
Canned:—Sulphur dioxide, benzoate of soda, saccharin, artificial color.
Dried:—Sulphur dioxide used to bleach in drying.
Fruit Products:—
Jams and preserves:—Made from unripe or decayed fruit, fruit refuse, apple trimmings, glucose, phosphoric acid, coal tar dyes, benzoate of soda.
Jellies:—Made from apple pomace, starch paste, gelatin, glucose, tartaric acid, artificial flavors, coal tar dyes.

FATS:—
Lard:—Cottonseed oil, cottonseed stearin, beef stearin, beef tallow.
Oleomargarine:—Made in semblance of yellow butter, by use of artificial color or selection of material.

MEATS:—
Fresh Meat:—Meat from diseased animals.
Chopped Meats:—Preserved with sulphites, boric acid, borax, colored with coal tar dyes.
Sausage:—Filled with starch and cereal fillers, added water, boric acid, borax, coal tar dyes, sulphites.

MOLASSES:—Glucose, poisonous salts introduced in the refining of sugar, sulphur dioxide.
NUTS:—Artificially colored to make them appear of greater value.
NOODLES:—Often sold as "Egg Noodles" but containing no egg, artificially colored.
OLIVE OIL:—Cottonseed oil, peanut oil, lard oil, copper salt.
PICKLES:—Alum, benzoic acid, saccharin, artificial color.
RICE:—Coated with glucose and talc to make it appear of greater value, artificial color.

SYRUPS:—
Cane Syrup:—Glucose.
Sorghum:—Glucose.
Maple Syrup:—Mixed with glucose, cane syrup or sorghum, or made entirely from sugar and a decoction of maple wood, hickory wood, or corn cobs, saccharin, benzoate of soda.

SUGAR:—
Cane Sugar:—Starch sugar.
Maple Sugar:—Made by the evaporation of mixtures such as stated above for maple syrup.

VEGETABLES:—Canned vegetables, sulphate of copper, tin oxide, saccharin, starch, soaked dried vegetables in cans sold as fresh canned vegetables.

COURSES OF PROCEDURE OPEN TO THE PUBLIC.

With these widespread adulterations of food products, for which the food manufacturers and purveyors were alone responsible, there were three courses of procedure open to the people of this country, as to the recovery of their rights:

1. They could quietly acquiesce in these conditions. They could, by silence and inaction, allow an army of food adulterators to rob them of their health and of their incomes. They could close their eyes, stultify their intellects and proclaim that the American food manufacturers and purveyors are the personification of honesty and integrity; that no wrongs were being perpetrated on consumers; that there was no embalmed beef; no adulterated food. General Miles was wrong. Dr. Wiley was wrong. Mr. Adams was wrong. The New York Court of Appeals was wrong. And they were "hurting business."

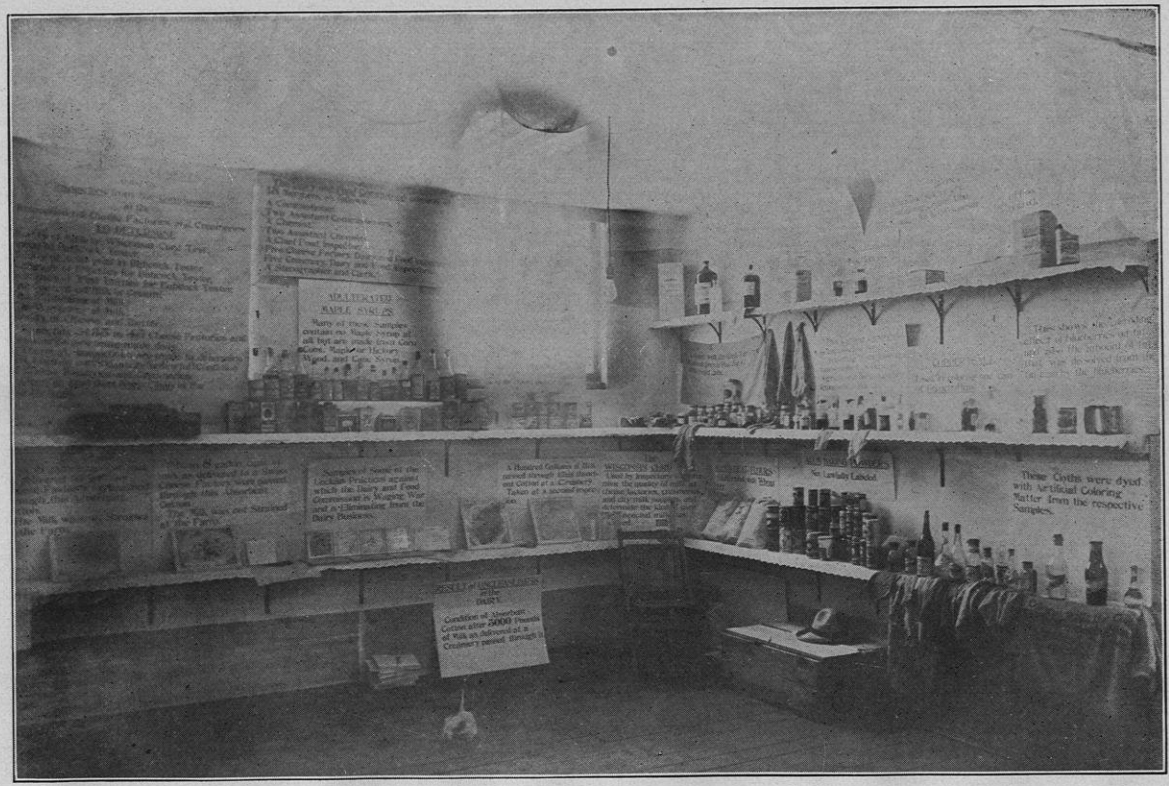


FIG. 8.—PART OF EXHIBIT OF ADULTERATED FOODS MADE BY DAIRY AND FOOD COMMISSION AT WISCONSIN STATE FAIR 1905.

2. Another method to be pursued was to let each consumer fight his own battle with these powerful food adulterating interests. Here is our laboring man with his family to support from his daily earnings. How much our political parties have concerned themselves that he should have a "full dinner pail." Full of what? Embalmed beef? Sausage loaded with potato flour and Lake Michigan water? Oleomargarine bought as butter, at the price of butter? Glucose bought as and for pure syrup, sorghum or molasses? Canners' waste preserved with benzoate of soda instead of genuine fruits? Bread made from a low grade of wheat flour, artificially bleached to deceive him into the belief that he is getting the best grade of wheat flour? Filled with never ending frauds and counterfeits? Or shall the dinner pail be filled with honest food?

By this second method of procedure, if this man considers himself wronged, defrauded, why, say the food adulterating fraternity, in their blandest manner and with their most complacent smiles, let him take his case into court; let him employ a lawyer; let him secure at his own expense the service of a chemist to prove that the food he purchased was adulterated, was a counterfeit; let him go into court and there establish that he has been damaged and how much and there recover the damage; let him do all this to win his case against the strong defense we will put up with our highly paid expert lawyers to conduct our case and equally expert and highly paid chemists to give the testimony we need. Or if food laws are to be enacted and enforced, let us dictate what the laws shall be and how they shall be enforced.

3. But there was another and a better method to deal with food adulterators and their frauds. It is the method which the people have chosen, and that is, to define food adulteration by legal enactment, provide by law and at public expense for food commissioners, food chemists, food inspectors, etc., for a vigorous and impartial enforcement of food laws made for the purpose of protecting the consuming public against the harmful consequences of food adulteration. And this method is the "square deal." This is the method of fair play; and that is what the people of Wisconsin love and are fully determined to have.

The end sought to be accomplished by the efforts of the dairy and food department of the state in the enforcement of the dairy and food laws, has been the protection of the consuming public by eliminating from the Wisconsin markets the adulterations and frauds in food and drug products hereinbefore set forth, with the results that today those conditions are greatly improved. Pure foods and pure drugs of proper strength and truthful labeling, now take the place upon our markets of former adulterated and fraudulent food products. Adulterated or fraudulent food products are now an exception and not the rule as a result of the enactment of the state food laws and their vigorous enforcement by this department. As the adulterations and frauds in food and drug products have been enormous in their extent, so the work of this department in their elimination has also been enormous.

AMOUNT OF FOOD ADULTERATION.

As before stated, the late Hon. H. C. Adams was for seven and one-half years dairy and food commissioner of this state and shortly after he resigned the position he was elected member of congress from the second district. He was a member of the committee on agriculture of the House of Representatives in the fifty-eighth and fifty-ninth congresses. Because of his ability and large experience in food matters as dairy and food commissioner of this state as well

as the experience gained as a member of the committee on agriculture of the House of Representatives, he was chosen to represent the committee with President Roosevelt at the critical time when the meat inspection bill was pending before Congress. His interview with the president in a representative capacity is conceded to have been the turning point which secured the passage of the meat inspection bill. His large acquaintance with food matters also made his influence potent in the passage of the national food and drug act of 1906. In a public address in the early part of 1904, speaking from his great experience, he made the following statement:

> "F. N. Barrett, editor of the American Grocer, stated to the Committee on Interstate Commerce of the 57th Congress that the 80,000,000, people of the United States consumed each year $8,000,000,000 worth of food and drink. This statement was based upon an average expenditure of $100 for each person.
>
> It has been estimated by officials of the department of agriculture that each year there is sold in the United States 2%, or $160,000,000 worth of foods adulterated in such a manner as to be injurious to the public health and that other forms of adulterations not injurious to health but dishonest because of being falsely labeled or deprived of their natural purity, would make the total extent of food adulteration for each year 15%, an estimate which would make food adulteration in this country cost the enormous amount of $1,200,000,000."

The American Grocer of April 3, 1904, in copying a letter to the Newark Daily News from United States Senator McCumber who was in charge of the pure food bill in the senate, quotes Senator McCumber as making the following statement:

> "The extent of the adulteration and misbranding of food products is appalling. * * * The report of the agricultural department estimates that the amount of fraudulent adulteration reaches 15% and injurious adulteration 2% of the products consumed. In other words $1,200,000,000 worth of adulterated food products are sold each year in the United States, and the cost of the injurious products reaches the sum of $160,000,000 yearly. These are conservative figures. It is probable that the truth would be more nearly reached if these sums were doubled."

SAVING TO CONSUMERS BY THE ENACTMENT AND ENFORCEMENT OF STATE FOOD LAWS.

With the statements of Congressman Adams, Mr. Barrett and Senator McCumber as a basis for estimates, we have the following: 15% (estimated per cent of adulterated foods) of $8,000,000,000 (the estimated amount expended in a year for food upon the basis of $100 to each person) amounts to $1,200,000,000 (as one year's cost of adulterated foods for the country). As the population of Wisconsin, 1900 census, was 2.7% of the entire population of the country, it is fair to estimate, upon the basis of population, that 2.7% of the $1,200,000,000 or $32,400,000 would have been paid by the people of Wisconsin for adulterated foods at the time the above estimates were made, 1904, unless protected by the food laws of this state and their enforcement.

It is a conservative estimate that 25% of the 15% of adulterated foods was absolutely worthless as food products, representing an absolute loss to the purchasers.

Twenty-five per cent of the $32,400,000 amounts to $8,100,000, which is the amount that would have been absolutely swindled out of the Wisconsin consuming public except for the food laws of this

state and their enforcement by the dairy and food department.

Estimating 75% as the yearly amount thus saved of the 25% of the worthless adulteration to the Wisconsin consuming public by the work of this department in the food law enforcement, which in view of the conditions of the food market today as compared with those when the food law was enacted is an extremely conservative estimate, it is shown that the work of this department has, during the recent years, been making an annual saving to the people of the state of over $6,000,000. This amount thus saved is more than 132 times the highest cost for any year for the maintenance of the dairy and food department and it is 370 times the average annual cost of the dairy and food department during the entire time of its existence.

In this report, I forbear to undertake to estimate what has been saved in life and health to the people of Wisconsin. Such a saving cannot be measured in dollars and cents. A study of the reports of the dairy and food department and of the statements quoted in this report of the extent and character of food adulteration, will disclose that in the early history of this struggle, milk, the common food of babes and invalids, was preserved with poisonous chemicals; that chopped meats and sausages, the chief reliance of the laboring class, were doped with borax, sodium sulphite and other substances deleterious to health; that extracts were made with poisonous wood alcohol; that numerous food products were artificially colored with harmful coal tar dyes; that salicylic acid was used as a preservative in many beverages; that saccharin, a coal tar product five hundred times as sweet as sugar, was a common adulterant, and that in general there was a riot of artificial coloring and harmful chemical preservatives in very general use in food products. These harmful chemical preservatives and deleterious artificial colors have been almost completely driven from the food products marketed in this state. It must follow that this result has caused an immense saving as to the lives and health of the people of Wisconsin.

INSPECTION OF SANITARY CONDITION.

In this connection, a statement should be made relative to the work of this department during the past two years in the sanitary inspection of groceries, general stores, meat markets, and other places where food is manufactured for sale or stored or offered or exposed for sale.

Until the year 1909, the work of sanitary inspection by this department was limited under the dairy and food laws of the state to cheese factories, creameries and dairies. While unsanitary conditions in a cheese factory or in a creamery or in a dairy barn might be corrected by officials of this department, we had no authority to correct like or even more unsanitary conditions in groceries, meat markets and other places where food for man was manufactured for sale or stored or offered or exposed for sale. But as a result of the public sentiment aroused by the work done by this department along various lines, the legislature of 1909 enacted a law requiring of this department the inspection of groceries, meat markets and other places where food is manufactured for sale and fixed penalties for manufacturing for sale or offering or exposing for sale food unless securely protected from filth, flies, dust or other contamination or other unclean, unheathful or unsanitary conditions.

The legislature of 1911 added to these provisions both by extension and by making more specific the penalties for violation of law. The results of the work of this department in the enforcement of

these statutes is a matter of common knowledge. There has been a general cleaning up in the places herein referred to. Instead of the unsanitary display of foods on the streets and in the places of business, suitable coverings of glass or metal or other material are being provided, and in the main food products are now reasonably well protected in striking contrast with the bad conditions of a few years ago. Still a great work along these lines yet remains to be done. Remembering the possible contamination by the many forms of disease germs which have been demonstrated by science, the importance of strict sanitary inspection and enforcement of sanitary laws can scarcely be over estimated.

SCOPE OF DAIRY AND FOOD WORK.

In scope the work under the dairy and food and drug and sanitary inspection laws now extends to the more than 3,000 cheese factories, creameries and skimming stations, and their nearly 123,000 patrons; 8,000 groceries and general stores; over 2,000 meat markets; upwards of 2,000 drug stores and an unknown number of other places where foods, including beverages, are manufactured, stored, offered or exposed for sale, estimated at 12,000, and totals 150,000 units of inspection. And like the compound eye of the fly, each of these units comprises a large number of smaller units.

During the past seven years, there have been 1,157 convictions for violations of the dairy and food and drug and sanitary laws. There have been 393 city and village milk supply inspections; 3,255 dairy inspections; 27,000 (estimated) inspections of the meat markets, groceries, etc.; 13,744 inspections of creameries, cheese factories, skimming stations and cream routes; 9,273 complete analyses of food products by the chemists and a total of 44,721 food products tested or analyzed.

I realize how inadequate must be the concept formed from the meager statement of this report as to the real character and scope of the work of the dairy and food department. I trust, however, that I have not failed to give a few clear glimpses of this great work of "safeguarding the public against fraud and adulteration in food products."

GLUCOSE MIXTURES, INTERLOCUTORY INJUNCTION; THE MCDERMOTT AND GRADY CASES.

The interlocutory injunction issued October 27, 1910, by A. L. Sanborn, Judge of the United States Circuit Court for the Western District of Wisconsin, on application of the Corn Products Refining Company, restraining the dairy and food commissioner of Wisconsin, his agents, assistants or attorneys, pending the determination of the cases of George McDermott, plaintiff in error, vs. The State of Wisconsin, defendant in error, from enforcing the provisions of chapter 557, laws of 1907, continues in force, those cases not having yet been determined by the U. S. Supreme Court.

SUSTAINED BY THE COURTS.

The aforesaid cases were instituted in the municipal court for Dane county on the 7th day of May, 1909, and in due

course the defendants were convicted of violation of the terms of chapter 557, laws of 1907, of the state of Wisconsin. An appeal to the circuit court of Dane county resulted in sustaining the verdict of the municipal court and the finding by the circuit court that the portion of chapter 557, laws of 1907, under consideration is a valid constitutional enactment and that under the undisputed evidence the defendants were guilty of the offenses charged against them. In his findings in this case, Judge Stevens said:

"The evidence convinces the court that the public generally understands a 'syrup' to be the concentrated sap of a sugar producing plant. The term 'corn syrup' naturally suggests that the product is a syrup produced from corn. Certainly the name carries no suggestion that it is produced by the action of acid on starch, which may be made from a score of different substances as well as from corn. But even if the product here in question were properly termed a syrup, that is not the controlling fact. As was said of oleomargarine, 'It may be butter, but it is not butter made from cream, and the difference in cost or market value, if no other, would make it a fraud to pass off one article for the other.

* * *

"The question is not whether the term 'corn syrup' is coming into general use, the question is whether this name deceives the public and leads it to buy that which it would not otherwise purchase. Whether the product be wholesome or unwholesome, whether the consumer had valid reasons or only unreasoning prejudices in regard to the matter, the public has a right to know, and the state the right to compel the disclosure of what is contained in all food products offered to the consumer.

* * *

When the defendants established the fact that the public generally would not purchase the product if it were put out under the name of glucose (which is shown to be a proper designation), they brought the case within the realm where the state, exercising the police power, has the right to determine that it shall no longer be sold under a name which misleads the public.

* * *

As we have seen, there is such danger that the public may be misled and defrauded into buying a product which it would not otherwise purchase, if the name 'corn syrup' is used, as to suggest some reasonable necessity for a remedy, affordable only by legislative enactment, as to efficiently invite public attention thereto."

On appeal to the Supreme Court of the State of Wisconsin, the judgment in each of the cases separately appealed from was affirmed, two of the seven Justices dissenting. It was from this decision of the Supreme Court of Wisconsin that an appeal was taken and has since been pending in the U. S. Supreme Court and pending the determination of which cases the dairy and food commissioner is restrained from enforcing the provisions of the statute in question. This accounts for the continuance of the sale in this state of glucose mixtures as

"corn syrup," in contravention of the terms of the law as interpreted and sustained by the Wisconsin Supreme Court.

In the opinion rendered by the Supreme Court it was stated:

"The characteristics and qualities of glucose in its pure state are admittedly not those of the articles known in the trade as table syrup; nor is it used as a table syrup in its unmixed state. The term 'corn syrup' as applied generally to an article for table use conveys a meaning and designates an article wholly different in character and quality from that of glucose. It does not appear that 'corn syrup' designates a mixture having a fixed proportion of glucose or syrup constituents; it seems that such constituents are of variant proportions in the article sold as 'corn syrup.' Nor can it be said that the great mass of persons understand that 'corn syrup' is a mixture of glucose and syrup. The natural result of such use of the term 'corn syrup' is to mislead the consumers into the belief that they are obtaining a table food of the variety and kind commonly known as syrup, the product of sugar producing plants, and the consequences of such practice are that the consumers are misled and deceived in the respects as to the actual nature, the constituents and the value of the article as a food product."

Evidently the purpose of the legislature of Wisconsin in enacting chapter 557 of the laws of 1907 was to "safeguard the public against fraud and deception in food products." The same purpose evidently led the legislatures of 1909 and 1911 to refuse so to amend that law as to legalize the sale of glucose under the name "corn syrup," although most urgently importuned so to do. It seems probable that the McDermott and Grady cases herein mentioned will be argued in December, 1912. If the United States Supreme Court should decide that the law is invalid, such decision of course would put an end to the law. But if on the other hand, the United States Supreme Court shall hold the law to be valid, then in the interests of the general public, the law should not be so amended as to legalize the sale of glucose under a name that the courts have decided to be deceptive and misleading.

Weights and Measures.

By the provisions of chapter 566 of the laws of 1911, relating to weights and measures, which became effective July 7, 1911, the state dairy and food commissioner was made ex officio state superintendent of weights and measures.

By the provisions of that statute the state superintendent of weights and measures was authorized to appoint, subject to the rules of the state civil service commission, a chief inspector of weights and measures with an annual salary of $1600 and nec-

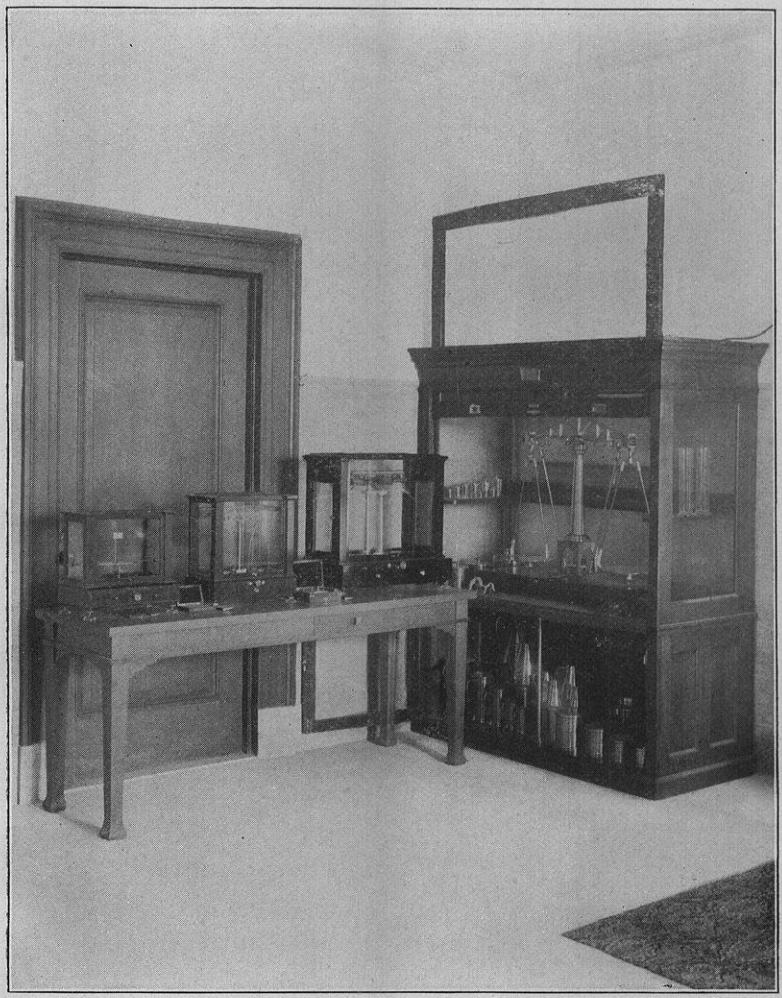
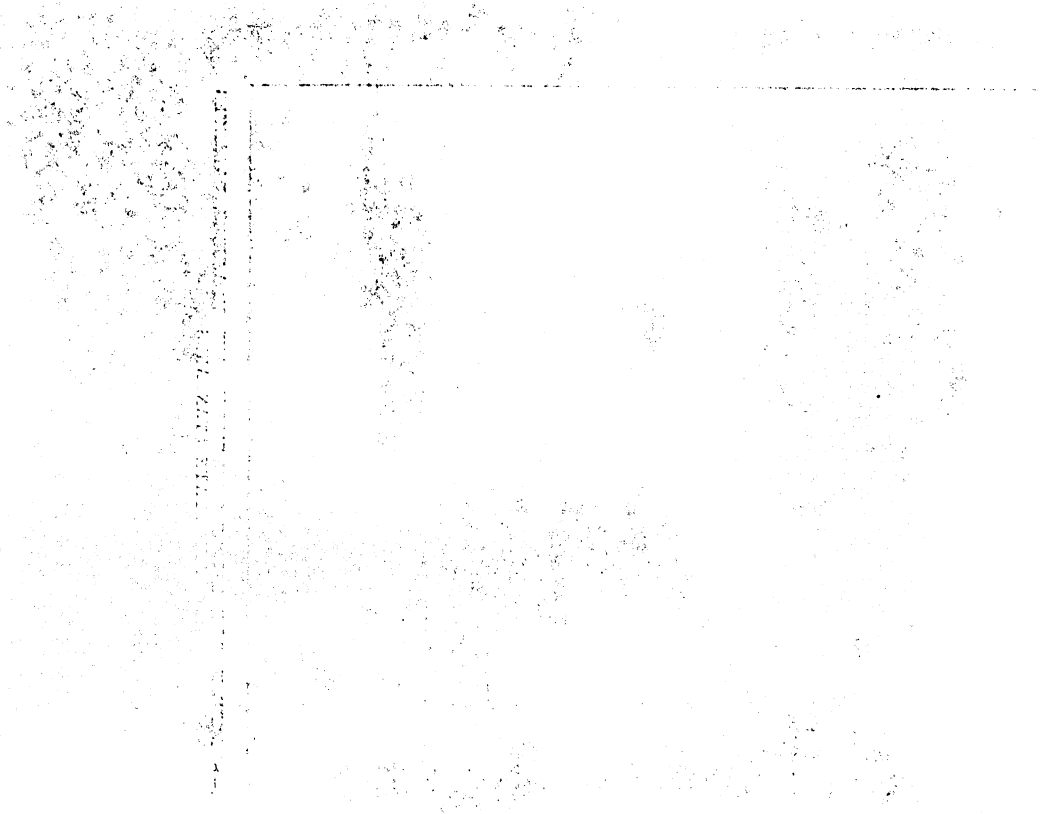


FIG. 9.—CORNER IN THE OFFICE OF WEIGHTS AND MEASURES, BALANCES AND STATE STANDARDS



essary traveling expenses, and one stenographer for the office of weights and measures, at a salary of $1200. The dairy and food commissioner was authorized to appoint not more than five additional dairy and food inspectors at a salary of not to exceed $1200 per year and necessary traveling expenses; he was authorized to designate any assistant dairy and food commissioner or any cheese factory, creamery, dairy and food inspector to act, ex officio, as state sealer of weights and measures, with like authority, powers, and duties as prescribed for city sealers of weights and measures.

The law prescribes that among the duties of the ex officio state superintendent of weights and measures, he shall have and keep a general supervision of the weights and measures and the weighing and measuring devices of the state and in use in the state; take charge of the state standards, cause them to be kept in a fireproof building belonging to the state, and to correct the standards of the several cities and as often as once in five years compare the same with those in his possession, and seal the same when tried and proved to be in conformity with the state standards. He is required annually to test all scales, weights and measures used in checking the receipt or disbursement of supplies in all institutions under the jurisdiction of the state board of control. He is required either himself or by his inspectors to visit the various cities at least once in each two years in order to inspect the work of the local sealers, and to issue from time to time regulations for the guidance of all sealers, said regulations to cover the procedure to be followed by the aforesaid officers in the discharge of their official duties. In those regulations he is required to prescribe the amount of tolerance to be allowed.

The old office of county sealer of weights and measures was abolished and in lieu thereof all the cities in the state of more than 5000 population by the last state or national census are required to have a city sealer of weights and measures to be appointed by the mayor from a list of eligible candidates furnished by the state civil service commission. In all territory within the state, except the aforesaid cities, the inspectors of weights and measures appointed by the state superintendent

of weights and measures, and such assistant dairy and food commissioners, cheese factory, dairy and food inspectors, and such creamery, dairy and food inspectors as may from time to time be designated by the state superintendent of weights and measures, shall act ex officio as sealers of weights and measures with like authority, powers and duties as prescribed for city sealers. No fees are allowed for sealing weights and measures.

It was nearly two months after the law became effective before a suitable room for the office of weights and measures as required by law became available, and the work of the office was to that extent retarded in conseqeuence.

Acting under authority of law, and with the approval of the civil service commission and in accordance with the state civil service law and regulations, on July 11, 1911, Mr. Fred P. Downing was promoted from the position of assistant chemist in the dairy and food department to the position of chief inspector of weights and measures. A state normal school graduate and a graduate of the University of Wisconsin, with four years of service as assistant chemist in the laboratory of the dairy and food department, he was well equipped for undertaking the duties of the office to which he was appointed. September 18, 1911, Miss Ethel D. Thomas, who had for nearly six years been employed as stenographer and confidential clerk in the office of the dairy and food commission, was transferred in accordance with the civil service law and regulations to the position of stenographer in the office of weights and measures. November 6, 1911, John E. Boettcher of Janesville, Henry L. Bornheimer of Jefferson, George Warner of Wausau, William Winder of Richland Center, and W. A. Voigt of Eau Claire, having been duly appointed dairy and food inspectors, were under authority of law designated to act ex officio as state sealers of weights and measures. Likewise, on January 25, 1912, Walter Kramer of Chilton, having been duly appointed dairy and food inspector, was designated to act ex officio as state sealer of weights and measures. Since these dates these appointees have devoted their entire time to the work of enforcement of the weights and measures law.

In July, 1911, a booklet containing the new weights and

measures law was published for distribution throughout the state to parties in interest, and in October of the same year a booklet of instructions for weights and measures officials was prepared and published in compliance with the requirements of law. "Specifications for city and state working standard weights and measures and apparatus for the sealers of the state of Wisconsin" were prepared and published in compliance with the requirements of law. Dealers in standards were provided with copies of this booklet.

Finding the terms of the law ambiguous as to the relation of the office of weights and measures to that of the office of the dairy and food commissioner, on July 20, 1911, a letter of inquiry was directed to the attorney general concerning this matter, and on August 7 an opinion was received from the attorney general's office as follows:

"Receipt of yours of July 20th is acknowledged. You have invited my attention to certain provisions of chapter 566 of the laws of 1911 and desire my opinion on the construction that should be placed upon it.

In paragraph 1 of section 1659, the Dairy and Food Commissioner is made ex officio State Superintendent of Weights and Measures and is authorized to appoint a chief inspector of weights and measures and one stenographer. He is also authorized to appoint not more than five additional dairy and food inspectors, at a salary not to exceed twelve hundred dollars per year and necessary traveling expenses.

You call my attention to the fact that no specific provision is made in said chapter 566 for compensation or for traveling expenses of the ex officio State Superintendent of Weights and Measures, or for traveling expenses of the ex officio sealer of weights and measures. You inquire whether the provisions of the statutes for traveling expenses of these officers and the assistant dairy and food commissioners, etc., extend to the services of these officials when acting in their ex officio capacity.

In answer I will say that in my opinion the traveling expenses provided for for the dairy and food commissioners and the dairy and food inspectors must be construed as applying to these officers when acting as sealers of weights and measures. You will notice that the Chief Inspector of Weights and Measures, under section 1659, is expressly given a salary and traveling expenses and that the stenographer provided for for the office of Superintendent of Weights and Measures is given a salary. It seems very evident that the Legislature did not provide additional salaries and additional traveling expenses for the Superintendent of Weights and Measures and the authorized ex officio sealers of weights and measures, as it was believed that these were already provided for in the statutes allowing traveling expenses for their services as appointees under the Dairy and Food Commissioner.

While courts have in certain cases held that, where an officer is ex officio the holder of another office, he may, under such provision, be held to hold two offices when there are special reasons apparent in the statute why such construction should be given, still, the other rule has often been followed: that the two offices are merged and the second office, which is held by virtue of the first, is simply an

extension of the duties of the other.

It seems to me that the intention of the legislature is so apparent that there can be no question regarding it. Any other construction would lead to the absurdity that it would be impossible to carry out the provisions of this law for lack of an appropriation for the necessary traveling expenses.

You also inquire whether the five additional dairy and food inspectors whom you are authorized to appoint as Dairy and Food Commissioner may be designated by you as ex officio sealers of weights and measures.

This question must, I believe, also be answered in the affirmative. Under the various statutes pertaining to your office you have been authorized to appoint cheese factory, dairy and food inspectors and creamery and dairy and food inspectors, and said chapter 566 authorizes you to appoint five additional dairy and food inspectors. Under section 1662 it is provided that such assistant dairy and food inspectors and such cheese factory, dairy and food inspectors and such creamery and dairy and food inspectors as may from time to time be designated by the Superintendent of Weights and Measures shall act ex officio as sealers of weights and measures, with like authority, powers and duties as are prescribed for city sealers.

It seems very apparent, and is clear to my mind, that the legislature, by the provisions of the statute quoted and other provisions of chapter 566, merely intended that you could designate any or all of the five dairy and food commissioners provided for by said section 1659, subdivision 1, and any or all of the cheese factory, dairy and food inspectors and creamery and dairy and food inspectors as inspectors of weights and measures.

You also inquire whether, as Superintendent of Weights and Measures, you are authorized and given the necessary printing to carry out the provisions of said section. You call my attention to the fact that you are given the necessary printing for the office of Dairy and Food Commissioner, but that chapter 566 does not mention printing.

"In view of the fact that under section 1670b there is appropriated out of any money in the state treasury not otherwise appropriated, a sum sufficient to carry out the provisions of sections 1658 to 1670a inclusive and, in view of the fact that you are ex officio Superintendent of Weights and Measures and that the printing is expressly granted to you as Dairy and Food Commissioner, I am of the opinion that you are entitled to the necessary printing for the office of Superintendent of Weights and Measures. It would be impossible, as I understand, to carry out the duties imposed upon you as Superintendent of Weights and Measures, if you were not permitted to have the necessary printing. This statute must receive a reasonable construction, so as to render it effective."

As a preparation for the work of inspecting and sealing of weights and measures and of an effective enforcement of the many provisions of the new weights and measures statute, a careful study was made of the systems existing in other states and in some of the larger cities having effective weights and measures departments. New York, Chicago, Milwaukee and other places were visited and their methods of inspection and sealing and law enforcement carefully and critically studied. In addition to this, a study was made of the methods of man-

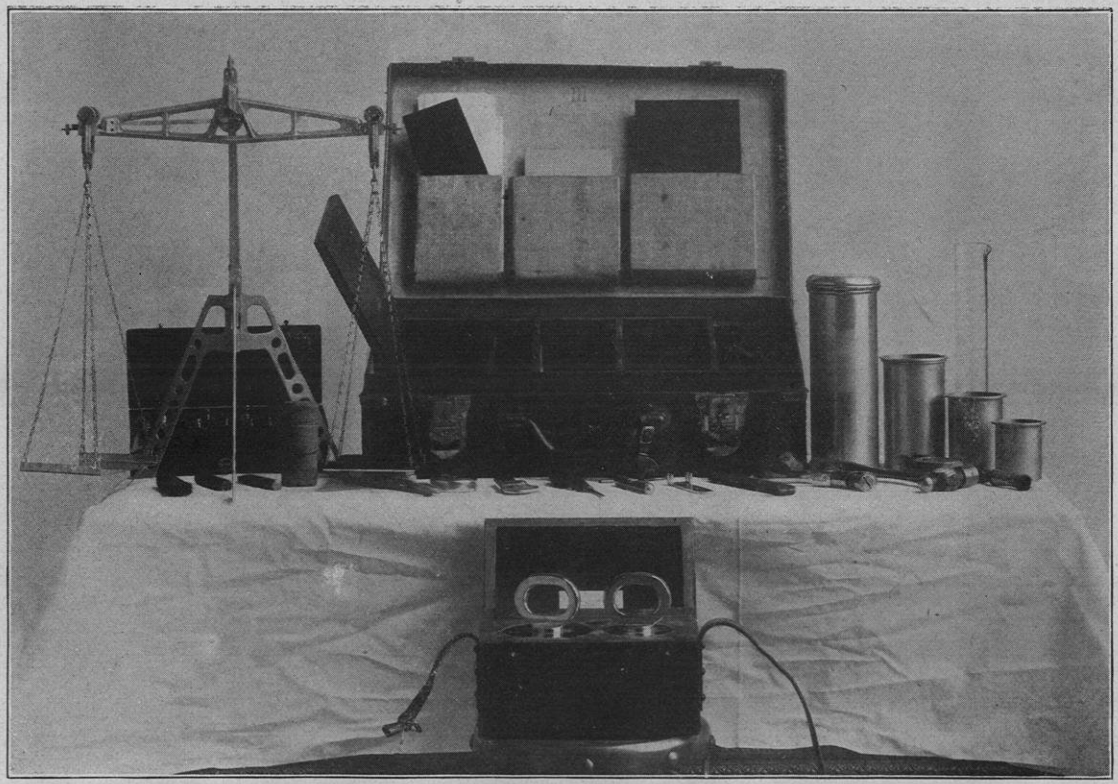


FIG. 10.—SEALER'S PORTABLE OUTFIT FOR LIGHT INSPECTION WORK, WEIGHT 60 LBS.

ufacture of scales in several of the larger establishments devoted to the manufacture of scales and measures. The laws and regulations effective in other states were carefully studied, and the suggestions of the officials entrusted with the enforcement of such laws were given very careful consideration.

As soon as a suitable room was made available for the office of weights and measures, the old state standards were transferred from the engineering building of the University of Wisconsin to the new quarters provided in the state capitol. These standards included balances, weights and measures furnished to the state of Wisconsin by the United States, pursuant to the several acts of congress. These standards also included a few purchases that had been made by the former state sealer of weights and measures, Professor Leonard Smith of the University of Wisconsin. As these standards were inadequate for the full performance of the duties of the state superintendent of weights and measures as prescribed by the new law, and as there were no working standards, it became necessary to make a careful selection and purchase of additional standards and other appliances, and adequate equipment has been provided.

The state sealers have been provided with portable sealing outfits carefully designed so that the greater portion of such outfits can be carried in one leather case, 20″x14″x5½″. These outfits are for what is designated as light work in sealing. For heavy work, that is for the testing and sealing of dormant platform and wagon scales, a much more difficult problem has presented itself. For the doing of this work not less than 1000 lbs. of weights are absolutely necessary. The transportation of these weights from place to place where the testing and sealing is required is a source of large expense. The problem thus presented calls for some more satisfactory solution than is possible by means now afforded the state superintendent of weights and measures under existing law.

It is the judgment of those who have been doing the work of heavy weight sealing,—and so great is this work that only a comparative beginning has been made,—that with the present available force in the office of weights and measures, approximately ten years would be required to complete the first inspection throughout the state.

The duties of the office of weights and measures as pre-

scribed by law embrace not only a general supervision of the work done by the city sealers of weights and measures in cities of more than 5000 inhabitants, but also the actual inspecting, sealing or condemning in all territory of the state outside of cities containing more than 5000 population. The work thus imposed upon this department is simply enormous and the provision made for the doing of that work is utterly inadequate.

The weights and measures law of 1911 was the result of an earnest effort on the part of the legislature in response to a public demand to secure just and effective regulation. The information as to the actual conditions was meager and fragmentary. It was anticipated at the time that one effect of the law which was enacted would be to secure more exact information as to conditions which would be the basis of such modifications of the law as might be required that the law might more effectively fulfill the purposes for which it was intended, to-wit: to protect the public and secure fair dealing in trade with the least hardship possible to producers and dealers. In the main, the administration of the law has proved that its provisions are wise and effective. Its administration has also proved that there are some serious defects calling for correction. Probably the most serious defect in the law is its lack of an adequate force for its prompt and effective enforcement.

Much time and effort have been spent by the chief inspector of weights and measures in directing the attention of the proper city authorities to the provisions of the new weights and measures law and clearing up misapprehension that seemed to exist relative to the matter of city sealers and their duties. Considerable time has also been given to these cities by other sealers belonging to the office of the state superintendent of weights and measures. In a number of cases city councils have fixed the salary of the city sealer so low that competent men have refused to accept the position. It is apparent that the purposes of the law may be thus defeated through the adoption by the councils of a niggardly policy. This suggests that if this work is to be successfully accomplished in the interests of the great mass of the people, a minimum graduated salary for city sealers should be fixed by the legislature.

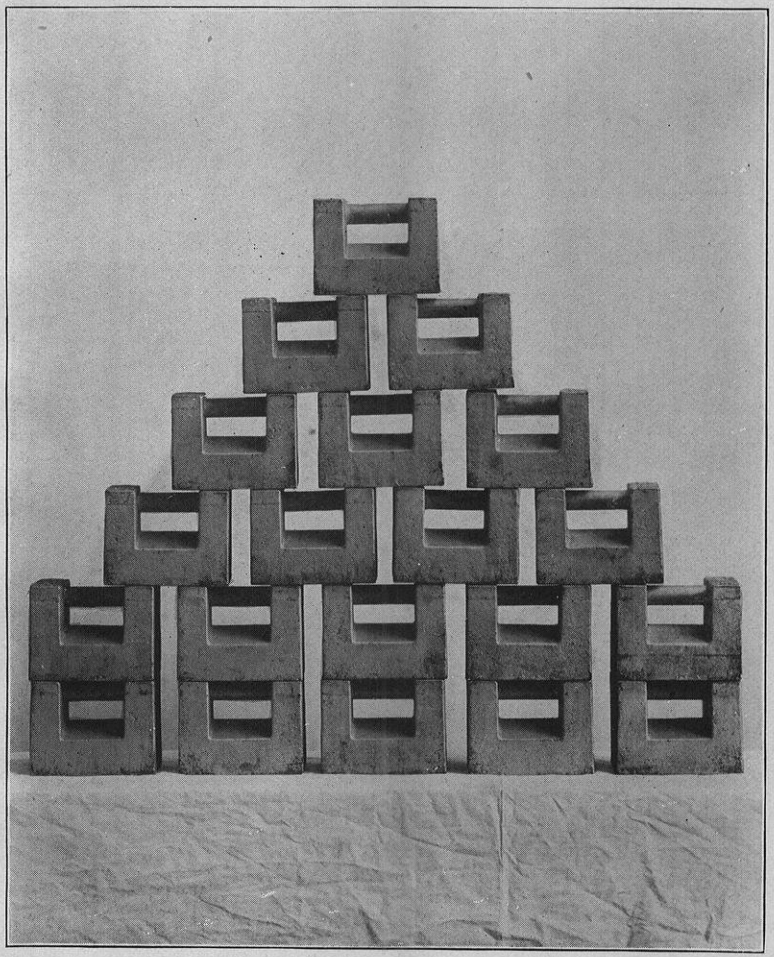


FIG. 11.—SEALER'S PORTABLE OUTFIT FOR TESTING WAGON AND PLATFORM SCALES, TWENTY 50-LB. WEIGHTS.

FIG 12.—CONFISCATED WEIGHTS AND MEASURES, OSHKOSH.

Of the thirty-six cities in Wisconsin having a population of more than 5000 inhabitants, according to the last official United States census, wherein section 1661 of the statutes requires that there shall be a city sealer of weights and measures appointed by the mayor from a list to be furnished by the state or local civil service board and under the rules of said board, such appointments have been made in twenty-eight of those cities up to June 30, 1912. It is expected that within the near future the terms of this statute will have been complied with by all of these cities.

Up to and including June 30, 1912, there have been made 34,591 first inspections and tests of different scales, weights and measures, with the result that 28.9% of that number was found inaccurate. The total number of second inspections or re-inspections is 3,824, of which number only 12.9% was found incorrect. It is thus shown that the per cent of inaccurate weighing and measuring appliances has been reduced from 28.9% to 12.9%. The number of office tests was 3,879, making a total number of 42,294 tests of all kinds.

The city of Milwaukee has for a number of years maintained an efficient city department of weights and measures. In his report for the year ending December 31, 1911, the city sealer of Milwaukee estimates that on twenty-four ordinary commodities of common use, his department made a saving to the consumers for that year of $319,500. As the population of the territory over which the state department of weights and measures has direct jurisdiction is 3.9 times the population of the city of Milwaukee, it is a fair inference that an equally effective enforcement of the weights and measures law throughout that territory will effect an annual saving to the consumers of that territory on the twenty-four commodities designated by the Milwaukee city sealer of weights and measures of 3.9 times the annual saving in Milwaukee or approximately one and a quarter million dollars, and on all the other commodities bought and sold a sum vastly more. Moreover the enforcement of the weights and measures law in the cities of the state is rendered much more effective by the supervision given by the office of the state superintendent of weights and measures.

Following is a list of cities and villages where weights and measures have been tested and either sealed or condemned as required by the terms of the law up to June 30, 1912:

Ableman
Albany
Allenton
Aniwa
Arena
Argyle
Avalon
Avoca
Bagley
Baldwin
Bangor
Barneveld
Basco
Bassett
Belgium
Belleville
Benton
Berlin
Birnamwood
Black Earth
Blanchardville
Bloomer
Blue Mounds
Blue River
Boaz
Boscobel
Brandon
Bridgeport
Bristol
Brodhead
Brookfield
Brooklyn
Browntown
Burke
Burlington
Byron
Caledonia
Calhoun
Cambria
Cambridge
Cashton
Cassville
Cedar Grove
Chilton
Cleveland
Clinton
Clintonville
Cobb
Collins
Corliss
Cottage Grove
Cross Plains
Cuba
Cudahy
Dane
Darien
Deerfield
Delafield
Delavan
DeSoto
Dodgeville
Dousman
Eagle
East Troy
Eau Claire
Edgerton
Edmund
Eland

Elkhorn
Elk Mound
Elmhurst
Elroy
Embarrass
Endeavor
Evansville
Fairwater
Fennimore
Ferryville
Fond du Lac
Fontana
Footville
Fort Atkinson
Fox Lake
Franksville
Gays Mills
Genesee
Genoa
Genoa Junction
Glendale
Glen Haven
Gotham
Grafton
Granville
Green Bay
Hales Corners
Hanover
Hartford
Hartland
Hazel Green
Helenville
Hersey
Highland
Hika
Hilbert
Hillsboro
Holiandale
Honey Creek
Horicon
Iron Ridge
Ixonia
Janesville
Jefferson
Johnson Creek
Jonesdale
Juda
Junction City
Kansasville
Kendall
Kenosha
Klevenville
Knapp
Koshkonong
La Farge
Lake Beulah
Lake Geneva
Lake Mills
Lancaster
Lannon
La Valle
Leon
Lima Center
Linden
Livingston
Lodi
London
Lone Rock

Lynxville
Lyons
Macfarland
Madison
Marinette
Marion
Markesan
Marshall
Mather
Mayville
Mazomanie
Melvina
Menomonee Falls
Merrimac
Merton
Middleton
Milton
Milton Junction
Minnesota Junction
Monroe
Montfort
Monticello
Mosinee
Mount Horeb
Mukwonago
Muscoda
Muskego
Nashotah
Neenah
New Glarus
New London
North Freedom
North Lake
North Milwaukee
North Prairie
Norwalk
Oakwood
Oconomowoc
Oconto
Okauchee
Omro
Oostburg
Oregon
Orfordville
Otjen (Carrolville)
Palmyra
Petersburg
Pewaukee
Pickett
Platteville
Pleasant Prairie
Port Washington
Potosi
Potter
Prairie du Chien
Prairie du Sac
Racine
Randolph
Reedstown
Reedsburg
Rewey
Richfield
Richland Center
Ridgeway
Riley
Ripon
Rochester
Rockland

Rolling Prairie
Rusk
St. Francis
Salem
Sauk City
Schleisingerville
Schofield
Sharon
Sheboygan Falls
Sherwood
Shullsburg
Silver Lake
Soldiers Grove
Somers
So. Germantown
Sparta
Split Rock
Springfield
Spring Green
Steuben
Stevens Point
Stitzer
Stoddard
Stoughton
Sugar Bush
Sullivan
Sun Prairie
Sussex
Templeton
Tiffany
Tigerton
Trevor
Troy Center
Twin Bluffs
Twin Lakes
Two Rivers
Union Center
Union Grove
Valders
Verona
Viola
Viroqua
Walworth
Waterford
Waterloo
Watertown
Waunakee
Waupun
Wauwatosa
Wauzeka
Welcome
Westby
West Salem
Wheatland
Whitcomb
Whitewater
Williams Bay
Wilson
Wilton
Winneconne
Wittenberg
Wonewoc
Woodford
Woodland
Woodman
Woodville
Woodworth
Zenda

More detailed information relating to the work of this department will be found in the report of the chief inspector of weights and measures, Mr. F. P. Downing, published elsewhere in this volume.

FIG. 13.—LIQUID MEASURES UNLAWFULLY USED FOR MEASURING DRY COMMODITIES, AND BOTTOMLESS MEASURES SEIZED BY STATE SEALERS.

CONVICTIONS.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1910.				
July 5	M. L. Drake, Poynette	Selling adulterated white lead	Frank Heidt, Portage	$25 and costs.
July 5	Keebaugh & Delaney, Poynette	Selling adulterated white lead	Frank Heidt, Portage	$25 and costs.
Aug. 6	A. R. Nitz, Milwaukee	Selling pop containing saccharin	N. B. Neelen, Milwaukee	$25 and costs.
Aug. 31	Ernest Bartling, Riley	**Selling adulterated milk**	A. Donovan, Madison	$25 and costs.
Sept. 12	Henry Dolski, Green Lake	**Selling adulterated milk**	Fred Engelbracht, Berlin	$25 and costs.
Sept. 13	Albert Eichhorst, Stevens Point	Selling adulterated milk	J. A. Murat, Stevens Point	$25 and costs.
Sept. 15	Edward Stuelke, Lake Mills	Selling adulterated milk	W. D. Stacy, Watertown	$25 and costs.
Sept. 22	Roy Potter, Cofferville, Kans.	Serving oleomargarine for butter (State Fair Grounds)	M. Blenski, Milwaukee	$50 and costs.
Oct. 1	Fred Kratz, New Franken	Delivering adulterated milk to a cheese factory	N. J. Monahan, Green Bay	$25 and costs.
Oct. 4	Chas. Stobb, Menomonie	Offering for sale and selling unsanitary milk to a cheese factory	P. B. Clark, Menomonie	$25 and costs.
Oct. 11	Frank Aherns, Prairie du Chien	Selling adulterated milk	C. H. Speck, Prairie du Chien	$25 and costs.
Oct. 19	Fred J. Rasmussen, Oconto	Selling adulterated cream	J. A. Dunlevy, Oconto	$25 and costs.
Oct. 22	D. Sorensen, Oconto	Selling adulterated milk	J. A. Dunlevy, Oconto	$25 and costs.
Oct. 22	J. A. Dearth, Owen	Selling adulterated cream	W. A. Campman, Neillsville	$25 and costs.
Nov. 4	Aug. C. Brandt, Monroe	Selling adulterated milk	W. T. Saucerman, Monroe	$25 and costs.
Nov. 7	J. M. Jensen, Independence	Maintaining cheese factory and utensils in an unclean and unsanitary condition	Jacob Jackson, Independence	$25 and costs.
Nov. 11	John Burns, Livingston	Selling adulterated milk	S. Thanhauser, Lancaster	$25 and costs.
Nov. 17	Jas. Hanley, Hurley	Selling adulterated milk	Griffith Thomas, Hurley	$25 and costs.
Nov. 18	John Hart, Evansville	Selling adulterated milk	C. L. Fifield, Janesville	$25 and costs.
Nov. 18	Howard Edwards, Evansville	Selling adulterated milk	C. L. Fifield, Janesville	$25 and costs.
Nov. 19	Fred Shutz, Evansville	Delivering adulterated milk to a creamery	C. L. Fifield, Janesville	$25 and costs.
Nov. 19	Chas. Webb, Evansville	Delivering adulterated milk to a creamery	C. L. Fifield, Janesville	$25 and costs.
Nov. 19	Frank Haasl, Park Falls	Selling adulterated milk	F. W. Sackett, Phillips	*$25 and costs.
Nov. 23	Peter Mader, Oshkosh	Maintaining cream separator in unsanitary condition	S. D. Baird, Neenah	$25 and costs.

* Pleaded *nolo contendere.*

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge	Fine or forfeiture.
1910.				
Nov. 24	Peter DeBoer, Midway	Selling adulterated milk	John Brindley, La Crosse	$25 and costs.
Nov. 25	Mike Hahn, Sturgeon Bay	Delivering adulterated milk	H. H. Reynolds, Sturgeon Bay	$25 and costs.
Nov. 30	Henry Klackner, Manitowoc	Selling adulterated cream	John Chloupek, Manitowoc	$25 and costs.
Dec. 2	A. F. Schmidt, Superior	Selling adulterated cream	F. S. Parker, Superior	$25 and costs.
Dec. 2	Chas. H. Russell, Superior (Russell Creamery Co.)	Selling adulterated milk	F. S. Parker, Superior	$25 and costs.
Dec. 6	T. J. Paulson, Superior	Selling adulterated milk	John Brindley, La Crosse	$25 and costs.
Dec. 7	C. H. Baker, La Crosse	Selling adulterated cream	A. Weimann, Iola	$25 and costs.
Dec. 9	W. M. Ellis, Northport	Selling adulterated milk	F. S. Parker, Superior	$25 and costs.
Dec. 13	John Lund, Superior	Selling adulterated milk	Chas. Hahn, Marshfield	$25 and costs.
Dec. 13	Fred Mews, Auburndale	Delivering unsanitary cream to a creamery	John Brindley, La Crosse	$25 and costs.
Dec. 14	Wm. Newburg, La Crosse	Selling adulterated cream	John Brindley, La Crosse	$25 and costs.
Dec. 14	Fred Hass, La Crosse	Selling adulterated cream	A. Donovan, Madison	$25 and costs.
Dec. 14	E. M. Holton, Madison	Selling adulterated cream	C. S. Briggs, Wautoma	$25 and costs.
Dec. 14	E. M. Coville, Red Granite	Delivering unsanitary cream to a creamery	F. S. Parker, Superior	$25 and costs.
Dec. 14	C. C. Simon, Superior	Selling adulterated cream	F. S. Parker, Superior	$25 and costs.
Dec. 15	Chas. Carlson, Superior	Selling adulterated cream	W. D. Stacy, Watertown	$25 and costs.
Dec. 17	Henry F. Kleist, Watertown	Selling adulterated cream	C. S. Briggs, Wautoma	$25 and costs.
Dec. 21	J. C. Hanawalt, Wild Rose	Delivering unsanitary cream to a creamery	C. W. Burrows, Lancaster	$25 and costs.
Dec. 22	Al. Hunsaker, Lancaster	Selling adulterated cream	A. H. Goss, Oshkosh	$25 and costs.
Dec. 23	Albert Klug, Oshkosh	Exposing for sale meat not properly protected from filth, etc.	F. W. Jenkins, Chippewa Falls	$25 and costs.
Dec. 28	John Rice, Chippewa Falls	Selling a diseased fowl	C. W. Burrows, Lancaster	$25 and costs.
Dec. 31	J. H. Paul, Platteville	Selling adulterated cream	E. N. Pomainville, Grand Rapids	$25 and costs.
1911.				
Jan. 7	J. R. Merriam, Grand Rapids	Selling adulterated milk	A. Donovan, Madison	$25 and costs.
Jan. 12	Matt. V. Schmitz, Waunakee	Selling adulterated linseed oil	Nicholas Hess, New Lisbon	$25 and costs.
Jan. 18	M. L. Shakman, New Lisbon	Selling a compound of lard and cotton-seed oil for lard	W. H. Miller, Richland Center	$25 and costs.
Jan. 19	Gus. Gilbertson, Lone Rock	Selling adulterated white lead	Thos. Ryan, Appleton	$25 and costs.
Jan. 30	Henry Towsley, South Kaukauna	Selling adulterated milk	Wisconsin Supreme Court. Appealed from Circuit Court of Portage Co.	$100 and costs.
Jan. 31	Wm. Welch, Stevens Point	Serving oleomargarine at lunch counter without notifying guest same was not butter		

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1911.				
Feb. 7	G. M. Rohrer, Cochrane.....	Selling adulterated buckwheat flour.....	J. S. McCabe, Alma.....	$25 and costs.
Mar. 11	John Fox, Avoca.....	Selling adulterated milk.....	Josiah Ward, Avoca.....	$25 and costs.
Mar. 11	Chris. Kraak, Avoca.....	Removing cream from milk at factory without consent of owner thereof	Josiah Ward, Avoca.....	$25 and costs.
Mar. 21	Frank Wreidt, Elkhart Lake....	Furnishing unsanitary milk to a cheese factory	D. Mahlsted, Plymouth.....	$25 and costs.
Mar. 23	Garrett TenDollen, Oostburg.....	Operating a cheese factory in an unclean and unsanitary condition	D. Mahlsted, Plymouth.....	$25 and costs.
Mar. 29	John Wintermardt, (clerk for The Gonger-Grotophorst Co.) Prairie du Sac.	Selling adulterated linseed oil.....	L. H. Halsted, Baraboo.....	$25 and costs.
Mar. 29	Fred Meintz, Luxembourg.....	Selling milk from cows kept in filthy stables	J. H. DeWane, Kewaunee.....	$25 and costs.
April 8	H. L. Platte, Prescott.....	Selling maple syrup misbranded as to weight	R. L. Canfield, Ellsworth.....	$25 and costs.
April 12	Jos. Sook, Campbellsport.....	Having in possession with intent to sell ing unsanitary milk	J. M. Kohler, Campbellsport.....	$25 and costs.
April 14	Wm. Jaeger, Campbellsport.....	Having in possession with intent to sell unsanitary milk	J. M. Kohler, Campbellsport.....	$25 and costs.
April 24	Chas. Hundertmark, Oconto Falls	Having and exposing for sale meat and meat products not protected from filth, flies, etc.	J. A. Dunlevy, Oconto.....	$25 and costs.
April 28	Frank Townsend, Rush Lake....	Maintaining cream separator premises in unsanitary condition	A. H. Goss, Oshkosh.....	$25 and costs.
April 28	Melchoir Kalscheur, Middleton...	Operating a creamery in unsanitary condition	A. Donovan, Madison.....	$50 and costs.
April 29	John Dick, Middleton.....	Storing and selling meat not protected from filth, dust, etc., and in unsanitary condition	A. Donovan, Madison.....	$50 and costs.
May 1	W. G. Smith, Brandon.....	Manufacturing for sale butter from unsanitary cream.	H. M. Older, Ripon.....	$10 and costs.
May 2	Theo. Madenwaldt, Merrill.....	Preparing meat for sale under unclean and unsanitary conditions	M. C. Porter, Merrill.....	$25 and costs.
May 8	J. Saftie, Kenosha (Agent for Cudahy Bros.)	Selling sausage with cereal for sausage	C. E. Randall, Kenosha.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1911.				
May 8	Thos. English, Kenosha (Agent for Cudahy Bros.).	Selling sausage with cereal for sausage	C. E. Randall, Kenosha.....	$25 and costs.
May 9	Robt. Boldus, Racine (Agent for Cudahy Bros.)	Selling sausage with cereal for sausage	Geo. Schmieding, Racine	$25 and costs.
May 9	Emil Just, Port Washington (Agent for Cudahy Bros.)	Selling sausage with cereal for sausage..	N. Wilson, Port Washington.....	$25 and costs.
May 11	Jos. Raymond, Arnott.....	Offering for sale and delivering unsanitary milk to a creamery	G. L. Park, Stevens Point.....	$25 and costs.
May 12	Wm. Kobernik, Green Lake.....	Maintaining cream separator in unsanitary condition	H. E. Megow, Princeton.....	$25 and costs.
May 19	J. E. Corcoran, Fond du Lac	Offering for sale unsanitary milk.....	D. F. Blewett, Fond du Lac.....	$25 and costs.
May 20	J. A. Bryan, Portage.....	Preparing for sale sausage not protected from filth, flies, dust, etc.	E. S. Baker, Portage.....	$25 and costs.
May 22	R. F. Kohlman, Fond du Lac	Maintaining cheese factory premises and utensils in unsanitary condition	R. C. Fairbank, Fond du Lac.....	$75 and costs.
May 24	Fred Handt, Chippewa Falls.....	Exposing for sale meat under unclean, unhealthful and unsanitary conditions	F. W. Jenkins, Chippewa Falls....	$25 and costs.
May	N. Hetsinger, Sheboygan.....	Selling sausage containing cereal for sausage	J. M. Giblin, Sheboygan.....	Sentence suspended on payment of cost.
May 31	Chas. Luebcke, Middleton.....	Selling adulterated milk.....	A. Donovan, Madison.....	$25 and costs.
June 5	John Lloyd, Menasha.....	Preparing for sale meat and sausage not protected from filth, flies, dust, etc.	S. D. Baird, Neenah.....	$60 and costs.
June 6	Stanley Gavre, Nekoosa.....	Maintaining an unclean, and unsanitary meat market	Burton L. Brown, Grand Rapids..	$25 and costs.
June 12	Emil Draheim, Markesan.....	Offering for sale unsanitary cream.....	H. A. Price, Markesan.....	$25 and costs.
June 15	Arthur Jenks, Loyal.....	Maintaining and operating a creamery in unclean and unsanitary condition	Wm. Mills, Loyal.....	$25 and costs.
June 22	Frank and Anton Kemmer, Madison	Preparing for sale meat not protected from filth, dust, flies, etc.	A. Donovan, Madison.....	$25 and costs.
June 23	Chas. Densmore, Blair.....	Selling unsanitary cream.....	I. H. Ecker, White hall.....	$25 and costs.
June 28	Julius Splitgerber, Shawano.....	Selling adulterated milk.....	John Alft, Shawano	$25 and costs.
June 29	Edward Schultz, Welcome.....	Maintaining an unclean and unsanitary cheese factory	Daniel Coughlin, Marion.....	$25 and costs.
June 29	John Mattson, St. Croix Falls...	Maintaining creamery and apparatus in unclean and filthy condition.	J. A. Sleeper, Osceola.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1911.				
June 29	Morris Lawdahl, Dresser Junction	Maintaining creamery and apparatus in unclean and filthy condition	J. A. Sleeper, Osceola.....	$25 and costs.
July 1	Wm. Hosli, Clayton.....	Maintaining cheese factory premises and apparatus in unclean and filthy condition	J. A. Sleeper, Osceola.....	$25 and costs.
July 1	Oscar Eckwald, Clayton.....	Selling unsanitary milk in dirty cans....	J. A. Sleeper, Osceola.....	$25 and costs.
July 1	Jos. Mertens, Kiel.....	Offering unsanitary milk to a cheese factory	Wm. Rothman, Chilton.....	$25 and costs.
July 3	Wolfgang Kolbeck, Marshfield....	Delivering unsanitary milk to a creamery	B. L. Brown, Grand Rapids.....	$25 and costs.
July 3	M. E. O'Neil, Green Bay.....	Selling canned cherries containing sulphur dioxide and artificial coloring and not true to name	N. J. Monahan, Green Bay.....	Sentence suspended on payment of costs.
July 7	J. G. Funk, Racine.....	Selling adulterated cream.....	Wm. Smieding, Racine.....	$25 and costs.
July 7	Vincent Dvorack, Racine.....	Selling adulterated milk.....	Wm. Smieding, Racine.....	$25 and costs.
July 19	B. Hermann, Milwaukee (Prop. Blue Ribbon Bottling Works)	Selling pop containing saccharin.....	N. B. Neelen, Milwaukee.....	$25 and costs.
July 24	J. M. Wolfmeyer, Brillion.....	Maintaining cheese factory premises and utensils in unsanitary condition	Wm. Rothman, Chilton.....	$25 and costs.
July 24	Arthur Bastian, Brillion.....	Maintaining cheese factory premises in unsanitary condition	Wm. Rothman, Chilton.....	$25 and costs.
July 27	J. F. Kennedy, Fond du Lac....	Maintaining cheese factory premises and utensils in unsanitary condition	D. F. Blewett, Fond du Lac.....	$25 and costs.
July 27	Simon Hoerl, Malone.....	Maintaining creamery premises in unsanitary condition	R. C. Fairbank, Fond du Lac....	$25 and costs.
July 27	D. Bonshek, Milwaukee.....	Selling pop containing saccharin.....	N. B. Neelen, Milwaukee.....	Sentence suspended on payment of costs.
July 27	Jas. Kufka, Edgar.....	Manufacturing cheese in unsanitary factory and with unclean utensils	L. Marchetti, Wausau.....	$30 and costs.
July 29	Fred Zimmerli, Medford.....	Delivering unsanitary milk to a cheese factory	W. W. Case, Medford.....	$25 and costs.
Aug. 3	John Hoerig, Rubicon.....	Offering for sale and delivering milk in dirty cans	Arthur A. Hauser, Rubicon.....	$25 and costs.
Aug. 4	Jos. Peters, Rubicon.....	Offering for sale and delivering milk in dirty cans	Arthur A. Hauser, Rubicon.....	$25 and costs.
Aug. 4	Edward Freitag, Forest Junction	Offering for sale unsanitary milk.....	E. E. Curtis, New Holstein.....	$25 and costs.
Aug. 5	Patrick Feeley, Arnott.....	Delivering unsanitary milk to a creamery	G. L. Park, Stevens Point.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1911.				
Aug. 5	Martin Magor, Arnott.....	Delivering unsanitary milk to a creamery	G. L. Park, Stevens Point.....	$25 and costs.
Aug. 5	Timothy J. Leary, Arnott.....	Delivering unsanitary milk to a creamery in unsanitary cans	G. L. Park, Stevens Point.....	$25 and costs.
Aug. 7	Ernst Kendler, New Holstein....	Offering unsanitary milk to a cheese factory	D. F. Blewett, Fond du Lac.....	$25 and costs.
Aug. 7	John J. Steiner, New Holstein....	Offering unsanitary milk to a cheese factory	R. C. Fairbank, Fond du Lac....	$25 and costs.
Aug. 9	B. Shapiro, Madison.....	Conducting a meat market in unsanitary condition	A. Donovan, Madison.....	$25 and costs.
Aug. 10	Kenneth Peabody, Star Prairie..	Maintaining in unclean condition premises where cheese and butter are made	J. A. Sleeper, Osceola.....	$25 and costs.
Aug. 11	Elmer Tarmaat, Plymouth.....	Maintaining cheese factory premises and utensils in unsanitary condition	D. Mahlsted, Plymouth.....	$25 and costs.
Aug. 12	E. E. Smith, La Crosse.....	Maintaining utensils used for dairy products in unsanitary condition	John Brindley, La Crosse.....	$25 and costs.
Aug. 14	John Hardimon, Fond du Lac....	Offering for sale unsanitary milk.....	R. C. Fairbank, Fond du Lac.....	$25 and costs.
Aug. 15	Wm. DeSmidt, Sheboygan.....	Offering for sale unsanitary milk.....	J. M. Giblin, Sheboygan.....	$25 and costs.
Aug. 15	Wm. Klink, Rubicon.....	Delivering and offering for sale milk in unclean cans	Arthur A. Hauser, Rubicon.....	$25 and costs.
Aug. 15	Ben Hahn, Rubicon.....	Delivering and offering for sale milk in unclean cans	Arthur A. Hauser, Rubicon.....	$25 and costs.
Aug. 16	Fred Jens, Sr., Plymouth.....	Offering unsanitary milk to a cheese factory	Adam Trester, Sheboygan.....	$25 and costs.
Aug. 17	Herman Ebenreiter, Sheboygan..	Offering for sale unsanitary milk.....	J. M. Giblin, Sheboygan.....	$25 and costs.
Aug. 17	Herman Reich, Watertown.....	Maintaining an unsanitary cheese factory	W. D. Stacy, Watertown.....	$25 and costs.
Aug. 18	Jacob Lemahieu, Oostburg.....	Maintaining cheese factory premises and utensils in unsanitary condition	Adam Trester, Sheboygan.....	$25 and costs.
Aug. 18	Gerhard Opgenorth	Offering for sale unsanitary milk.....	J. M. Giblin, Sheboygan.....	$25 and costs
Aug. 21	E. L. Schneider, Brillion.....	Offering and exposing for sale meat from a diseased animal	Wm. Koch, Brillion.....	$50 and costs
Aug. 24	Kurt Wiegert, Greenleaf.....	Maintaining unclean and unsanitary cheese factory	N. J. Monahan, Green Bay.....	$25 and costs.
Aug. 24	Edward Kopp, Maiden Rock.....	Maintaining cheese factory and utensils in unclean and filthy condition	C. Fenton, Ellsworth.....	$25 and costs.
Aug. 28	Jacob Bines, Sheboygan.....	Offering for sale unsanitary milk.....	J. M. Giblin, Sheboygan.....	$25 and costs.
Aug. 28	George S. Uebele, Tomah.....	Selling adulterated boiled linseed oil.....	O. J. Jackson, Sparta.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1911.				
Aug. 29	Theo. Stamatakus, Eau Claire....	Refusing to deliver to dairy and food inspector sample of food for analysis	Henry McBain, Eau Claire.....	$25 and costs.
Sept. 1	Edward Crye, Boscobel.....	Manufacturing an article of food under unsanitary conditions	C. C. Chase, Prairie du Chien....	$25 and costs.
Sept. 2	Jacob Muhlenbach, New Holstein	Offering for sale unsanitary milk.....	D. F. Blewett, Fond du Lac.....	$25 and costs.
Sept. 2	C. Mueller, Monroe.....	Selling adulterated milk.....	W. T. Saucerman, Monroe.....	$25 and costs.
Sept. 5	N. J. Moon, Sr., Oshkosh.....	Offering for sale unsanitary milk.....	A. H. Goss, Oshkosh.....	$25 and costs.
Sept. 6	Fred A. Zauk, Augusta.....	Offering for sale unsanitary milk.....	J. F. Ellis, Eau Claire.....	$25 and costs.
Sept. 7	Chas. Joslin, Sheboygan Falls..	Furnishing unsanitary milk to a cheese factory	Adam Trester, Sheboygan.....	$25 and costs.
Sept. 7	Arthur Leighton, Sheboygan Falls	Offering for sale unsanitary milk.....	D. Mahlsted, Plymouth.....	$25 and costs.
Sept. 9	Michael Harlow, Chilton.....	Offering for sale unsanitary milk.....	E. E. Curtis, New Holstein.....	$25 and costs.
Sept. 9	Barnard Block, Mellen.....	Offering and exposing for sale meat in unclean and unsanitary premises	John Garvin, Ashland.....	$25 and costs.
Sept. 11	Anton Sobieck, Pulaski.....	Selling adulterated milk.....	N. J. Monahan, Green Bay.....	$25 and costs.
Sept. 11	Jos. Snikas, Pulaski.....	Selling adulterated milk.....	N. J. Monahan, Green Bay.....	$25 and costs.
Sept. 11	Jac. Zilinski, Pulaski.....	Selling adulterated milk.....	N. J. Monahan, Green Bay.....	$25 and costs.
Sept. 16	John Esser, Madison.....	Selling unsanitary milk from dirty cans	A. Donovan, Madison.....	$25 and costs.
Sept. 19	Lary Ropella, Custer.....	Maintaining creamery premises and utensils in unclean and unsanitary condition	G. L. Park, Stevens Point.....	$25 and costs.
Sept. 22	Barney Rutten, Little Chute....	Selling adulterated milk.....	Thos. Ryan, Appleton.....	$25 and costs.
Sept. 25	Henry Schimming, Madison.....	Selling unsanitary milk from dirty cans	A. Donovan, Madison.....	$25 and costs.
Sept. 25	John Swontek, New Franken....	Delivering milk in dirty cans.....	N. J. Monahan, Green Bay.....	$25 and costs.
Sept. 29	Frank Frost, Plover.....	Maintaining utensils and premises where dairy products are produced in unclean and unsanitary condition	John A. Murat, Stevens Point....	$25 and costs.
Sept. 30	J. F. Marten, Allenville.....	Maintaining unclean and unsanitary cheese factory	Nels Jensen, Neenah.....	$25 and costs.
Oct. 2	John Dietsche, Spencer.....	Delivering adulterated milk to a cheese factory	R. F. Kountz, Neillsville.....	$25 and costs.
Oct. 2	Rudolph Freund, Malone.....	Maintaining creamery premises and utensils in unclean and unsanitary condition	R. C. Fairbank, Fond du Lac.....	$35 and costs
Oct. 2	Louis Luenberger, De Forest.....	Selling adulterated linseed oil.....	A. Donovan, Madison.....	$25 and costs.
Oct. 5	Edward Worachek, Kewaunee....	Maintaining unsanitary cheese factory....	J. N. Robillard, Kewaunee.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1911.				
Oct. 6	E. L. Viereck, Milwaukee.....	Selling canned cherries containing artificial color, sulphur dioxide, and not true to label	N. B. Neelen, Milwaukee.....	Sentence suspended on payment of costs.
Oct. 6	Jacob Best Co., Milwaukee.....	Selling canned cherries containing artificial color, and sulphur dioxide, misbranded	N. B. Neelen, Milwaukee.....	Sentence suspended on payment of costs.
Oct. 7	Peter Thill, Clayton.....	Maintaining cheese factory and untensils in unsanitary condition	F. B. Kinsley, Barron.....	$10 and costs.
Oct. 7	Arthur Jenks, Loyal.....	Manufacturing butter under unsanitary conditions	R. F. Kountz, Neillsville.....	$25 and costs.
Oct. 10	Alphonse Poels, Green Bay.....	Delivering milk in unclean cans.....	N. J. Monahan, Green Bay.....	$25 and costs.
Oct. 11	David Williquette, Green Bay....	Delivering unsanitary milk in unclean cans	N. J. Monahan, Green Bay.....	$25 and costs.
Oct. 11	Wm. Zitron, Milwaukee.....	Selling canned cherries containing artificial color, sulphur dioxide: misbranded	N. B. Neelen, Milwaukee.....	$25 and costs.
Oct. 12	Miesi Kazinkewicy, Ashland....	Maintaining an unsanitary meat market...	John Garvin, Ashland.....	$25 and costs.
Oct. 13	Jack Farming, Greenwood.....	Maintaining premises and utensils used in the handling of cream in unclean, filthy and noxious condition	R. F. Kountz, Neillsville.....	$25 and costs.
Oct. 14	Edward Schultz, Welcome.....	Maintaining cheese factory premises and utensils in unsanitary condition	A. W. Millard, New London.....	$25 and costs.
Oct. 17	E. L. Meloy, Tomah, (Agent for Central Hardware Co.)	Selling adulterated boiled linseed oil.....	O. J. Jackson, Sparta.....	$25 and costs.
Oct. 17	F. O. Drowatzky, Tomah.....	Selling adulterated boiled linseed oil.....	O. J. Jackson, Sparta.....	$25 and costs.
Oct. 17	Edward Dietrich, Clarno.....	Using filthy utensils in manufacturing whey butter	W. T. Saucerman, Monroe.....	$25 and costs.
Oct. 18	Loui Naef, Monroe.....	Using filthy utensils in manufacturing whey butter	W. T. Saucerman, Monroe.....	$25 and costs.
Oct. 19	Henry Schmidt, Marshfield.....	Maintaining premises and utensils used in the production of milk and cream in an unsanitary condition	B. L. Brown, Grand Rapids.....	$25 and costs.
Oct. 19	A. C. VanHee, Hammond.....	Selling adulterated linseed oil.....	C. A. Disney, Hudson.....	$25 and costs.
Oct. 20	Jos. Czarnecki, Stevens Point....	Delivering to a creamery unsanitary milk in unclean cans	J. A. Murat, Stevens Point.....	$25 and costs.
Oct. 24	F. E. Hunt, Palmyra.....	Returning ice cream cans over a railroad without same having first been washed	O. F. Stoppenbach, Jefferson.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1911.				
Oct. 24	George T. Young, Dallas.....	Maintaining an unclean and unsanitary meat market	F. B. Kinsley, Barron.....	$25 and costs.
Oct. 25	Even Erickson, Pigeon Falls.....	Selling unsanitary milk.....	J. H. Ecker, Whitehall.....	$25 and costs.
Oct. 30	Fred Stank, Pound.....	Maintaining cheese factory premises and utensils in unclean and unsanitary condition	Jas. A. Dunlevy, Oconto.....	$25 and costs.
Nov. 6	Leo Gross, Amery.....	Exposing and offering for sale foods in an unclean, unhealthful and unsanitary condition	J. A. Sleeper, Osceola.....	$25 and costs.
Nov. 7	A. Anderson (Manager of L. Anderson Grocery) Washburn.....	Maintaining an unclean and unsanitary grocery store	A. M. Warden, Washburn.....	$25 and costs.
Nov. 7	Ole Aune, (Mgr. Washburn Co-operative Store Co.,) Washburn	Maintaining an unclean and unsanitary grocery	A. M. Warden, Washburn.....	$25 and costs.
Nov. 7	John J. Walch, Kaukauna.....	Maintaining cheese factory and utensils in unclean and unsanitary condition	Thos. Ryan, Appleton.....	$25 and costs.
Nov. 22	Albert Anderson, Amherst Junction	Delivering unsanitary cream to a creamery	J. A. Murat, Stevens Point.....	$25 and costs.
Nov. 29	Chas. H. Carpenter, Janesville..	Serving oleomargarine at a hotel without notifying guest that the same was not butter	C. L. Fifield, Janesville.....	$50 and costs.
Dec. 1	Andrew Fredrickson, Neenah.....	Having in possession with intent to sell unsanitary milk	S. D. Baird, Neenah.....	$30 and costs.
Dec. 9	Rynard Draheim, Weyauwega...	Having in possession with intent to sell unsanitary cream	R. F. Taggart, Weyauwega.....	$25 and costs.
Dec. 15	Emil Makela, Hurley.....	Selling adulterated cider	Griffith Thomas, Hurley.....	$25 and costs.
Dec. 20	Geo. Schneider, Marshfield.....	Maintaining premises and utensils used in the handling of milk in unsanitary condition	B. L. Brown, Grand Rapids.....	$25 and costs.
Dec. 22	Skelly Grocery Co., Janesville....	Selling adulterated mustard.....	C. L. Fifield, Janesville.....	$25 and costs.
Dec. 26	F. A. Wopat, Hillsboro.....	Selling unsanitary cream.....	S. C. Pollard, Viroqua.....	$25 and costs.
1912				
Jan. 2	Geo. Holmes, Baraboo.....	Selling adulterated cream.....	H. L. Halsted, Baraboo.....	*$85 and costs.
Jan. 5	John E. Daly, Grand Rapids..	Selling adulterated spirit of nitre.....	Burton Brown, Grand Rapids.....	$25 and costs.
Jan. 6	Wm. Hoffman, Kewaunee.....	Delivering adulterated milk to a cheese factory	J. N. Robillard, Kewaunee.....	Fine suspended on payment of costs.

* Pleaded *nolo contendere.*

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1912.				
Jan. 8	J. L. Bonham, Baraboo.....	Selling adulterated cream.....	H. L. Halsted, Baraboo.....	*$25 and costs.
Jan. 11	Wm. Biegler, Hayward.....	Maintaining unclean and unsanitary meat-market	F. J. Riordan, Hayward.....	$25 and costs.
Jan. 12	Chas. Meyer, No. Fond du Lac	Selling unsanitary milk.....	R. C. Fairbank, Fond du Lac.....	$25 and costs.
Jan. 23	F. L. Steib, Grand Rapids....	Selling adulterated spirit of camphor.....	Burton Brown, Grand Rapids.....	*$25 and costs.
Feb. 1	Samuel Church, Grand Rapids..	Selling adulterated spirit of camphor.....	Burton Brown, Grand Rapids.....	$25 and costs.
Feb. 9	Samuel and Ben Schaefrin, Milwaukee (Blue Ribbon Bottling Works)	Selling pop containing saccharin.....	N. B. Neelen, Milwaukee.....	$100 and costs.
Feb. 9	J. B. Woodhead and Newton H. Woodhead, Ashland	Selling adulterated spirit of nitrous ether	John Garvin, Ashland.....	$25 and costs.
Feb 16	F. Bohn, Watertown.....	Selling adulterated milk.....	W. D. Stacy, Watertown.....	$25 and costs.
Feb. 17	W. L. Sexton, Marshfield (Sexton Bros.)	Selling adulterated spirit of nitrous ether	Hugo Wegner, Marshfield.....	$25 and costs.
Feb. 17	R. J. Strauss, Marshfield	Selling adulterated spirit of camphor....	Hugo Wegner, Marshfield.....	$25 and costs.
Feb. 17	Otto Lamke, and Emil Lamke, Fort Atkinson	Having in possession with intent to sell unsanitary cream	O. F. Stoffenbach, Jefferson.....	$25 and costs.
Feb. 21	Abe. Wiley, Fifield.....	Serving oleomargarine at hotel without notifying guest same was not butter	F. W. Sackett, Phillips.....	$50 and costs.
Feb. 23	Geo. Bicken, Kenosha.....	Serving oleomargarine at a restaurant without notifying guest same was not butter	C. E. Randall, Kenosha.....	$50 and costs.
Feb. 26	Noyes Matteson, Clintonville....	Selling unsanitary cream.....	E. Dooley, Marion.....	$25 and costs.
Mar. 2	Fred Melius, Rubicon.....	Selling adulterated milk.....	A. A. Hauser, Rubicon.....	$25 and costs.
Mar. 8	Robert Junchen, Stevens Point.	Preparing meats for sale under unsanitary conditions	J. A. Murat, Stevens Point.....	$25 and costs.
Mar. 9	Andrew Anderson, Amherst.....	Maintaining premises and utensils used in production of milk in unclean and unsanitary condition	G. L. Park, Stevens Point.....	$25 and costs.
Mar. 13	August Bonnin, New London....	Selling unsanitary milk.....	A. W. Miller, New London.....	$25 and costs.
Mar. 16	Geo. S. Beardsley, Grand Rapids	Selling canned "maraschino" cherries containing artificial coloring and sulphurous acid	Burton Brown, Grand Rapids.....	$25 and costs.
Mar. 27	Chas. Nachtigall, Marinette.....	Maintaining an unclean and unsanitary meat market	L. M. Evert, Marinette.....	$25 and costs.
Mar. 29	Ernest Venness, New Franken...	Delivering unsanitary milk in unclean cans	N. J. Monahan, Green Bay.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1912.				
April 5	Jacob Jacobsen, Neenah.....	Furnishing unsanitary milk to a cheese factory	S. D. Baird, Neenah.....	$25 and costs.
April 6	Edward Flynn, Neenah.....	Furnishing unsanitary milk to a cheese factory	Nels Jenssen, Neenah.....	$25 and costs.
April 6	John Brockman, Neenah.....	Furnishing unsanitary milk to a cheese factory	S. D. Baird, Neenah.....	$25 and costs.
April 10	C. H. Neisen, Saukville.....	Furnishing unsanitary milk to a cheese factory	N. E. Wilson, Port Washington.....	$25 and costs.
April 10	Michael Dickman, Saukville.....	Offering unsanitary milk to a cheese factory	N. E. Wilson, Port Washington.....	$25 and costs.
April 25	Frank Gevidek, West Bend.....	Offering unsanitary milk to a cheese factory	Henry Rolfs, West Bend.....	$25 and costs.
April 25	W. A. Gillmore, Durand.....	Selling canned peas containing a copper salt	W. H. Huntington, Durand.....	$25 and costs.
April 25	Jacob Skibba, Junction City....	Selling boiled linseed oil adulterated with mineral oil	J. A. Murat, Stevens Point.....	$25 and costs.
April 25	H. Garbisch, Kewaskum.....	Selling unclean and unsanitary milk....	W. P. Rix, West Bend.....	$25 and costs.
April 25	Chas. Garbisch, Kewaskum.....	Offering for sale unclean and unsanitary milk	W. P. Rix, West Bend.....	$25 and costs.
April 25	John Korneli, Newberg.....	Selling unclean and unsanitary milk.....	Henry Rolfs, West Bend.....	$25 and costs.
April 27	Henry Krueger, Jackson.....	Offering unsanitary milk to a creamery	W. P. Rix, West Bend.....	$25 and costs.
April 27	Joseph Jerzak, Stevens Point....	Preparing meat for sale under unsanitary conditions	J. A. Murat, Stevens Point.....	$25 and costs.
April 27	H. B. Woldt, Jackson.....	Maintaining an unclean and unsanitary creamery	Henry Rolfs, West Bend.....	$25 and costs.
April 29	L. O. Reidler, Token.....	Selling boiled linseed oil adulterated with mineral oil	J. C. Fehlandt, Madison.....	$25 and costs.
April 30	B. Scheunlman, Jackson.....	Selling unclean and unsanitary milk....	W. P. Rix, West Bend.....	$25 and costs.
April 30	B. D. Doperalski, Kewaunee.....	Delivering unsanitary milk to a factory..	J. H. Ray, Kewaunee.....	$25 and costs.
May 1	John Kobeldt, West Bend.....	Offering for sale milk in filthy utensils..	Henry Rolfs, West Bend	$25 and costs.
May 2	Jacob Vogelsang, Barton.....	Furnishing unsanitary milk to a cheese factory	Henry Rolfs, West Bend	$25 and costs.
May 2	Joseph Schemenauer, West Bend	Offering unsanitary milk to a cheese factory	W. P. Rix, West Bend.....	$25 and costs.
May 9	Peter Wolf, Richfield.....	Maintaining an unclean and unsanitary cheese factory	W. P. Rix, West Bend.....	$25 and costs.
May 9	Fred Becker Richfield.....	Offering unsanitary milk to a creamery..	Henry Rolfs, West Bend.....	$25 and costs.

CONVICTIONS—Continued.

Date.	Defendant.	Cause of Action.	Trial Judge.	Fine or forfeiture.
1912.				
May 14	Ben B. Kraus, Elkhorn.....	Selling boiled linseed oil adulterated with mineral oil	J. T. Lyon, Elkhorn.....	*$25 and costs.
May 17	Peter Bies, Schleisingerville.....	Offering unsanitary milk to a cheese factory	Timothy Foley, Hartford.....	$25 and costs.
May 17	Barney Katzfey, Schleisingerville	Offering unsanitary milk to a cheese factory	Timothy Foley, Hartford.....	$25 and costs.
May 21	Charles C. Hotchkiss, Elkhorn....	Selling boiled linseed oil adulterated with mineral oil	J. T. Lyon, Elkhorn.....	$25 and costs.
May 28	J. G. Uecke, Oshkosh.....	Selling adulterated milk.....	A. H. Goss, Oshkosh.....	$25 and costs.
June 7	H. O. Hemmingson, Cumberland (Cumberland Supply Co.)	Selling linseed oil adulterated with mineral oil	J. W. Soderberg, Barron.....	$25 and costs.
June 12	J. M. Pitts, Kenosha.....	Selling linseed oil adulterated with mineral oil.	C. E. Randall, Kenosha.....	$25 and costs.
June 15	Peter Thill, Fredonia.....	Offering unsanitary milk to a cheese factory	John Fintzen, Fredonia.....	$25 and costs.
June 16	Nicholas Roth, Plum City.....	False reading of Babcock test.....	C. Fenton, Ellsworth.....	$25 and costs.
June 18	R. H. Brennecke, Watertown....	Selling adulterated lemon extract.....	W. D. Stacy, Watertown.....	$25 and costs.
June 25	Jos. Reeves, Beloit.....	Selling canned cherries containing artificial color and a chemical preservative	J. B. Clark, Beloit.....	$25 and costs.
June 28	Geo. Tarnish, Shullsburg.....	Serving oleomargarine at a hotel without notifying guest same was not butter	J. B. Simpson, Darlington.....	$50 and costs.

* Pleaded *nolo contendere.*

DISBURSEMENTS FOR THE YEAR ENDING JUNE 30, 1911.

J. Q. Emery, Commissioner, salary and expenses	$2,620.28
U. S. Baer, Assistant, salary and expenses	2,501.19
H. C. Larson, Second Assistant, salary and expenses	2,089.72
A. E. Kundert, Chemist, salary and expenses	1,808.74
Richard Fischer, Assistant Chemist (Associate Director of Chemical Laboratory, salary)	600.00
F. P. Downing, Assistant Chemist, salary and expenses	1,238.94
W. A. Brannon, Assistant Chemist, salary and expenses	1,231.92
Harry Klueter, Assistant Chemist, salary and expenses	1,559.71
F. M. Buzzell, Chief Food Inspector, salary and expenses	1,704.81
E. L. Aderhold, Cheese Factory, Dairy and Food Inspector, salary and expenses	2,013.13
F. E. Carswell, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,961.12
J. D. Cannon, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,951.16
Fred Marty, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,916.40
P. A. Larson, Creamery, Dairy and Food Inspector, salary and expenses	1,776.88
James VanDuser, Creamery, Dairy and Food Inspector, salary and expenses	2,015.17
S. J. Dufner, Creamery, Dairy and Food Inspector, salary and expenses	1,968.28
W. A. Voigt, Creamery, Dairy and Food Inspector, salary and expenses	1,897.96
R. B. Southard, Cheese Factory, Dairy and Food Inspector, salary and expenses	2,067.67
J. B. Linzmeyer, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,461.18
W. F. Scott, Food Inspector, salary and expenses	1,359.66
P. W. Guse, Creamery, Dairy and Food Inspector, per diem, and expenses	1,459.80
Florence Q. Norton, Secretary, salary	1,200.00
Ethel D. Thomas, Stenographer and Confidential Clerk, salary	900.00
Menges Pharmacies, supplies	43.75
S. D. Myers, supplies	24.50
Madison Post Office, postage	797.79
Wisconsin Telephone Co., messages	73.95
Western Union Telegraph Co., messages	5.60
Postal Telegraph Cable Co., messages	.54
Democrat Printing Co., printing	1,670.52
American Express Co., express	34.13
Wells Fargo Express Co., express	9.99
Eimer & Amend, supplies	389.55
Chicago & Northwestern Ry. Co., freight	1.43
C. N. Casper Co., supplies	1.25
George Burroughs & Son, supplies	20.00
Cornish, Curtis & Greene, supplies	10.36
P. W. Guse, Creamery, Dairy and Food Inspector, salary and expenses	274.88
Mautz Bros., supplies	1.00
Parsons Printing & Stationery Co., supplies	1.85
Mautz Bros., supplies	3.96

Krey-Scheerer Co., supplies	217.00
Streissguth-Petran Engraving Co., cuts	33.57
Chicago & Northwestern Railway Co., freight	1.10
Chicago, Milwaukee & St. Paul Ry. Co., freight,	17.53
Andrew Mayers, supplies	1.25
C. M. Thomas, photos	1.50
John M. Olin, Special Counsel,	135.55
L. E. Gettle, Special Counsel,	21.50
Hinrichs Dry Goods Co., supplies	3.00
J. E. Moseley, supplies	34.60
C. W. Jarvis, draying	3.75
E. H. Sargent & Co., supplies	6.02
Total	$43,145.14

DISBURSEMENTS FOR THE YEAR ENDING JUNE 30, 1912.

J. Q. Emery, Commissioner, salary and expenses	$2,677.10
U. S. Baer, Assistant Commissioner, salary and expenses	2,300.69
H. C. Larson, Second Assistant, salary and expenses	2,292.18
W. A. Brannon, Assistant Chemist, salary and expenses	375.00
A. E. Kundert, Chemist, salary and expenses	158.03
A. E. Kundert, Assistant Chemist, salary and expenses	961.51
Richard Fischer, Assistant Chemist (Associate Director of Chemical Laboratory) salary	600.00
Harry Klueter, Assistant Chemist, salary and expenses	131.48
Harry Klueter, Chemist, salary and expenses	1,709.15
F. P. Downing, Assistant Chemist, salary and expenses	91.87
I. R. Howlett, Assistant Chemist, salary	939.27
F. M. Buzzell, Chief Food Inspector, salary and expenses	1,628.93
F. E. Carswell, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,898.47
E. L. Aderhold, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,981.88
J. D. Cannon, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,821.47
Fred Marty, Cheese Factory, Dairy and Food Inspector, salary and expenses	1,823.07
R. B. Southard, Cheese Factory, Dairy and Food Inspector, salary and expenses	2,043.99
P. W. Guse, Creamery, Dairy and Food Inspector, salary and expenses	2,063.26
S. J. Dufner, Creamery, Dairy and Food Inspector, salary and expenses	1,951.05
W. A. Voigt, Creamery, Dairy and Food Inspector, and ex officio Sealer of Weights and Measures, salary and expenses	2,031.39
James VanDuser, Creamery, Dairy and Food Inspector, salary and expenses	1,990.62
W. F. Scott, Food Inspector, salary and expenses	1,760.87
S. B. Cook, Creamery, Dairy and Food Inspector, salary and expenses	1,234.68
J. B. Linzmeyer, Cheese Factory, Dairy and Food Inspector salary and expenses	1,493.78
F. P. Downing, Chief Inspector of Weights and Measures, salary and expenses	2,053.79

J. E. Boettcher, Sealer of Weights and Measures, salary and expenses	1,004.68
William Winder, Sealer of Weights and Measures, salary and expenses	1,203.60
George Warner, Sealer of Weights and Measures, per diem and expenses	963.69
H. L. Bornheimer, Sealer of Weights and measures, per diem and expenses	822.22
W. J. Kramer, Sealer of Weights and Measures, per diem and expenses	563.33
Florence Q. Norton, Secretary, salary	1,200.00
Ethel D. Thomas, Confidential Clerk and Stenographer, salary	187.49
Ethel D. Thomas, Stenographer,	949.98
M. L. Walter, Stenographer and Confidential Clerk, salary	675.00
J. E. Moseley, books	10.50
E. H. Sargent & Co., supplies	5.93
Schwaab Stamp & Seal Co., seal	1.05
Lorenz Model Co., supplies	132.00
J. Bishop & Co., supplies	295.57
Torsion Balance Co., supplies	4.75
C. W. Jarvis, drayage	6.75
Streissguth-Petran Engraving Co., cuts	4.00
American Express Co., express	64.93
Wells Fargo Express Co., express	14.87
Madison Post Office, postage and box rent	392.41
Democrat Printing Co., printing	1,243.97
Western Union Telegraph Co., messages	20.10
Postal Telegraph Cable Co., message	.60
Wisconsin Telephone Co., messages	113.85
Chicago, Milwaukee & St. Paul Ry. Co., freight	12.16
Chicago & Northwestern Ry. Co., freight	7.62
Eimer & Amend, supplies	539.26
Menges Pharmacies, supplies	45.45
Hinrichs Dry Goods Co., supplies	7.44
Hollister Drug Co., supplies	1.70
Creamery Package Manufacturing Co., supplies	21.50
Milwaukee Lithographing Co., letterheads	59.39
	$48,649.32

By the foregoing it is shown that for the year ending June 30, 1912, there were disbursements amounting to $48,649.32. This amount includes the additional expense incurred by the administration of the new weights and measures law committed to this department, not inclusive, however, of (approximately) $3,000 expended for permanent equipment for the office of weights and measures by the superintendent of public property and which amount was not paid during the fiscal year ending June 30, 1912. It exceeds the amount of disbursements of any former year as is shown by the following tabulation of annual disbursements and membership:

For the year ending Sept. 30	Disbursements:	Membership	
1889	$3,490.81	3	Chapter 452 laws of 1889
1890	7,424.95		
1891	7,857.50		
1892	8,630.69		
1893	7,742.92		
1894	7,971.99		
1895	9,261.94		
1896	8,347.61		
1897	9,787.21	5	Chapter 328, laws 1897.
1898	10,100.70		
1899	12,984.80		
1900	12,120.25		
1901	13,074.96		
For the year ending June 30			
1902	$7,966.95		
1903	9,712 82	8	Chapter 144, laws 1903.
1904	16,853.57		
1905	16,117.18	18	Chapter 390, laws 1905.
1906	36,206.88		
1907	36,752.27	22	Chapter 386, laws 1907.
1908	44,283.75		
1909	42,244.77	23	Chapter 532, laws 1909.
1910	45,907.26		
1911	43,152.70	30	Chapter 556, laws 1911.
1912	48,649.32		

In this connection it will be of public interest to compare the disbursements for the year 1911 of the dairy and food department of Wisconsin with those of the states bordering on Wisconsin. The annual cost of the Illinois dairy and food commission was $73,000; of the Iowa dairy and food commission, $48,000; of the Michigan dairy and food commission, $40,600; of the Minnesota dairy and food commission, $62,728. The average annual cost, therefore, of the dairy and food commissions of the four states bordering on Wisconsin for the year 1911 was $56,075, while the cost of the dairy and food commission of Wisconsin for the same year was $48,649.32, and as above stated is the largest annual expenditure in the history of the commission. These figures show that the average cost of the dairy and food commissions of the states bordering on Wisconsin was $7,425 more than the highest cost for any year of the dairy and food commission of the state of Wisconsin. But Wisconsin has a total of 3,048 cheese factories, creameries and condenseries, whereas Illinois has only 306; Iowa only 503; Michigan only 531; and Minnesota 927. This shows that the inspection work of the Wisconsin dairy and food commission covers 781 more cheese factories, creameries and condenseries than is covered by all of the dairy and food commissions of the four neighboring states of Illinois, Iowa, Michigan and Minnesota combined.

FIG. 14.—CONFISCATED WEIGHTS AND MEASURES, MILWAUKEE.

LEGISLATION.

1. During the past year a vacancy has existed in the position of assistant chemist authorized by chapter 390, laws of 1905, the salary of which is $1200 with reimbursement for necessary traveling expenses. It would greatly strengthen the dairy and food department to provide by law for a bacteriologist in lieu of the assistant chemist here referred to. The time has come in the experience of the department when the services of a bacteriologist are greatly needed and when the demand upon the department cannot be met without the services of a competent bacteriologist. It is believed that with the splendid appliances now in the laboratory, no additional funds would be required for the necessary equipment for the bacteriologist. The legislation herein indicated is urgently recommended.

2. As changes in conditions designed to circumvent the effectiveness of food laws are taking place and as previously undiscovered fraudulent, deceptive and harmful conditions are being brought to light, there must be amendments to the food laws from time to time to meet such changed and changing conditions. This statement is applicable to present Wisconsin food laws.

3. In recent years Wisconsin has been priding herself upon her progressive spirit in the provisions made for safeguarding the rights of various classes of employes in industrial occupations. It is here submitted that consistency requires that the employes of the state should receive at the hands of the legislature the consideration which their merits justly entitle them to, and that what these just dues of the employes of the state are should be determined not by political pull but by scientific expert investigation of the importance, quality and amount of service rendered. These remarks are offered as preparatory to the statement that in my judgment employes in the Wisconsin dairy and food department are not all receiving at the hands of the state the consideration for their service which the importance, quality and the quantity of their work entitle them to. A study was made of the organization and efficiency of the dairy and food commission by an expert employed by the state board of public affairs who, as I am informed, has reported his findings to the said board with certain recom-

mendations as to the importance, amount and quality of the work done by the respective members of the department, and has made certain recommendations in connection with other departments in behalf of a more just and discriminating recognition of such services. I desire here to emphasize my conviction that the employes of this department who have rendered faithful and efficient service to the state during a series of years, and thereby have become more valuable to the state, are entitled to a just recognition of such service.

4. As is made manifest elsewhere in this report under the topic Weights and Measures, and in the special report of the chief inspector of weights and measures, the force provided for the administration of the new weights and measures law is very inadequate. If that law is to be justly and effectively enforced throughout the state, it is inevitable that a greater force for doing that work must be provided.

J. D. Emery.

Dairy and Food Commissioner,

Ex officio State Superintendent of Weights and Measures.

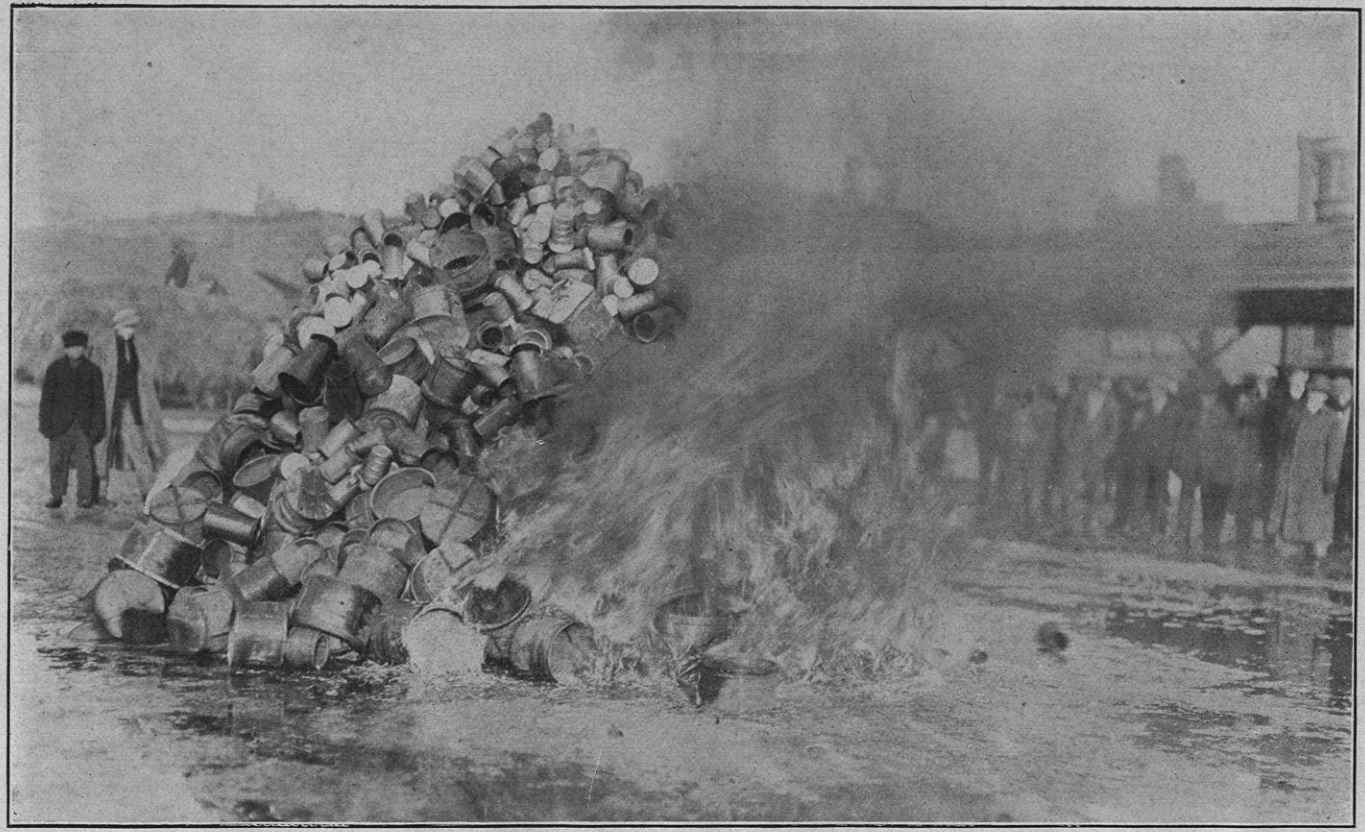


FIG. 14½.—BURNING OF CONFISCATED MEASURES AT THE HAYMARKET, MILWAUKEE, DECEMBER 6, 1911.

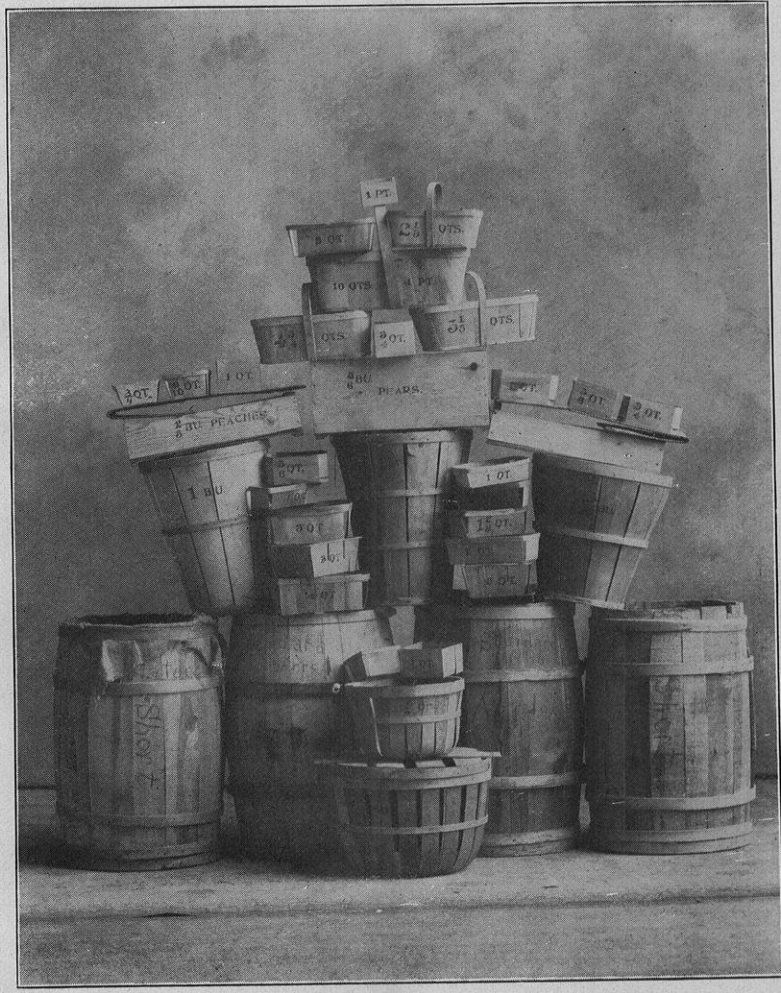


FIG. 15.—SHOWING THE VARIABLE SIZES OF "BASKETS", "BARRELS", "HAMPERS". ETC. THE LAW SEEKS TO STANDARDIZE SUCH NONDESCRIPT CONTAINERS.

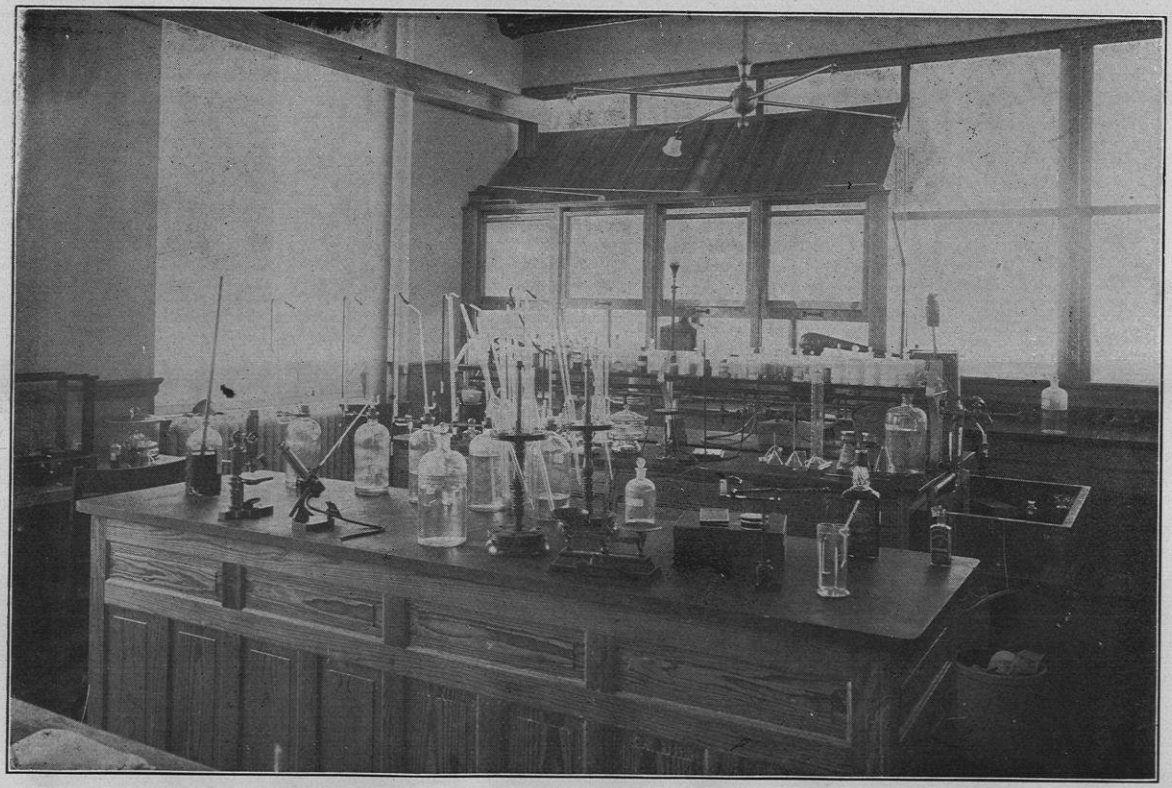


FIG. 16.—VIEW IN LABORATORY OF WISCONSIN DAIRY AND FOOD COMMISSION.

REPORT OF CHEMIST.

HARRY KLUETER PH. G.

General Summary of Analyses.

1614 Samples.

	No. of samples	
Beverages		61
Adulterated or misbranded. Tested for saccharin and preservatives	34	
Free from saccharin, and salicylic and benzoic acids	27	
Buckwheat Flour		49
Not standard. Found to contain foreign flour	7	
Standard	17	
Submitted	25	
Butter		73
Not standard	7	
Served as butter. Found to be oleomargarine	6	
Tested for foreign fats. None found	10	
Standard	13	
Submitted		
Found to contain foreign fats	2	
Tested for foreign fats. None found	33	
Tested for per cent of butter fat	2	
Butter Fats		13
Candy		21
Canned Goods		17
Not standard	12	
Standard	5	
Catsup		19
Cheese		35
Not standard	6	
Standard	24	
Submitted	5	
Coffee		7
Standard	7	
Cream		150
From city supplies. Not standard	55	
From city supplies. Standard	9	
Submitted	54	
Samples taken to determine overreading or underreading of Babcock test	32	

Drugs		178
Ammonia water—		
Not standard	7	
Standard	3	
Hamamelis water—		
Not standard	3	
Standard	14	
Lime water—		
Not standard	2	
Standard	31	
Spirit of camphor—		
Not standard	32	
Standard	28	
Spirit of nitrous ether—		
Not standard	20	
Standard	6	
Tincture of iodine—		
Not standard	12	
Standard	11	
Miscellaneous	9	
Evaporated Milk		21
Not standard	8	
Standard	13	
Flavors and Flavoring Extracts		46
Lemon extracts—		
Not standard	10	
Standard	11	
Terpeneless lemon extracts—		
Below standard	3	
Vanilla extracts—		
Vanilla extracts not standard, and substitutes	16	
Standard	3	
Miscellaneous	3	
Flour		10
Honey		8
Ice Cream		53
Below standard in fat	11	
Standard	18	
Experimental work on ice cream and ice cream mixtures	24	
Ice Cream Cones		24
Free from saccharin, and salicylic, boric and benzoic acids	20	
Sweetened with saccharin	4	
Jellies, Preserves and Mixtures		18
Lard		5
Linseed Oils		156
Found to contain mineral oil	36	
Found to contain mineral oil and rosin oil	3	
Found to contain a volatile petroleum product	3	
Found to contain more than 2.5 per cent unsaponifiable material	16	
Standard	48	
Submitted	50	

Meats and Meat Products		73
Chopped meats free from boric acid and sulphites	10	
Sausage—		
Bought for sausage. Found to be sausage with cereal. Tested for boric acid and borates. None found	20	
Bought for sausage. Found to contain potato flour	1	
Bought for sausage. Found to contain more than 4 per cent of cereal. Tested for boric acid and borates. None found	17	
Bought for sausage. Free from cereal, potato flour, boric acid or borates	13	
Sausage with cereal—		
Bought for sausage with cereal	5	
Miscellaneous meats and chopped meats	7	
Milk		370
City milk—		
Below standard	42	
Standard	40	
Milk delivered to creameries or cheese factories—		
Below standard	82	
Standard	12	
Herd samples milked in presence of inspectors	107	
Submitted samples	87	
Miscellaneous		49
Samples collected by inspectors	29	
Submitted samples	20	
Oleomargarine		20
Held to be in resemblance of yellow butter	10	
Tested for butter fat. Little or none found	4	
Tested for per cent of fat	6	
Olive Oil		36
Not standard	1	
Standard	35	
Soda Fountain Crushed Fruits and Syrups		17
Tested for benzoic acid, salicylic acid, saccharin, and artificial color	17	
Spices		12
Syrups, Molasses, and Syrup Mixtures		40
Maple syrup—		
Not standard	5	
Standard	14	
Miscellaneous syrups and molasses	9	
Syrup mixtures	12	
Turpentine		7
Vinegar		14
White Lead and Zinc White		12
White lead—		
Not standard	1	
Standard	10	
Zinc white—		
Not standard	1	

BEVERAGES.

Adulterated or misbranded. Tested for saccharin and preservatives.

Date.	Bought for.	Labeled.	Bought of.	Manufacturer or Jobber.	Remarks.
1910.					
Aug. 2	Pop	.....	A. R. Nitz Co., Milwaukee.....	A. R. Nitz Co., Milwaukee.....	Contains saccharin.
Aug. 2	Pop	.....	C. W. Herro, Milwaukee.....	A. R. Nitz Co., Milwaukee.....	Contains saccharin.
Aug. 2	Pop	.....	Santo Maglio, Milwaukee.....	A. R. Nitz Co., Milwaukee.....	Contains saccharin.
Aug. 29	Ginger ale.....	Ginger ale.....	Piper Bros. Madison.....	Cantrell & Cochrane, Dublin and Belfast.	Contains .002% sulphur dioxide.
Aug. 30	Lemon sour.....	Lemon sour.....	L. L. Rowe, Madison.....	Manhattan Bottling Works, Milwaukee.	Not a fruit juice product. Misbranded.
Dec. 12	Ginger ale.....	Pepsin ginger ale.....	Emery & Dewey, Madison.....	Chicago Consolidated Bottling Co., Chicago.	No active pepsin found. Misbranded.
1911.					
April 14	**Ginger ale.....**	Ginger ale.....	Findlay & Co., Madison.....	.....	Colored with caramel.
May 31	Orange cider ...	**Artificial orange** cider.	St. John Mineral Spring Co., Green Bay.	St. John Mineral Spring Co., Green Bay.	Not an orange juice product.
May 24	Orange cider....	Orange cider.....	The Salvator Mineral Springs Co., Green Bay.	The Salvator Mineral Springs Co., Green Bay.	Not an orange juice product. Misbranded. Contains benzoic acid. Colored with a coal-tar dye.
May 24	**Orange cider....**	Orange cider, artificial	J. J. Handlen, Green Bay.....	J. J. Handlen, Green Bay.....	Not an orange juice product.
May 24	Orange cider....	Orange cider.....	De Pere Bottling Works, De Pere...	Allouez Mineral Springs Co., Green Bay.	Not an orange juice product. Misbranded. Contains benzoic acid.
May 25	Orange cider....	Artificial orange cider. Colored and flavored.	Allouez Mineral Springs Co., Green Bay.	De Pere Bottling Works, De Pere...	Not an orange juice product. Artificially colored with a coal-tar dye.
May 25	**White pop.....**	.....	Erickson Hotel, Kewaunee.....	Kewaunee Bottling Works, Kewaunee.	Contains saccharin.
May 31	**Grape punch....**	.....	*Earl Gyles, Madison.....	.....	Contains added benzoic acid and colored with a coal-tar dye.
June 8	White pop.....	.....	Kewaunee Pop Co., Kewaunee.....	Kewaunee Pop Co., Kewaunee.....	Contains saccharin.
June 19	**Pepsin ginger ale.**	Pepsin ginger ale.....	B. F. Staack, Madison.....	Manhattan Bottling Works, Milwaukee.	Does not contain pepsin. Misbranded.
July 12	White pop.....	.....	Blue Ribbon Bottling Works, Milwaukee.	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.

*Submitted by.

July 12	White pop.....	.....	D. Bonchek, Milwaukee.....	D. Bonchek, Milwaukee.....	Contains saccharin.
Aug. 1	White pop.....	.....	Bitker's Department Store, Milwaukee.	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
Nov. 8	Apple cider.....	Apple cider.....	Emil Makela, Hurley.....	Hurley Bottling Works, Hurley.....	Not apple cider. Misbranded. Diluted with water and sweetened with sugar.
Nov. 22	Cider	Cider preserved with 1-1000 part of benzoate of soda.	Mrs. John M. Fox, Footeville.....	S. D. Deyo Co., Kingston, N. Y.....	Preserved with benzoate of soda.
Nov. 22	Lemon sour.....	Lemon sour.....	Mrs. John M. Fox, Footeville.....	C. Gray, Janesville.....	Not a fruit juice product. Artificially colored and flavored.
Dec. 14	Solon Springs . punch.	Solon Springs punch. Four in one. Concentrated.	W. H. Kneeland, Eau Claire.....	T. F. Solon, Solon Springs.....	Artificially colored. Contains benzoic acid.
1912.					
Feb. 2	Pop	.....	L. Doliver, Milwaukee.....	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
Feb. 2	Pop	.....	Jos. Shapiro, Milwaukee.....	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
Feb. 2	Pop	.....	L. Margalus, Milwaukee.....	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
Feb. 2	Pop	.....	I. Koppel, Milwaukee.....	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
Feb. 2	Pop	.....	Otto Fiedler, Milwaukee.....	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
Feb. 2	Pop	.....	Jos. Primakow, Milwaukee.....	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
Feb. 2	Pop	.....	A. Jacswitch, Milwaukee.....	Blue Ribbon Bottling Works, Milwaukee.	Contains saccharin.
April 24	Pop	.....	J. E. Jelling, Withee.....	Chris. Volkman, Eau Claire.....	Contains saccharin.
May 24	Pop	.....	Jos. Evans, Eau Claire.....	Jos. Evans Bottling Works, Eau Claire.	Contains saccharin.
May 24	Pop	.....	Jos. Evans, Eau Claire.....	Jos. Evans Bottling Works, Eau Claire.	Contains saccharin.
May 24	Pop	.....	Jos. Evans, Eau Claire.....	Jos. Evans Bottling Works, Eau Claire.	Contains saccharin.

BEVERAGES FREE FROM SACCHARIN, AND SALICYLIC AND BENZOIC ACIDS.

Date.	Bought for.	Bought of.	Manufacturer or Jobber.
1910.			
Aug. 28	Ginger ale	M. L. Nelson, Madison	Clicquot Club Co., Millis, Mass.
Aug. 29	Ginger ale	Wm. Brady Co., Madison	Sprague, Warner & Co. Chicago.
Aug. 29	Ginger ale	John Hyland, Madison	Franklin MacVeagh & Co., Chicago.
Aug. 30	Root beer	Simons Bros., Madison	Chicago Consolidated Bottling Co., Chicago.
Sept. 13	Pop	Jos. Stainer, State Fair Park, Milwaukee	
Sept. 13	Pop	J. Foxhoven, State Fair Park, Milwaukee	Manhattan Bottling Co., Milwaukee.
Sept. 13	Pop	H. Hoff, State Fair Park, Milwaukee	A. R. Nitz Co., Milwaukee.
Sept. 13	Pop	J. E. Okray, State Fair Park, Milwaukee	John Grab, Milwaukee.
Sept. 13	Pop	John Brill, Milwaukee	Manhattan Bottling Co., Milwaukee.
Sept. 13	Pop	C. A. Mosher, State Fair Park, Milwaukee	E. L. Husting Co., Milwaukee.
Sept. 13	Pop	J. Foxhoven, State Fair Park, Milwaukee	Manhattan Bottling Co., Milwaukee.
Sept. 13	Pop	Jos. Stainer, State Fair Park, Milwaukee	
Sept. 20	Pop	Herman Smith, Chippewa Falls, Northern Fair Park	C. Kleis, Chippewa Falls.
Sept. 20	Pop	Jos. E. Kempton, Chippewa Falls, Northern Fair Park	Chippewa Spring Co. Chippewa Falls.
1911.			
June 8	White pop	J. Oakes, Luxembourg	Luxembourg Pop Co., Luxembourg.
July 12	White pop	Star Bottling Works, Milwaukee	Star Bottling Works, Milwaukee.
Aug. 15	White pop	Wenzler Bros. & Metzker, Milwaukee	Wenzler Bros. & Metzker, Milwaukee.
Aug. 15	White pop	Walberg Bottle House, Milwaukee	Wenzler Bros. & Metzker, Milwaukee.
Aug. 15	Cream soda	Westside Bottle House, Milwaukee	Wenzler Bros. & Metzker, Milwaukee.
1912.			
Feb. 19	Pineapple juice	L. L. Rowe, Madison	Hawaiian Pineapple Products Co., Honolulu.
May 9	Red pop	Rice Lake Bottling Works, Rice Lake	Rice Lake Bottling Works, Rice Lake.
May 9	Pop	Rice Lake Bottling Works, Rice Lake	Rice Lake Bottling Works, Rice Lake.
May 24	Pop	Chris. Volkman, Eau Claire	Chris. Volkman Bottling Works, Eau Claire.
May 24	Pop	Chris. Volkman, Eau Claire	Chris. Volkman Bottling Works, Eau Claire.
June 17	Pop	Chris. Volkman, Eau Claire	Chris. Volkman Bottling Works, Eau Claire.
June 17	Pop	Chris. Volkman, Eau Claire	Chris. Volkman Bottling Works, Eau Claire.
June 17	Pop	Chris. Volkman, Eau Claire	Chris. Volkman Bottling Works, Eau Claire.

BUCKWHEAT FLOUR.

Not standard. Found to contain foreign flour.

Date.	Bought of.	Manufacturer or Jobber.
1910.		
Dec. 29	C. H. Kaste, Alma	A. G. Ochsner, Cochrane, Wis.
Dec. 29	Albert Kirchner, Fountain City	Alert Roller Mills, Fountain City, Wis.
1911.		
Jan. 20	G. N. Rohrer, Cochrane	A. G. Ochsner Cochrane, Wis.
Feb. 8	Chas. Wesserberger, Neillsville	Neillsville Milling Co., Neillsville, Wis.
Feb. 9	George W. Hart, Granton	J. W. Huyck & Son, Hingham, Wis.
Mar. 18	W. L. Hemphill, Neillsville Milling Co., Neillsville	Neillsville Milling Co., Neillsville, Wis.
April 21	W. L. Hemphill, Neillsville Milling Co., Neillsville	Neillsville Milling Co., Neillsville, Wis.

Standard.

1910		
Dec. 3	J. McNamara, Madison	E. R. Pahl & Co., Milwaukee.
Dec. 16	Gilbert Bros., Eau Claire	The Berkett Mills, Penn Yan, New York.
Dec. 16	A. Nelson & Co., Eau Claire	Northwestern Flour & Grain Co., Eau Claire.
Dec. 28	H. L. Platte, Prescott	Griggs, Cooper & Co., St. Paul, Minn.
Dec. 28	F. M. White & Son, Maiden Rock	S. M. Meyers & Son, Winona, Minn.
Dec. 29	C. F. Prussing & Co., Fountain City	Bay State Milling Co., Winona, Minn.
1911.		
Jan. 9	P. A. Moe, Chetek	Northwestern Flour and Grain Co., Chetek, Wis.
Jan. 10	The Fair Store Co., Rice Lake	J. W. Taylor, Barron, Wis.
Jan. 19	W. Grams, La Crosse	A. Grams & Son, La Crosse, Wis.
Jan. 19	J. G. Jakel, La Crosse	The Blodgett Milling Co., Janesville, Wis.
Feb. 8	Ketchen & Albright, Neillsville	Olson & Johnson, Humbird, Wis.
Feb. 24	Wise & Mish, Independence	Independence Milling Co., Independence, Wis.
Feb. 24	M. I. Gilbert, Blair	A. Jacobson, Coral City Mills, Whitehall, Wis.
Mar. 21	Wise & Mish, Independence	Independence Milling Co., Independence, Wis.
Mar. 21	Whitehall Milling Co., Whitehall	A. Jacobson, Coral City Mills, Whitehall, Wis.
Nov. 2	Sprecker Grocery Store, Baraboo	Timme Bros. Delton.
Dec. 28	Neillsville Milling Co., Neillsville	Neillsville Milling Co., Neillsville, Wis.

Buckwheat Flour, Submitted.

Date.	Submitted by.	Remarks.
1910.		
Nov. 18	R. P. Koenig & Co., Watertown	No foreign flour found.
1911.		
Jan. 30	O. Leonard, West Salem	No foreign flour found.
Feb. 5	Edward Ramsden, Kansasville	No foreign flour found.
Feb. 22	W. R. Roberts, Wild Rose	No foreign flour found.
Mar. 13	W. A. Fuller, Merton	No foreign flour found.
Nov. 18	Frank Tirrill, Lodi	No foreign flour found.
Nov. 29	Harley Best, Belleville	No foreign flour found.
Nov. 29	Mrs. H. L. Terry, 137 Langdon St., Madison	No foreign flour found.
Dec. 8	John R. Place, Belleville	No foreign flour found.
Dec. 8	John R. Place, Belleville	No foreign flour found.
Dec. 8	J. Moher, Rolling Prairie	No foreign flour found.
Dec. 27	Frank Guttenberg Jr., Jefferson, R. D. 1	No foreign flour found.
Dec. 27	Mrs. Addie Babcock, Evansville	No foreign flour found.
1912.		
Jan. 10	W. E. Chatterton, 1112 W. Washington Ave., Madison	No foreign flour found.
Jan. 15	The Jacob Frank Co., Hartford	No foreign flour found.
Jan. 15	Kleist Bros., Brillion	Contains foreign starch.
Jan. 18	O. D. Hutchins, Loyal	No foreign flour found.
Jan. 23	Wm. Sherman, La Valle	Contains foreign flour.
Jan. 27	H. C. Larson, Madison	No foreign flour found.
Jan.	Chas. Ritter, Appleton	No foreign flour found.
Feb. 16	C. E. Smith, Gordon	Contains a small amount of wheat starch.
Feb. 17	Wm. Waddell, Hub City	No foreign flour found.
Mar. 6	F. Stover, 744 Van Buren St., Milwaukee	No foreign flour found.
Mar. 16	A. H. Craig, Mukwonago	No foreign flour found.
June 19	J. H. Tichenor, Lynxville	No foreign flour found.

BUTTER.

Butter, Not Standard.

Date.	Bought of.	Manufacturer or Jobber.	Per cent butter fat.
1910.			
Oct. 20	Poynette Creamery, Poynette	August Westphal, Neosho, Wis	77.8
1911.			
Sept. 21	Rhinelander Creamery & Produce Co., Rhinelander	F. W. Meen, Rhinelander, Wis	80.2
1912.			
Jan. 2	Badger Creamery Co., Madison	Madison Dairy Produce Co., Madison, Wis	80.14
Jan. 2	Badger Creamery Co., Madison	Madison Dairy Produce Co., Madison, Wis	80.21
Jan. 2	Badger Creamery Co., Madison	Madison Dairy Produce Co., Madison, Wis	80.11
Jan. 27	Herrmann Bros, Appleton	Hermann Bros., Appleton, Wis	82.0
Mar. 29	W. E. Kingsbury, Stevens Point	Custer Creamery Co., Custer, Wis	80.1

Served as butter. Found to be oleomargarine.

Date.	Bought of
1910.	
Sept. 13	Roy Potter, State Fair Park, Milwaukee.
1911.	
Nov. 21	Chas. D. Carpenter, Railroad Hotel, Janesville.
1912.	
Jan. 2	Abe Wiley, Fifield.
Jan. 4	Geo. Bicken, Kenosha.
Jan. 30	Abe Wiley, Fifield.
Mar. 11	George Tarnish, Shullsburg.

Butter, Tested for Foreign Fats. None Found.

Date.	Bought of.	Manufacturer or Jobber.	Remarks.
1911.			
Feb. 8	Minix & Campbell, Barneveld	Gordon Williams	
Feb. 28	Klatt & Stuber, Clyman	Harmony Creamery Co., Pittsburg, Pa.	
Mar. 7	Richard C. Henning, Stetsonville		Served with meal.
Dec. 8	Hotel Campbell, Merrillan		Served with meal.
Dec 13	Chapin Hall House, Hudson		Served with meal.
1912.			
Jan. 29	Tremont Hotel, Oshkosh		Served with meal.
Jan. 29	Tremont Hotel, Oshkosh		Served with meal.
Feb. 27	E. T. Borgen, Westby		
Mar. 12	Frank Gordon, Darlington		
Mar. 12	Frank Gordon, Darlington		

Butter, Standard.

Date.	Bought of.	Manufacturer or Jobber.
1910.		
Oct. 22	Peter Nottleman, Oshkosh	Nottleman Bros., Oshkosh, Wis.
Oct. 22	John Hackbarth, Oshkosh	
1911.		
Mar. 1	E. Seaman, Clinton Junction	H. C. Raven, Clinton Junction, Wis.
Apr. 5	Ralph Meracle, Palmyra	Oak Hill Creamery, Palmyra, Wis., R. D.
Oct. 17	Edward M. Pond, Eau Claire	Eau Claire Creamery Co., Eau Claire, Wis.
Oct. 17	Lind & Co., Eau Claire	Eau Claire Creamery Co., Eau Claire, Wis.
Oct. 17	F. F. Conley, Eau Claire	E. C. Jacobs, Elk Mound, Wis.
Nov. 15	W. Welsher, Madison	Madison Dairy Produce Co., Madison, Wis.

Butter, Standard—Continued.

Date.	Bought of.	Manufacturer or Jobber.
1912.		
Jan. 15	Jules J. Marten Co., South Kewaunee	Fox River Valley Creamery Co., West De Pere, Wis.
Jan. 27	Potts, Woods & Co., Appleton	
Mar. 6	M. Moersch & Son, Peebles	M. Moersch & Son, Peebles, Wis.
Mar. 29	H. C. Moen, Stevens Point	Custer Creamery Co., Custer, Wis.
Mar. 29	W. B. Pett, Stevens Point	Custer Creamery Co., Custer, Wis.

Butter, Submitted.

FOUND TO CONTAIN FOREIGN FATS.

Date.	Submitted by.
1911.	
Apr. 1	B. E. Nelson, Woodruff.
1912.	
Jan. 22	F. A. Ochtenberg, Oshkosh.

Butter, Submitted.

TESTED FOR PER CENT OF BUTTER FAT.

Date.	Submitted by.	
1910.		
Oct. 14	Miss Mildred Kenzel, Oshkosh	Contains 73.0% butter fat.
1911.		
Mar. 6	Hon. John Thomas, Jim Falls	Contains 80.56% of butter fat.

Butter, Submitted —Continued.
Tested for foreign fats. None found.

Date.	Submitted by.
1910.	
Oct. 28	L. R. Davies, Marinette.
Dec. 16	Fred M. Trogstad, Sparta.
Dec. 24	Prof. F. O. Reed, Madison.
Dec. 29	Kestel Bros., Marshfield.
1911.	
Jan. 14	W. E. Winters, Delavan.
Jan. 31	Ragatz & Gasser, Prairie du Sac.
Feb. 7	M. L. Ensign, Madison.
Feb. 13	J. B. McCoy, Milwaukee.
Feb. 24	A. C. Stone, Tomah.
Mar. 17	J. F. Kadonsky, Wausau.
Mar. 29	Mrs. Geo. R. Kenzel, Oshkosh.
Apr. 8	Arnold J. Brandt, Boyd.
Sept. 22	W. E. Knuth, Green Bay.
Oct. 14	J. S. Jenson, Racine.
Dec. 8	N. A. Steel, Tomah.
Dec. 8	D. F. Truax, Eau Claire.
Dec. 12	Frank Newcomb, Lake Mills.
Dec. 18	P. J. Savage, Iron River.
1912.	
Jan. 15	W. E. Carle, Janesville.
Jan. 22	H. P. Friday, Markesan.
Jan. 27	Mrs. Louis R. Head, Madison.
Feb. 1	Frank Dillman, New London.
Feb. 5	Laun Bros., Wausaukee.
Feb. 5	U. S. Baer, Madison.
Feb. 5	R. T. Jenney, De Pere.
Feb. 13	S. B. Friday, Markesan.
Feb. 23	H. C. Larson, Madison.
Feb. 28	Chas. Kinrill, Green Bay.
Mar. 15	George Jones, Oconto.
Mar. 20	Evelyn M. Irish, Beloit.
Mar. 23	A. C. Siekman, Appleton.
Apr. 4.	Miss M. S. Hohlfeldt, Janesville.
Apr. 8	S. B. Friday, Markesan.

BUTTER FATS.

Date.	From sample of.	Bought of or Submitted by.	Foam.	Melts.	Zeiss Butyro Refracto-meter at 40° C.	Reichert-Meissl Number.	Remarks.
1911.							
Jan. 14	Butter	*Board of Health, Barneveld.....	Good	Clear	43.5	21.1	Marked "1. F. Urban."
Jan. 19	Butter	*Board of Health, Barneveld.....	Good	Clear	43.0	20.8	Marked "2. From consignment rejected by Swift & Co."
Jan. 26	Butter	*Minix & Campbell, Barneveld.....	Good	Clear	42.8	22.8	Taken by inspector.
Jan. 26	Butter	*Minix & Campbell, Barneveld.....	Good	Clear in ½ hr.	42.7	21.1	Taken by inspector from tub returned by Swift & Co.
Feb. 8	Butter	Minix & Campbell, Barneveld.....	Good	Clear	43.0	20.8	Taken by inspector from a tub returned by Swift & Co.
Feb. 8	Butter	Minix & Campbell, Barneveld.....	Good	Clear in 1½ hrs.	44.0	16.9	Marked "Moody Price."
Feb. 8	Butter	Hughes & Harris, Barneveld.....	Good	Clear in 1½ hrs.	43.4	21.9	Marked "F. Pallan, farmer."
Feb. 8	Butter	Hughes & Harris, Barneveld.....	Good	Clear	43.0	22.5	Marked "W. Zipplin, farmer."
Feb. 8	Butter	Minix & Campbell, Barneveld.....	Good	Clear in ½ hr.	43.0	20.7	Marked "J. Hanley."
Feb. 23	Cream	F. Urban, Barneveld.....	.....	.....	43.5	25.8	
Feb. 24	Cream	J. Hanley, Barneveld.....	.....	.....	42.2	24.5	
Feb. 24	Cream	Gordon Williams, Barneveld.....	.....	.....	42.4	26.5	
Feb. 25	Cream	C. J. Zipplin, Barneveld.....	.....	.....	43.0	26.7	

* Submitted sample.

CANDY.

Date.	Bought for.	Bought of.	Remarks.
1910.			
Aug. 31	Candy	N. F. Schmitt, Kenosha.....	No adulteration found.
Aug. 31	Candy	N. F. Schmitt, Kenosha.....	No adulteration found.
1911.			
Jan. 6	Burnt peanuts	Jos. Puccinelli, 473 3rd St., Milwaukee.....	No adulteration found.
Jan. 6	Burnt peanuts	G. A. Taddey, Center St., Milwaukee.....	Manufactured from wormy and moldy peanuts. No shellac found.
Jan. 6	Marshmallows	G. A. Taddey, Center St., Milwaukee.....	Contain gelatin.
Jan. 6	Marshmallows	Chas. Stuger, Center St. and Louis Ave., Milwaukee.....	Contain gelatin.
Jan. 6	Burnt peanuts	F. Schwind, 12th and Chestnut Sts., Milwaukee.....	Coated with shellac.
Jan. 6	Burnt peanuts	Chas. Stuger, Center St. and Louis Ave., Milwaukee.....	Coated with shellac.
Jan. 6	Burnt peanuts	Fruit Stand, 12th and Walnut Sts., Milwaukee.....	Coated with shellac.
Jan. 6	Burnt peanuts	M. Weisberg, 904 Walnut St., Milwaukee.....	Peanuts raw.
Jan. 6	Candy wine bottles.	F. Slinglbauer, 1225 Center St., Milwaukee.....	Syrup in candy bottles contains no alcohol.
Feb. 10	Burnt peanuts	Princess Candy Co., Milwaukee.....	Coated with shellac.
Feb. 10	Burnt peanuts	S. S. Kressge, 313 Grand Ave., Milwaukee.....	No adulteration found.
Feb. 10	Burnt peanuts	Knox Five and Ten Cent Store, 218 Grand Ave., Milwaukee..	No adulteration found.
Feb. 16	Burnt peanuts	The Princess, Grand Ave., Milwaukee.....	Coated with shellac.
Feb. 17	Burnt peanuts	Metry & Barrock, Grand Ave., Milwaukee.....	Coated with shellac.
Feb. 17	Burnt peanuts	Chas. Stuger, 1223 Center St., Milwaukee.....	Coated with shellac.
Feb. 17	Burnt peanuts	F. Schwind, 12th and Chestnut Sts., Milwaukee.....	Coated with shellac.
Feb. 17	Burnt peanuts	Scherer's Confectionery, Grand Ave., Milwaukee.....	Coated with shellac.
Feb. 17	Burnt peanuts	Chacona's, Grand Ave., Milwaukee.....	Coated with shellac.
1912.			
Feb. 14	Candy	*Mrs. Alex. Johnson, Marshfield.....	No adulteration found.

* Submitted sample.

CANNED GOODS.

Canned Goods, Not Standard.

Date.	Bought for.	Labeled.	Brand.	Bought of.	Manufacturer or Jobber.	Remarks.
1911. May 24	Maraschino cherries	Maraschino cherries ...	Lovedale	M. E. O'Neill, Green Bay.	Liebenthal Bros. & Co., Cleveland, Ohio.	Contains a bleaching compound (sulphurous acid), artificial color (coal-tar dye), and added benzoic acid. Not Maraschino cherries. Misbranded.
June 9	Early June peas...	Early June Peas.....	Gold Bond	Boston Store, Milwaukee	Dundas Canning Co., Dundas, Wis.	Mixed with Canada thistle bulbs. Misbranded.
July 12	Maraschino cherries	Maraschino Cherries ...	C. S. K.....	Fiegi & Kopps Saloon, Milwaukee.	Chas. Krause, Milwaukee	Contains a bleaching compound (sulphurous acid), artificial color. Not Maraschino cherries. Misbranded.
July 31	Canned cherries ...	Maraschino Cherries ...	.....	Espenhain's Department Store, Milwaukee.	.....	Contains a bleaching compound (sulphurous acid) and artificial color (coal-tar dye). Not Maraschino cherries. Misbranded.
Aug. 1	Canned cherries ...	Maraschino Cherries ...	.....	Bitker's Department Store, Milwaukee.	Bonheim-Rexinger Co., Cincinnati.	Contains a bleaching compound (sulphurous acid) and artificial color (coal-tar dye). Not Maraschino cherries. Misbranded.
Dec. 9	Maraschino cherries	Maraschino Cherries ...	Victor	G. S. Beardsley, Grand Rapids.	Rheinstrom Bros., Cincinnati.	Contains a bleaching compound (sulphurous acid) and artificial color (cochineal). Not Maraschino cherries. Misbranded.
Dec. 19	French peas	.....	Couteaux	W. A. Gilmore, Durand	Wespelaer, Belgium	Colored with a deleterious substance (a copper compound).

Canned Goods, Not Standard—Continued.

Date.	Bought for.	Labeled.	Brand.	Bought of.	Manufacturer or Jobber.	Remarks.
1911.						
Dec. 19	Canned cherries ...	Canned Cherries	Silver Thistle ...	Joseph Reeves, Beloit...	Hannan & Hogg, Chicago.	Contains a bleaching compound (sulphurous acid) and artificial color (coal-tar dye).
1912.						
Feb. 23	Canned peas	Canned Peas	Couteaux	C. S. Stacy, Waterloo..	Reid, Murdock & Co., Chicago.	Colored with a deleterious substance (a copper compound).
Mar. 4	Canned cherries ...	Maraschino Cherries ...	White Rose.....	Dion Condos, Janesville	Wm. J. Benckos & Co., Chicago.	Contains a bleaching compound (sulphurous acid) and artificial color (a coal-tar dye). Not Maraschino cherries. Misbranded.
May 2	Canned cherries ...	Canned Cherries	Silver Thistle ...	Joseph Reeves, Beloit...	Hannan & Hogg, Chicago.	Contains a bleaching compound (sulphurous acid) and artificial color.
May 2	Canned cherries ...	Fancy Cherries	.....	Burr Bros., Beloit.....	Cincinnati Extract Wks., Cincinnati.	Contains a bleaching compound (sulphurous acid). Artificially flavored.

Canned Goods, Standard.

Date.	Bought for.	Brand.	Bought of.	Manufacturer or Jobber.
1911.				
Mar. 14	Canned tomatoes.	Bright Spot	*J. Q. Emery, Madison.....	V. R. Pieper, Milwaukee.
Aug. 22	Sauerkraut	Hanover	H. G. Vogel, Prairie du Sac.....	Libby, McNeill & Libby, Chicago.
Aug. 22	Sauerkraut	Union	John Kaiserman, Richland Center.....	Steele-Wedeles Co., Chicago.
Aug. 22	Sauerkraut	Genesee	Louis Traeger, Richland Center.....	Sprague, Warner & Co., Chicago.
Dec. 19	Peas	Carvel	Perkins Bros., Kenosha.....	The Columbus Canning Co., Columbus, Wis.

*Submitted by.

CATSUP.

Date.	Bought of.	Manufacturer or Jobber.	Brand.	Bacteria No. per cc., millions.	Per cent of fields showing moulds.	No. spores and yeasts per 1-60 cc.	Remarks.
1911.							
Feb. 8	Adams & Taylor, Whitehall.....	Frazier Packing Co., Elwood, Indiana.....	Champion..	96	60	15	.....
Feb. 24	M. I. Gilbert, Blair.....	Frazier Packing Co., Elwood, Indiana.....	Champion ..	84	50	10	.....
April 17	Monat-Duenow Co., Chippewa Falls.	Franklin MacVeagh & Co., Chicago.....	Lyndon.	12	17	.....	.....
April 18	A. A. Peterson, Amery.....	Green & DeLaittre Co., Minneapolis, Minn.	Golden West..	19	40	.....	.....
April 18	Goethel Bros., Chippewa Falls...	Columbia Conserve Co., Indianapolis, Indiana.	Columbia....	1 to 2	43	.....	.....
April 21	Harry Olson, Eau Claire.....	H. T. Lang Co., Eau Claire.....	Wisconsin....	96	80	40	.....
April 27	Wm. Rabenowich & Sons, Park Falls.	Frazier Packing Co., Elwood, Indiana.....	Burro...	108	94	70	.....
June 19	Behrend & Oelmiller, Madison....	H. J. Heinz Co., Pittsburg.....	Heinz...	12	100	20	.....
June 19	Haak & Son, Madison.....	T. A. Snider Preserving Co., Cincinnati...	Snider's.	84	60	25	.....
June 23	M. H. Halperin, Madison.....	Huss-Edler Preserve Co., Chicago.....	Kinzie..	35	50	30	.....
June 23	S. Kasdin, So. Madison.....	Van Camp Packing Co., Indianapolis, Indiana.	Van Camp's	14	52	15	.....
June 23	I. Kalen, Madison.....	Libby, McNeill & Libby, Chicago.....	Libby's.	8	64	.....	.....
June 23	Mrs. Gerke, Madison.....	The Jersey Packing Co., Cincinnati.....	Newport	120	64	66	.....
July 6	Fred Allen, Ridgeway.....	Reid, Murdock & Co., Chicago.....	Farm House.	16	100	22	.....
July 6	Geo. Swenson, Klevenville.....	Corbin & Sons Co., Chicago.....	Hartland..	1 to 2	60	.....	.....
July 6	Jas. Kelly, Ridgeway.....	Durand & Kasper Co., Chicago.....	Rival...	132	100	30	.....
Dec. 19	H. C. Marquardt, Durand.....	Frazier Packing Co., Elwood, Indiana.....	Royal Red...	24	85	17	.....
1912.							
Mar. 29	Robert Vincent, Baraboo.....	.....	.....	.....	.....	.....	Color natural. Ether-soluble preservative none. Saccharin none.
May 23	George B. Purvis, Knapp.....	The Williams Bros. Co., Detroit, Mich....	Williams	.....	.....	.....	Color natural. Preservative none.

CHEESE.

Cheese, Not Standard.

Date.	Bought for.	Labeled.	Bought of.	Manufacturer or Jobber.	Fat per cent.	Water free substance. per cent.	Ratio.	Remarks.
1911.								
Apr. 19	D'Isigny cheese.	D'Isigny cheese..... American type. Partly skimmed.	Wm. Steinmeyer, Milwaukee.	Phoenix Cheese Co., Zeeland, Mich.	24.0	50.69	47.3	Partly skimmed.
May 16	Pimento cheese.	MacLaren's Pimento cheese.	Adolph Dernehl, Milwaukee.	MacLaren Imperial Cheese Co., Detroit and Toronto	19.1	43.6	43.8	.....
Dec. 28	Cheese	.....	A. Grosenbach Co., Milwaukee.	.....	15.70	54.82	28.6	.....
1912.								
April 16	Cheese	Sorge's Pimento cheese..	The City Grocery Co., La Crosse.	Central Wisconsin Creamery Co., La Crosse.	21.00	42.81	49.0	.....
April 16	Cheese	Elkhorn Brand Potted cheese.	The City Grocery Co., La Crosse.	Kraft & Bros. Co., Chicago.	31.00	64.9	47.8	.....
April 17	Cheddar ..... cheese.	Cheddar cheese.....	Adolph Dernehl, Milwaukee.	Harry Peck, Snow Hill, London.	43.7	.....	.....	Contains boric acid or a salt thereof.

Cheese, Standard.

Date.	Bought for.	Labeled.	Bought of.	Manufacturer or Jobber.
1910.				
Dec. 1	Limburger cheese..	.....	Rudolph Urben, Blue Mounds.....	.....
Dec. 1	Limburger cheese..	.....	Rudolph Urben, Blue Mounds.....	.....
Dec. 1	Limburger cheese..	.....	Rudolph Urben, Blue Mounds.....	.....

Dec. 1	Limburger cheese..	.....	Rudolph Urben, Blue Mounds.....	.....
1911.				
Jan. 27	Cheese	Pearce's Special.....	Monsos Bros., Black River Falls.....	Pearce & Co. Indianapolis.
Feb. 24	Cheese	Wis. Danish Style Pimento cheese.....	E. W. Schultze, La Crosse.....	Wis. Dairy Products Co., La Crosse.
April 26	Camembert cheese.	Veritable Fromage de Camembert, extra fine.	Hale's Grocery, Kenosha.....	C. Percival, New York.
April 26	Camembert cheese.	Imported Camembert	Scholer & Funck, Kenosha.....	Beech-Nut Pack. Co., Canajoharie, N. Y.
April 27	Roquefort and American cheese.	MacLaren's Roquefort and American cheese.	Adolph Dernehl, Milwaukee.....	MacLaren Imperial Cheese Co., Detroit and Toronto.
May 16	Lunch Brie cheese.	Miniature Lunch Brie fancy cheese.....	Adolph Dernehl, Milwaukee.....	.....
May 22	Roquefort cheese...	Roquefort cheese	Findlay & Co., Madison.....	.....
May 26	Brie cheese	Miniature Brie (made in Wisconsin)....	Galloway-West Co., Fond du Lac.....	Galloway-West Co., Fond du Lac.
Aug. 25	Edam cheese	.....	Chas. A. Johnson, Allouez.....	John Beemster, Appleton.
Nov. 6	Cheese	.....	J. L. Kilkenny, Whitewater.....	J. L. Kilkenny, Whitewater.
Nov. 10	Cheese	.....	J. C. Coxe Co., Whitewater.....	J. L. Kilkenny, Whitewater.
Nov. 10	Cheese	.....	A. E. Scholl, Whitewater.....	J. L. Kilkenny, Whitewater.
Nov. 10	Cheese	.....	H. A. Dierfield & Son, Whitewater.....	J. L. Kilkenny, Whitewater.
Nov. 10	Cheese	.....	H. A. Dierfield & Son, Whitewater.....	J. L. Kilkenny, Whitewater.
Dec. 19	Brick cheese	.....	Berard & Kubisiak, Grand Rapids.....	F. B. Ives Co., Fond du Lac.
1912.				
Jan. 5	Cheese	.....	John Jenkins, Athens.....	Marathon County Farmers' Creamery Co., Athens.
Feb. 14	Cheese	.....	Evansville, Merc. Ass'n, Evansville.....	MacLaren Imperial Cheese Co., Detroit.
April 10	Cheese	MacLarens' Canada style cheese.....	E. W. Moran, Portage.....	MacLaren Imperial Cheese Co., Detroit.
April 16	Cheese	Elkhorn Brand Cream cheese.....	The City Grocery Co., La Crosse.....	Kraft & Bros. Co., Chicago.
Apr. 17	Cheese	Elkhorn Brand Club cheese.....	The City Grocery Co., La Crosse.....	Kraft & Bros. Co., Chicago.

Cheese, Submitted.

Date.	Submitted by.	Fat per cent.	Water-free substance per cent.	Ratio.	Remarks.
1910.					
July 13	Butz Bros, Mazomanie.....	32.0	.....	.....	Tested for foreign fats. None found.
1911.					
Aug. 14	J. Kirkpatrick, Richland Center.....	31.5	65.54	48.06	Not standard.

Cheese Submitted—Continued.

Date.	Submitted by.	Fat per cent.	Water-free substance. per cent.	Ratio.	Remarks.
1911.					
Aug. 14	J. Kirkpatrick, Richland Center	33.50	65.06	51.48	Standard.
Dec. 19	H. B. Stanz Co., Milwaukee	19.0	51.16	37.13	Below standard.
1912.					
Jan. 20	F. F. Chesak, Athens	37.9	70.45	53.8	Standard.

COFFEE.

Standard.

Date.	Bought of or Submitted by.	Manufacturer or Jobber.
1911.		
Jan. 3	*Philip Giloy, Humbird	
Oct. 11	*Mrs. Rohr, 368 Quine St., Kenosha	
Nov. 8	*W. F. Scott, Madison	
Nov. 13	Mrs. Minnie Ratigan, 260 Ashland Ave., Kenosha	
Nov. 13	Mrs. Jos. Sweeney, 266 Ashland Ave., Kenosha	Eureka Tea Co., Chicago.
Nov. 13	Mrs. H. J. Davis, 260 Ashland Ave., Kenosha	India Tea Co., Chicago.
Nov. 13	Mrs. Patrick Ward, 322 Wisconsin St., Kenosha	India Tea Co., Chicago and Sullivan Tea & Coffee Co., Kenosha.
		W. W. Barlow, Kenosha.

* Submitted samples.

CREAM.

Cream From City Supplies, Not Standard.

Date.	Bought of.	City.	Per cent fat.
1910.			
Aug. 18	S. J. Resch	Menasha	13.6
Aug. 23	H. Menret	Wausau	14.4
Aug. 25	William Haeger	Merrill	15.0
Aug. 25	F. J. Massart	Merrill	13.0
Aug. 30	Chas. Carlson	Superior	14.0
Aug. 30	C. C. Simon	Superior	17.0
Aug. 30	Ed. Kamler	Superior	17.0
Aug. 30	A. F. Schmidt	Superior	13.6
Sept. 1	Henry Schroeder	Oshkosh	13.2
Sept. 1	J. G. Uecke	Oshkosh	15.1
Sept. 9	Henry Lochschmidt	Appleton	16.1
Sept. 9	William Ohlroges	Appleton	15.7
Sept. 9	A. T. Krickeberg	Appleton	16.6
Sept. 21	J. A. Dearth	Owen	13.0
Sept. 22	Fred C. Rasmussen	Oconto	15.6
Sept. 27	Henry Duellman	Marshfield	17.3
Sept. 29	H. Klackner	Manitowoc	13.0
Sept. 29	S. O. Gunderson	Manitowoc	16.25
Sept. 29	Bernard Gerl	Manitowoc	15.5
Sept. 29	Ernest Dill	Manitowoc	13.6
Oct. 18	Henry Klackner	Manitowoc	14.3
Nov. 4	H. J. Yule	Columbus	14.4
Nov. 7	Al. Hunsaker	Lancaster	16.0
Nov. 10	E. Norlund	Superior	16.2
Nov. 10	Russell Creamery Co.	Superior	12.1
Nov. 10	F. Berg	Superior	17.0
Nov. 10	Chas. Carlson	Superior	13.8
Nov. 10	C. C. Simon	Superior	15.1
Nov. 10	A. F. Schmidt	Superior	12.3
Nov. 11	Bernard Gerl	Superior	15.7
Nov. 11	E. W. Dill	Manitowoc	16.7
Nov. 11	S. O. Gunderson	Manitowoc	14.2
		Manitowoc	

Cream From City Supplies, Not Standard—Continued.

Date.	Bought of.	City.	Per cent fat.
1910.			
Nov. 16	A. Kleist, agent for Jahnke Bros.	Watertown	16.4
Nov. 16	Misses Virtue	Hudson	14.6
Nov. 16	C. H. Baker	La Crosse	15.0
Nov. 16	Fred Hass	La Crosse	16.3
Nov. 16	Wm. Newberg	La Crosse	16.3
Nov. 25	E. M. Holton	Madison	*13.8
Nov. 29	Russell Creamery Co.	Superior	14.0
Nov. 29	Adam F. Schmidt Cry. Co.	Superior	17.5
Nov. 29	Charles Carlson	Superior	12.8
Nov. 29	Mrs. Mary Albeck	Superior	16.0
Nov. 29	Ed Kamler	Superior	16.0
Nov. 29	Russell Creamery Co.	Superior	14.0
Nov. 29	A. Christensen	Superior	16.0
Nov. 29	L. Kahle	Superior	17.5
Dec. 6	J. H. Paul	Platteville	16.7
Dec. 9	E. M. Holton	Madison	13.0
Dec. 30	Crystal Spring Dairy	Madison	16.1
1911.			
June 24	J. G. Funk	Racine	15.1
July 18	Peter Christopher	Stoughton	15.0
Dec. 16	George Holmes	Baraboo	14.4
Dec. 16	J. L. Bonham	Baraboo	16.0
1912.			
Apr. 16	F. G. Reckner & Son	Beaver Dam	16.5
May 21	J. G. Uecke	Oshkosh	16.0

* Contains dirty sediment.

Date.	Bought of	City.
1910.		
Nov. 29	Charles C. Simon	Superior.
Nov. 29	G. Peterson	Superior.
Nov. 29	H. Koffoed	Superior.
Nov. 29	B. Knutsen	Superior.
Nov. 29	T. J. Paulson	Superior.
Nov. 29	Pitts & Son	Superior.
Nov. 29	E. J. Mills	Superior.
Nov. 29	F. Berg	Superior.
Nov. 29	J. H. Carlsgaard	Superior.

Submitted Cream.

Date.	Submitted by	Per cent fat.	Remarks.
1910.			
July 18	Square Deal Creamery, Stoughton	21.0	
July 20	E. V. Harpold, Camp Douglas	27.75	
Aug. 6	John Lebeis, Bloomer	29.6	
Aug. 24	P. Bauer, Kilbourn	25.0	
Aug. 31	A. A. Schroeder, Stetsonville	33.2	
Sept. 6	Ole B. Peterson, Marathon	28.0	
Sept. 14	State Fair Association, Milwaukee	21.0	Tested for preservatives. None found.
Sept. 14	State Fair Association, Milwaukee	20.2	Tested for preservatives. None found.
Sept. 14	State Fair Association, Milwaukee	41.0	Tested for preservatives. None found.
Sept. 14	State Fair Association, Milwaukee	24.0	Tested for preservatives. None found.
Sept. 14	State Fair Association, Milwaukee	35.0	Tested for preservatives. None found.
Sept. 14	State Fair Association, Milwaukee	26.0	Tested for preservatives. None found.
Sept. 14	State Fair Association, Milwaukee	27.5	Tested for preservatives. None found.
Sept. 19	V. E. Scott, Madison	.....	Tested for foreign fats. None found.
Oct. 3	John Belcher, Camp Douglas	28.0	

Submitted Cream—Continued.

Date.	Submitted by	Per cent fat.	Remarks.
1910.			
Nov. 2	J. T. Lundeberg, Stoughton	21.0	Marked "No. 8".
Nov. 2	J. T. Lundeberg, Stoughton	21.0	Marked "No. 9".
Nov. 2	J. T. Lundeberg, Stoughton	25.0	Marked "No. 12".
Nov. 10	N. R. Toogood, Lake Mills	24.35	
Dec. 9	A. H. Koch, Rudolph	20.5	
Dec.	E. G. Schwingle, Avoca	28.0	
1911.			
Jan. 22	N. E. Warren, Grand Rapids, R. D. 2	32.0	
Feb. 7	J. W. Hamilton, Portage, R. D. 2	35.0	
Mar. 7	Hon. Christian Pickart, Malone	20.5	
Mar. 24	Fred Imert, Fall River	29.0	
Mar. 27	F. Laurick, Seymour, R. D. 39	18.75	
Apr. 5	F. W. Parks, Sherry	29.50	
Apr. 5	Roach & Seeber Co., Waterloo	19.50	
Apr. 18	J. A. Marion, Fall River	28.0	
Apr. 26	Henry Meyer, Darlington	23.0	
May 8	Howard D. Kuter, Grand Rapids, R. D. 56	21.6	
July 8	F. W. Huth, Seymour	31.0	
July 27	M. B. Lincoln, Doylestown	22.5	
Aug. 9	R. C. Sawales, Ogema, R. 1	37.0	
Aug. 19	Klondike Creamery, Salem	22.5	
Nov. 27	Hoard's Creameries, Fort Atkinson	37.0	
Dec. 27	J. L. Bonham, Baraboo	17.0	Marked "No. 1".
Dec. 27	J. L. Bonham, Baraboo	15.0	Marked "No. 2".
Dec. 27	J. L. Bonham, Baraboo	21.5	Marked "No. 3".
1912.			
Jan. 2	M. B. Lincoln, Doylestown	26.75	
Feb. 3	C. J. Benson, Reeve	32.0	
Feb. 13	F. A. Philbrick, Baraboo	19.5	
Feb. 14	Hoard's Creameries, Fort Atkinson	32.5	Marked "No. 3".
Feb. 14	Hoard's Creameries, Fort Atkinson	32.0	Marked "No. 17".
Feb. 20	W. G. Roepke, Sussex	22.0	
Mar. 7	W. G. Roepke, Sussex	34.0	
Mar. 14	Marcus Perfection Creamery, Muscoda	.....	Tested for foreign fats. None found.

Mar. 27	Karl Kohn, Dousman	23.5
Apr. 1	Hoard's Creameries, Fort Atkinson	19.0
Apr. 23	Wm. C. Hirschfeld, Jefferson	20.0
Apr. 26	F. G. Reckner, Beaver Dam	22.0
May 1	Hoard's Creameries, Fort Atkinson	24.0
May 15	F. J. Grab, Junction	38.0
June 13	Frank Ritter, Doylestown, R. D. (Weuthrich Bros.)	23.5
June 13	F. Zink, Doylestown (Weuthrich Bros.)	28.75
June 24	E. G. Schwingle, Avoca	36.5

Creams Tested for Per Cent of Butter Fat to Determine Overreading or Underreading of Babcock Test.

During this biennial period, thirty-two samples of cream were collected by members of the commission with the view of determining whether or not overreading or underreading of the Babcock test was being practiced by the purchasers of cream who were paying for the same on the basis of the butter fat contained therein as determined by the Babcock test. The percentage of fat in these samples was determined in the laboratory. In some instances prosecutions followed.

DRUGS.

Ammonia Water, Not Standard.

Date.	Bought of	Per cent ammonia gas (by weight).	Remarks.
1911.			
Dec. 9	John E. Daly, Grand Rapids	7.4	
Dec. 13	Chas. J. Norton, Mellen	8.3	
Dec. 14	A. C. Whitman Co., Hurley	12.6	Contains more than the required percentage of ammonia gas.
Dec. 15	Woodhead's Drug Store, Ashland	3.56	
Dec. 19	Durand Drug Co., Durand	2.66	
Dec. 27	Olaf Noer, Menomonie	7.7	
1912.			
Jan. 24	Weichmann's Pharmacy, Wausau	7.9	

Ammonia Water, Standard.

Date.	Bought of
1911.	
Dec. 9	Samuel Church, Grand Rapids.
Dec. 27	Louis Ehrhard, Menomonie.
1912.	
Jan. 24	Wausau Drug Store, Wausau.

Hamamelis Water (Witch Hazel), Not Standard.

Date.	Bought of	Per cent alcohol (by vol.).
1911.		
Dec. 9	F. L. Steib, Grand Rapids	12.85
Dec. 13	Mellen Drug Store, Mellen	12.0
Dec. 15	Harrison's Drug Store, Ashland	34.0

Hamamelis Water (Witch Hazel), Standard.

Date.	Bought of
1911.	
Dec. 5	Lemmer Drug Co., Spooner.
Dec. 5	Cumberland Drug Co., Cumberland.
Dec. 8	The Potter Pharmacy, Marshfield.
Dec. 9	Johnson, Hill & Co., Grand Rapids.
Dec. 15	Weed's Drug Store, Ashland.
Dec. 14	J. F. Sullivan, Hurley.

Dec. 15	Warner Bros., Ashland.
Dec. 19	D. H. Pollock & Co., Beloit.
Dec. 19	C. A. Hougen, Durand.
Dec. 27	C. C. Sniteman Co., Neillsville.
Dec. 27	Tonnar's Drug Store, Menomonie.
1912.	
Jan. 4	H. D. Culloch Co., Stevens Point.
Jan. 20	E. C. Dettloff, Bloomer.
Jan. 24	Ramsey's Pharmacy, Wausau.

Lime Water, Not Standard.

Date.	Bought of	Per cent calcium hydroxide
1911.		
Dec. 8	The Potter Pharmacy, Marshfield	0.047
1912.		
Jan. 20	E. C. Dettloff, Bloomer	0.078

Lime Water, Standard.

Date.	Bought of
1911.	
Dec. 4	Jewett Drug Co., Rice Lake.
Dec. 5	Lemmer Drug Co., Spooner.
Dec. 5	O. F. Baker & Co., Shell Lake.
Dec. 5	Cumberland Drug Co., Cumberland.
Dec. 5	Red Cross Pharmacy, Spooner.
Dec. 8	Sexton Bros., Marshfield.
Dec. 9	F. L. Steib, Grand Rapids.
Dec. 9	Johnson, Hill & Co., Grand Rapids.
Dec. 9	Samuel Church, Grand Rapids.

Lime Water, Standard—Continued.

Date.	Bought of
1911.	
Dec. 13	Mellen Drug Store, Mellen.
Dec. 13	J. F. Sullivan, Hurley.
Dec. 15	Weed's Drug Store, Ashland.
Dec. 15	Harrison Drug Co., Ashland.
Dec. 15	Warner Bros., Ashland.
Dec. 19	C. A. Hougen, Durand.
Dec. 27	Boston Drug Store, Menomonie.
Dec. 27	Tonnar's Drug Store, Menomonie.
1912.	
Jan. 24	Geo. W. Pardee, Wausau.
Jan. 24	W. W. Albers, Wausau (Branch Store).
Jan. 24	W. W. Albers, Wausau.
Jan. 24	Bert. Schwanberg, Wausau.
Jan. 24	Pardee Pharmacy, Wausau.
Jan. 24	Weichmann's Pharmacy, Wausau.
Jan. 24	Ramsey's Pharmacy, Wausau.
Feb. 9	Crabb & Giese, Ashland.
Feb. 9	H. G. Gielle, Ashland.
Feb. 9	Edw. Hoppenyan, Ashland.
Feb. 28	Wm. Haarlow, Spring Valley.
Mar. 7	Mooney's Pharmacy, Ladysmith.
Mar. 7	Speidel & Speidel, Ladysmith.
	H. A. Dimock, Ladysmith.

Spirit of Camphor, Not Standard.

Date.	Bought of	Gms. of camphor in 100 ccs.	Solvent per cent alcohol, by w't.	Remarks.
1911.				
Nov. 21	John Graham, Portage	12.8	92.6	
Nov. 21	Rhyme's Drug Store, Portage	12.6	92.0	
Dec. 5	O. F. Baker & Co., Shell Lake	9.0	91.5	
Dec. 5	Cumberland Drug Co., Cumberland	9.1	90.3	
Dec. 8	The Potter Pharmacy, Marshfield	9.0	91.5	
Dec. 8	R. J. Strauss, Marshfield	6.2	93.15	
Dec. 9	F. L. Steib, Grand Rapids	4.9	72.4	Below standard both in camphor and alcohol.
Dec. 9	Samuel Church, Grand Rapids	6.17	92.0	
Dec. 13	Mellen Drug Store, Mellen	9.1	91.4	
Dec. 15	Harrison Drug Co., Ashland	9.7	76.6	Contains added water.
Dec. 15	Weed's Drug Store, Ashland	9.0	91.5	
Dec. 19	C. A. Hougen, Durand	8.5	72.0	Below standard both in camphor and alcohol.
Dec. 27	Boston Drug Store, Menomonie	8.5	91.6	
1912.				
Jan. 4	H. D. McCulloch, Stevens Point	10.4	84.3	Contains added water.
Jan. 24	Weichmann's Pharmacy, Wausau	11.0	81.0	Contains added water.
Jan. 24	Wausau Drug Co., Wausau	10.0	80.0	Contains added water.
Jan. 24	Bert Schwanberg, Wausau	3.2	79.2	Below standard both in camphor and alcohol.
Jan. 24	George W. Pardee, Wausau	4.0	64.25	Below standard both in camphor and alcohol.
Jan. 24	W. W. Albers, Wausau	9.3	90.7	
Jan. 24	Weichmann's Pharmacy, Wausau	9.2	91.5	
Jan. 24	Fred A. Schmidt, Wausau	8.5	91.2	
Feb. 9	H. G. Gielle, Ashland	7.4	73.3	Below standard both in camphor and alcohol.
Feb. 9	Harrison Drug Co., Ashland	8.4	83.8	Below standard both in camphor and alcohol.
Feb. 9	Crabb & Giese, Ashland	9.1	91.7	
Mar. 7	Mooney's Pharmacy, Ladysmith	5.34	72.3	Below standard both in camphor and alcohol.
Mar. 7	H. A. Dimock, Ladysmith	11.8	92.4	
Mar. 7	Speidel & Speidel, Ladysmith	12.9	92.26	
Mar. 8	E. C. Molstad, Rio	8.1	90.0	
Mar. 21	Ivey's Pharmacy, Mineral Point	8.1	92.2	
Apr. 2	Wm. Nussbaum, Elk Mound	8.1	91.8	
Apr. 4	Geo. W. Prandel, Wausau	8.0	80.29	Below standard both in camphor and alcohol.
Apr. 10	Alex. Krembs, Jr., Stevens Point	13.2	91.8	

Spirit of Camphor, Standard.

Date.	Bought of
1911.	
Dec. 4	Elmer E. Larson, Rice Lake.
Dec. 4	N. W. Heintz, Rice Lake.
Dec. 5	Lemmer Drug Co., Spooner.
Dec. 5	Red Cross Pharmacy, Spooner.
Dec. 8	Sexton Bros., Marshfield.
Dec. 9	Johnson, Hill & Co., Grand Rapids.
Dec. 14	J. F. Sullivan, Hurley.
Dec. 15	Warner Bros., Ashland.
Dec. 19	W. T. Sherer, Janesville.
Dec. 27	Louis Ehrhard, Menomonie.
Dec. 28	C. C. Sniteman, Neillsville.
Dec. 30	Collette Drug Co., Chippewa Falls.
1912.	
Jan. 4	Alex. Krembs, Jr., Stevens Point.
Jan. 20	E. C. Dettloff, Bloomer.
Jan. 24	W. W. Albers, Wausau.
Jan. 24	Pardee Pharmacy, Wausau.
Feb. 9	E. Hoppenyan, Ashland.
Feb. 28	Wm. Haarlow, Spring Valley.
Mar. 21	Prideaux & Bliss, Mineral Point.
Mar. 21	Metz Pharmacy, Mineral Point.
Mar. 22	H. A. Robinson, Platteville.
Mar. 22	Youman's Pharmacy, Platteville.
Mar. 23	Brown's Drug Store, Highland.
Apr. 3	B. Buchholz & Co., Fond du Lac.
Apr. 4	W. W. Albers, Wausau.
Apr. 4	W. W. Albers, Wausau.
Apr. 5	Williams & Johnson Drug Co., Merrillan.
Apr. 11	H. J. O'Connor, Whitewater.

Spirit of Nitrous Ether, Not Standard.

Date.	Bought of	Ethyl nitrate per cent by w't.	Remarks.
1911.			
Dec. 4	Elmer E. Larson, Rice Lake	2.7	
Dec. 5	O. F. Baker & Co., Shell Lake	82.32	A concentrated solution of ethyl nitrate sold for spirit of nitrous ether.
Dec. 8	Sexton Bros., Marshfield	1.1	
Dec. 9	R J. Strauss, Marshfield	0.06	
Dec. 9	John E. Daly, Grand Rapids	0.41	Contains added water.
Dec. 15	Woodhead's Drug Store, Ashland	1.03	
Dec. 19	King's Pharmacy, Janesville	3.0	
Dec. 30	Riester & Dettloff, Chippewa Falls	2.25	
1912.			
Jan. 4	Alex. Krembs, Jr., Stevens Point	1.7	
Jan. 24	Wausau Drug Co., Wausau	0.0	Contains added water.
Jan. 24	Weichmann's Pharmacy, Wausau	0.58	Contains added water.
Jan. 24	Ramsey's Pharmacy, Wausau	0.15	Contains added water.
Jan. 24	Fred A. Schmidt, Wausau	3.5	Contains added water.
Jan. 24	W. W. Albers, Wausau	2.6	
Jan. 24	Bert Schwanberg, Wausau	2.8	
Jan. 24	Pardee Pharmacy, Wausau	2.6	
Jan. 24	Weichmann's Pharmacy, Wausau	2.4	
Feb. 9	Crabb & Giese, Ashland	1.43	
Apr. 4	Wausau Drug Co., Wausau	2.39	Contains added water.
Apr. 4	Weichmann's Pharmacy, Wausau	1.61	

Spirit of Nitrous Ether, Standard.

Bought of	
Chas. J. Norton, Mellen. A. C. Whitman Co., Hurley. Durand Drug Co., Durand. Olaf Noer, Menomonie Victor C. Woelffer, Menomonie. E. C. Dettloff, Bloomer.	

Tincture of Iodine, Not Standard.

Date.	Bought of	Gms. of iodine in 100 ccs.	Gms. of potassium iodide 100 ccs.	Remarks.
1911.				
Nov. 21	Rhymes Drug Store, Portage	5.6	5.47	
Dec. 5	Red Cross Pharmacy, Spooner	8.34	3.27	Above standard in iodine.
Dec. 8	R. J. Strauss, Marshfield	6.4	3.27	
Dec. 9	John E. Daly, Grand Rapids	6.0	4.52	
Dec. 13	Chas. J. Norton, Mellen	5.04	4.8	
Dec. 14	A. C. Whitman Co., Hurley	7.5	3.62	
Dec. 19	Durand Drug Co., Durand	6.6	3.76	
Dec. 28	C. C. Sniteman, Neillsville	7.00	3.95	
1912.				
Jan. 4	H. D. McCulloch, Stevens Point	5.8	1.5	
Mar. 8	E. C. Molstad, Rio	5.46	2.66	
Mar. 21	Ivey's Pharmacy, Mineral Point	8.17	7.29	Above standard in iodine and potassium iodide.
Mar. 22	H. A. Robinson, Platteville	6.65	3.85	

Tincture of Iodine, Standard.

Date.	Bought of
1911.	
Dec. 4	Jewett Drug Co., Rice Lake.
Dec. 4	N. W. Heintz, Rice Lake.
Dec. 15	Woodhead's Drug Store, Ashland.
Dec. 28	Tonnar's Drug Store, Menomonie.
Dec. 30	Collette Drug Co., Chippewa Falls.
Dec. 30	Riester & Dettloff, Chippewa Falls.
1912.	
Jan. 4	Alex. Krembs, Jr., Stevens Point.
Mar. 21	Prideaux & Bliss, Mineral Point.
Mar. 21	The Metz Pharmacy, Mineral Point.
Mar. 22	Youman's Pharmacy, Platteville.
Mar. 23	Brown's Drug Store, Highland.

Miscellaneous Drugs.

Date.	Sample of	Bought of or Submitted by	Remarks.
1910.			
July 28	Wood alcohol	*Prof. Chas. S. Slichter, Madison	Contains methyl alcohol, by weight, 65%.
Aug. 4	Castor oil	*Dr. F. S. Wade, New Richmond	No adulteration found.
Oct. 26	Alcohol	*T. R. Whalen, Madison	Contains alcohol, by weight, 76.5%. Not standard. Diluted with water.
Oct. 31	Alcohol	A. A. Pardee, Madison	Alcohol, by weight, 91%. Not standard.
1911.			
May 17	Sulphur	*Hon. Clinton B. Ballard, Appleton	Standard.
Dec. 30	Precipitated sulphur	Collette Drug Co., Chippewa Falls	Ash 0.33%. Not standard.
1912.			
Jan. 30	Alcohol	W. E. Barringer, Baraboo	Alcohol, by weight, 91.4%. Not standard.
Feb. 27	Alcohol	C. A. Hougen, Durand	Alcohol, by weight, 78.44%. Not standard. Diluted with water.
Apr. 8	Alcohol	C. A. Hougen, Durand	Alcohol, by weight, 90.5%. Not standard.

*Submitted samples.

EVAPORATED MILK.

Evaporated Milk, Not Standard.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Labeled.	Brand.	Per cent fat	Per cent total solids
1911.						
Feb. 17	O. K. Himley, Soldiers Grove.	John T. Hancock Co., Dubuque, Iowa.	Evaporated unsweetened milk.....	Faultless	6.9	22.77
Mar. 8	*F. E. Carswell, Richland Center.	Reid, Murdock & Co., Chicago....	Condensed milk	Monarch	6.9	21.75
		National Condensed Milk Co., Chicago.	Evaporated milk	Globe	8.14	25.60
1912.						
April 10	J. H. Bryan, Portage....	.....	Condensed milk	Carnation	7.35	24.75
Apr. 16	H. E. Schlicht, La Crosse.	.....	Condensed milk	Globe	7.38	24.87
Apr. 16	H. E. Schlicht, La Crosse.	Libby, McNeill & Libby, Chicago..	Unsweetened sterilized evaporated milk.	Libby's	7.75	25.17
Apr. 17	B. M. Benson, Madison...	Helvetia Milk Condensing Co., Highland, Ill.	Evaporated milk	Pet	7.50	25.86
Apr. 17	B. M. Benson, Madison...					
May 7	E. A. Glover, New Richmond	National Condensed Milk Co., Chicago.	Evaporated milk unsweetened.....	Globe	7.50	24.39

*Submitted sample. Bought for condensed milk.

Evaporated Milk, Standard.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Labeled.	Brand.
1911.				
Sept. 28	*J. Q. Emery, Madison.....	.....	.....	.....
1912.				
April 10	Steinke Bros., Arlington.....	The Sheboygan Evaporated Milk Co., Sheboygan.	Evaporated milk	Sunset.
April 10	W. R. Deakin, Portage.....	The Sheboygan Evaporated Milk Co., Sheboygan.	Evaporated milk	Sunset.
April 10	W. R. Deakin, Portage.....	Van Camp Packing Co., Indianapolis, Indiana..	Evaporated milk	Van Camp's.
April 10	J. H. Bryan, Portage.....	Van Camp Packing Co., Indianapolis, Indiana..	Evaporated milk	Van Camp's.
April 10	T. W. Drew, Portage.....	Pacific Coast Cond. Co., Seattle, Wash.....	Evaporated milk	Carnation.

April 10	T. W. Drew, Portage	Libby, McNeill & Libby, Chicago	Evaporated milk	Libby's.
April 16	H. E. Schlicht, La Crosse	Van Camp Packing Co., Indianapolis, Indiana	Condensed milk	Van Camp's.
April 17	B. M. Benson, Madison	National Condensed Milk Co., Chicago	Evaporated milk	Globe.
April 17	B. M. Benson, Madison	Van Camp Packing Co., Indianapolis, Indiana	Evaporated milk	Van Camp's.
April 24	D. W. McKenzie, Cadott	The Ortman Condensed Milk Co., Dundee, Ill.		Dundee.
May 2	A. Heiting, Stanley	Eau Claire Grocery Co., Eau Claire		Colon.
May 2	A. Heiting, Stanley	The H. T. Lange Co., Eau Claire		Yours truly.

* Submitted sample.

FLAVORS AND FLAVORING EXTRACTS.

Lemon Extract, Not Standard.

Date.	Bought of	Manufacturer or Jobber.	Labeled.	Brand.	Oil per cent.	Alcohol per c't. (by vol.)	Remarks.
1910. Dec. 28	F. M. White & Son, Maiden Rock.	Rolander Remedy Co., St. Paul, Minn.	Triple strength lemon flavor.	Rolander's	0.0	46.3	Not triple strength. Not standard. Misbranded.
Dec. 28	H. L. Platte, Prescott	Geo. R. Newell & Co., Minneapolis, Minn.	Concentrated lemon flavor.	Mrs. Bakers'	0.0	26.0	Below standard. Not concentrated. Misbranded.
Dec. 29	Albert Kirchner, Fountain City.	Fountain City Bottling Works, Fountain City.	Extract lemon	Fromm's Fountain.	4.3	89.0	Below standard in oil of lemon.
1911. Mar. 14	Mower & Bush, Black River Falls.	McNeill & Higgins Co., Chicago.	Pure flavoring extract of terpeneless lemon.	Mt. Baker	0.0	48.4	One quarter standard strength of terpeneless lemon extract. Sold for flavoring extract of lemon.

Lemon Extract—Continued.

NOT STANDARD—Continued.

Date.	Bought of	Manufacturer or Jobber.	Labeled.	Brand.	Oil per cent.	Alcohol per c't. (by vol.)	Remarks.
1912. April 5	Pelletier & Paquette, Chippewa Falls.	Meissner-Bergwall Co., Milwaukee.	Terpeneless lemon extract.	Full Value	0.0	48.21	One-half standard strength terpeneless extract of lemon. Sold for extract of lemon.
April 25	S. H. Jewett, Milton Junction.	S. H. Jewett, Milton Junction.	Extract of lemon.....	Excelsior	4.6	81.68	Below standard in lemon oil. Artificially colored.
May 22	R. H. Brennecke, Watertown.	R. H. Brennecke, Watertown.	Extract of lemon.....	.....	2.85	79.69	Below standard in lemon oil. Artificially colored.
June 27	Henry Machlman, Burke...	Badger Medicine Co., Waterloo.	Pure concentrated extract of lemon.	Badger	0.0	42.62	Not a pure concentrated extract of lemon. Not a lemon extract. Misbranded.
June 27	C. M Gulickson, Kaiser....	.....	.....	.....	0.0	44.5	Bought for lemon extract. Not lemon extract. One half standard strength terpeneless extract of lemon.
June 28	Badger Medicine Co., Waterloo.	Badger Medicine Co., Waterloo.	Pure concentrated extract of lemon.	Badger	0.0	44.18	Not a pure concentrated extract of lemon. Artificially colored with a coal tar dye. Misbranded.

Lemon Extract—Continued.

STANDARD.

Date.	Bought of	Manufacturer or Jobber.	Brand.
1910.			
Dec. 16	Gilbert Bros., Eau Claire	McFadden Coffee & Spice Co., Dubuque, Ia	Crystal.
Dec. 21	Fred Broadburt Lone Rock	A. J. Kasper Co., Chicago	A. J. K.
Dec. 21	F. T. Nourse & Son, Lone Rock	Federal Extract Co., Chicago	Federal.
Dec. 21	Brainard & Son, Lone Rock	John T. Hancock Co., Dubuque, Ia	Climax.
Dec. 21	J. A. Logan, Muscoda	McNeill & Higgins Co., Chicago	Blossom.
Dec. 25	H. L. Platte, Prescott	George R. Newell & Co., Minneapolis	Newell's Extra.
1911.			
June 8	Frank Strykowski, Junction City	Wilson Mercantile Co., Wausau	Good Buy.
June 8	Frank Strykowski, Junction City	McNeill & Higgins Co., Chicago	Blossom.
Dec. 7	H. N. Burrington, Tomahawk	Royal Remedy & Extract Co., Dayton, Ohio	Souder's.
Dec. 19	Fries & Kaiser, 222 Main St., Racine	Chapman & Smith Co., Chicago	Rolling Pin.
1912.			
May 17	Dorchester Coöperative Co., Dorchester	Chapman & Smith Co., Chicago	Chapman's.

Terpeneless Lemon Extract.

BELOW STANDARD.

Date.	Bought of	Manufacturer or Jobber.	Labeled.	Brand.	Per cent citral (by Hiltner method).	Remarks.
1911.						
Dec. 15	George J. Neher, Eau Claire.	Eau Claire Grocery Co., Eau Claire.	Terpeneless lemon flavor, one-quarter standard strength.	Valley Belle	.04	One-quarter standard strength. Sold for terpeneless lemon flavor.
Dec. 19	R. H. Goodwin, Beloit	McNeill & Higgins Co., Chicago.	Pure extract terpeneless lemon.	Mt. Baker	0.1	Below standard in citral.
1912.						
Mar. 28	Chas. Hoenn, Fall Creek	Steinwender-Stoffregen Coffee Co., St. Louis, Mo.	One-half standard strength, terpeneless of lemon flavor.	Jumbo	0.1	One-half standard strength. Sold for terpeneless lemon flavor.

Vanilla Extracts.

NOT STANDARD, AND SUBSTITUTES.

Date.	Bought of	Bought for	Manufacturer or Jobber.	Labeled.	Brand.	Remarks.
1909.						
Dec. 16	Sever Olson, Ashland.....	Vanilla flavoring	Sandham Medicine Co., Duluth, Minn.	Vanillin, coumarin and vanilla flavor.	Interstate	Not a vanilla flavoring.
1910.						
Dec. 29	B. G. Schultz & Son, Fountain City.	Vanilla extract..	Frimmes Chemical Co., La Crosse.	Artificial vanilla extract made from chemically pure vanillin and coumarin.	Fountain	Not a vanilla extract. Contains little or no vanilla.
Dec. 29	Albert Kirchner, Fountain City.	Vanilla flavor ...	Fountain City Bottling Works, La Crosse.	Compound essence vanillin and coumarin. Superior to ordinary vanilla flavor.	Fountain	Not a vanilla flavor. Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
1911.						
June 22	Cumberland Supply Co., Cumberland.	Compound vanilla flavor.	Steinwender & Stoffregen Coffee Co., St. Louis, Mo.	Compound flavor of vanillin, 8 ounces full measure.	Jumbo	Misbranded as to measure. Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
Dec. 7	D. C. Jones, Tomahawk..	Vanilla extract..	A. Kickbusch Grocery Co., Wausau.	Imitation extract of vanillin, vanilla, tonka and coumarin.	.....	Contains little or no vanilla. In imitation of genuine vanilla extract.
Dec. 19	Fries & Kaiser, Racine...	Vanilla extract..	Chapman & Smith Co., Chicago.	Colonial vanilla extract.	Rolling Pin	Not a standard extract Contains coumarin.
1912.						
Mar. 28	Chas. Hoenn, Fall Creek..	Compound vanillin flavor.	Steinwender & Stoffregen Coffee Co., St. Louis, Mo.	Compound flavor of vanillin, coumarin, vanilla, with caramel coloring, 8 ounces full measure.	Jumbo	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract. Misbranded as to measure.
Apr. 23	T. W. Janzen, Milwaukee..	Compound vanillin and coumarin.	Janzen Co., Milwaukee.	Compound vanillin, coumarin, sugar color.	Daisy	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.

Apr. 23	R. W. Bruckner, 760 27th St., Milwaukee.	Vanillin	Janzen Co., Milwaukee.	Flavoring extract vanillan.	Daisy	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
Apr. 23	A. J. Hilbert Co., Milwaukee.	Imitation vanilla and tonka.	A. J. Hilbert Co., Milwaukee.	Imitation vanilla and tonka with caramel color.	Wright's	Artificially colored and flavored in imitation of the flavor and color of genuine vanilla extract.
Apr. 23	Economy Grocery and Coffee Store, Milwaukee.	Imitation vanilla and tonka.	.....	Imitation vanilla and tonka with caramel color.	Economy	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
Apr. 23	Arthur Gale, 2615 Elm St. Milwaukee.	Compound vanillin and coumarin.	Hart Extract Co., Wauwatosa.	Compound vanillin and coumarin with caramel color.	Eclipse	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
Apr. 23	Hart Extract Co., Wauwatosa.	Compound vanillin and coumarin.	Hart Extract Co., Wauwatosa.	Compound of vanillin and coumarin with caramel color.	Eclipse	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
Apr. 23	F. E. Warren, Milwaukee..	Imitation vanilla and tonka.	.....	Imitation vanilla and tonka with caramel color.	Warren's	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
Apr. 25	S. H. Jewett, Milton Junction.	Extract of tonka and vanillin.	S. H. Jewett, Milton Junction.	Compound extract of tonka and vanillin.	Jewett's	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.
June 4	A. J. Hilbert, Milwaukee..	Imitation vanilla and tonka.	A. J. Hilbert Co., Milwaukee.	Imitation vanilla and tonka with caramel color.	.....	Artificially colored and flavored in imitation of the color and flavor of genuine vanilla extract.

7—D. & F.

Vanilla Extracts.

STANDARD.

Date.	Bought of	Manufacturer or Jobber.	Brand.
1912.			
Mar. 28	Charles Hoenn, Fall Creek.....	Steinwender-Stoffregen Coffee Co., St. Louis, Mo.....	Yale.
April 5	Pelletier & Paquette, Chippewa Falls.....	Meissner-Bergwall Co., Milwaukee.....	Ice Cream Makers' Special.
April 10	Chas. Frieders, Antigo.....	B. Heller & Co., Chicago.....	

Miscellaneous Flavors and Extracts.

Date.	Bought for	Labeled.	Bought of	Manufacturer or Jobber.	Brand.	Remarks.
1911.						
Dec. 7	Imitation lemon flavor....	Imitation Lemon Flavor.	D. C. Jones, Tomahawk.	Franklin MacVeagh & Co., Chicago.	Priscilla	In imitation of the flavor of a genuine extract of lemon.
1912.						
May 7	Extract of almond.....	Extract of Almond..	Ole Bergsug, New Richmond.	Hunt's Perfect Baking Powder Co., Minneapolis.	Hunt's Perfect...	An alcoholic solution of benzaldehyde. Not an extract of almond.
May 7	Extract of orange.....	Extract of Orange. Triple. 2 ounce full measure.	Ole Bergsug, New Richmond.	Minnesota Mercantile Co., Stillwater, Minn.	Dells	Below standard in oil of orange. Misbranded, in that it is not a triple extract, and as to measure, being 14.5% short of amount stated on label.

FLOUR.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Brand	Remarks.
1911.				
Jan. 26	A. C. Dixon & Son, Kilbourn.....	Updike Milling Co., Omaha, Neb...	Updike's Seal of Nebraska	Tested for chemical bleaching. Not chemically bleached.
Feb. 6	*H. C. Larson, Madison.....	Wells-Abbott-Nieman Co., Schuyler, Neb.	Puritan	Tested for chemical bleaching. Not chemically bleached.
Aug. 28	*Duluth-Superior Milling Co., Duluth, Minn.	.....	....	Tested for chemical bleaching. Not chemically bleached.
1912.				
Jan. 18	*C. Monson, Richland Center.....	.....	....	No adulteration found. Not chemically bleached.
Feb. 28	J. A. Meller Drug Co., Boscobel.....	.....	Puritan	Tested for chemical bleaching. Not chemically bleached.

Feb. 28	Williams & Scott, Boscobel.....	Davis Milling Co., St. Joseph, Mo..	Cream of Lakota...	Tested for chemical bleaching. Not chemically bleached.
Feb. 28	The Parker-Hildebrand Co., Boscobel	.....	White Lily	Tested for chemical bleaching. Not chemically bleached.
Feb. 29	Robert Buerki, Sauk City.....	Southwestern Milling Co., Kansas City.	Anstos	Tested for chemical bleaching. Not chemically bleached.
Feb. 29	Schneller & Felix Co., Prairie du Sac	Crete Mills, Crete, Neb.....	White Lily	Tested for chemical bleaching. Not chemically bleached.
Feb. 29	Murrish & Sons, Mazomanie.....	.....	Kirk's Cyclone.....	Tested for chemical bleaching. Not chemically bleached.
Mar. 14	*George H. Smith, Janesville.....	.....	....	Graham flour. Tested for adulterants. None found.

*Submitted sample.

HONEY.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Remarks.
1910.			
Sept. 27	Milt. Brown, Shell Lake.....	Milt. Brown, Shell Lake.....	Contains sucrose 10.4%. Not standard.
1911.			
Feb. 23	*Peterson Grocery Co., Waupaca.....	.....	Standard.
Feb. 23	*Peterson Grocery Co., Waupaca.....	.....	Standard.
Mar. 2	*J. Q. Emery, Madison.....	.....	Standard.
Nov.	*J. L. Haakeson, Stoughton.....	.....	Standard.
Nov. 29	Harty Bros., 185 Michigan St., Milwaukee.....	E. R. Pahl & Co., Milwaukee.....	Standard.
1912.			
Feb. 14	Evansville Mercantile Ass'n, Evansville.....	McNeil & Higgins Co., Chicago.....	Standard.
Feb. 15	H. C. Koenig, Marshfield.....	.....	Standard.

* Submitted samples.

ICE CREAM.

Ice Cream, Below Standard in Fat.

Date.	Bought of	Manufacturer.	Fat per cent.	Remarks.
1910.				
July 19	S. H. Knox & Co., Madison		13.0	Contains a gum and coal tar dye.
July 21	Bellows & Co., Chippewa Falls	Bellows & Co., Chippewa Falls	12.6	Contains gums.
Aug. 15	C. A. Whipple, Beloit	Sturtevant, Wright & Wagner Dairy Co., Beloit.	8.5	Contains no gums or gelatin.
1911.				
May 9	American Ice Cream Co., Madison	American Ice Cream Co., Madison	11.5	Contains gum. No gelatin found.
July 17	Paul A. Ruf, Monroe	Paul A. Ruf, Monroe	10.1	Contains no gums or gelatin.
July 17	Gustave Voss, Monroe	Union Dairy Co., Rockford, Ill.	8.1	Contains no gums or gelatin.
July 17	Geo. Pfeiffer, Monroe	Geo. Pfeiffer, Monroe	11.1	Contains gum. No gelatin found.
July 17	Krise's Emporium, Monroe	Allen, Rockford, Ill.	9.8	Contains gelatin. No gums found.
July 17	Zilmer's Bakery, Monroe	Shurtliff & Co., Janesville	13.3	Contains gelatin. No gums found.
Nov. 10	H. B. Quackenbush, Antigo		12.6	Contains gelatin. No gums found.
Dec. 5	H. B. Quackenbush, Antigo		12.0	

Ice Cream, Standard in Fat.

Date.	Bought of	Manufacturer or Jobber.	Remarks.
1910.			
July 18	R. P. Schults, La Crosse		Contains a gum.
July 18	Royal Confectionery, La Crosse	Hadreas & Pappas, La Crosse	
Sept. 21	Moriarity & Hayes, Chippewa Falls	Eau Claire Creamery Co., Eau Claire	Contains gelatin.
Sept. 21	J. Melson, Chippewa Falls	John A. Mitchell, Chippewa Falls	Contains gelatin.
1911.			
May 9	Thos. Olson, Madison	Thomas Olson, Madison	Tested for gelatin and gums. None found.
May 9	T. Hagan, Madison		Contains gelatin. No gums found.
May 9	Ben & Frank's Lunch Room, Madison	Mansfield-Caughey Co., Madison	Contains gelatin. No gums found.

May 9	J. Y. Keeley, Palace of Sweets Co., Madison.	Palace of Sweets Co., Madison	Contains gum. No gelatin found.
May 9	C. F. Waltzinger, Madison	C. F. Waltzinger, Madison	Contains gelatin. No gums found.
July 11	Robinson's Drug Store, Platteville		Contains gelatin. No gums found.
July 11	Hatcher's Restaurant, Platteville		Contains gums. No gelatin found.
July 11	Metropolitan Cafe, Platteville	Metropolitan Cafe, Platteville	No gums or gelatin found.
July 17	Edw. Neuenschwander, Monroe	Mineral Point Creamery Co., Mineral Point	Contains gums. No gelatin found.
Oct. 18	Peter Zappas, Merrill	Peter Zappas, Merrill	Tested for foreign fats. None found.
Nov. 10	Rowlinson & Dickenson, Antigo		Contains gum. No gelatin found.
Nov. 10	N. Papadakis, Antigo		Tested for gums and gelatin. None found.
Dec. 8	*C. Dorter, Mayville		Fat 16.10%.
1912.			
May 6	*C. Wertz & Son, Richland Center		Fat 14.25%.

* Submitted samples.

EXPERIMENTAL WORK ON ICE CREAM AND ICE CREAM MIXTURES

While gathering samples of ice cream from various dealers throughout the state, the statement was made to a member of the commission by certain ice cream dealers that a representative sample of ice cream could not be obtained where a large quantity of the ice cream mixture was prepared and then frozen. To either prove or disprove this statement, Mr. H. C. Larson, second assistant commissioner, was instructed to obtain samples of such unfrozen mixtures and of the product at various stages in the process of freezing, for the purpose of making tests of the butter fat content. The results of the analyses of these samples collected by Mr. Larson and submitted to the laboratory are given in the following tables:

Table No. I.

Date.	Bought of	Bought for	Per cent fat.	Remarks.
1911				
June 7'..	Rendtorff & Zilisch Co., Madison.	Ice cream mixture with gelatin.	14.6	Taken from a 70 gallon mixture ready for freezing.
June 7...	Rendtorff & Zilisch Co.. Madison.	Ice cream with gelatin.	14.2	Taken from the first 20 gallons frozen.
June 7...	Rendtorff & Zilisch Co., Madison.	Ice cream with gelatin.	14.4	Taken from the next 17 gallons frozen.
June 7...	Rendtorff & Zilisch Co., Madison.	Ice cream with gelatin.	14.4	Taken from the next 5 gallons frozen.

Table No. II.

Date.	Bought of	Bought for	Per cent fat.	Remarks.
1911				
June 7...	Mansfield-Caughey Co., Madison.	Ice cream mixture with gelatin.	14.3	Taken from a 220 gallon mixture ready for freezing.
June 7...	Mansfield-Caughey Co.. Madison.	Ice cream with gelatin.	14.0	Taken from first ten gallons frozen.
June 7...	Mansfield-Caughey Co., Madison.	Ice cream with gelatin (A)	14.0	Taken from next 80 gallons frozen.
June 7...	Mansfield-Caughey Co., Madison.	Ice cream with gelatin (B)	14.2	Taken from next 5 gallons frozen.
June 10..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin (C)	14.1	Taken from bottom portion of a container packed with sample A after being kept in a frozen condition for three days.
June 10..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin.	14.4	Taken from top portion of above container at the same time sample C was collected.
June 10..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin (D)	14.4	Taken from bottom portion of a container packed with sample B after being kept in a frozen condition for three days.
June 10..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin.	14.7	Taken from top portion of the above container at the same time sample D was taken.

Table No. III.

Date.	Bought of	Bought for	Per cent fat.	Remarks.
1911				
June 19..	Rendtorff & Zilisch Co., Madison.	Ice cream mixture with gelatin.	13.2	Taken from a mixture ready for freezing.
June 19..	Rendtorff & Zilisch Co., Madison.	Ice cream with gelatin.	12.9	Taken from first 10 gallons frozen.
June 19..	Rendtorff & Zilisch Co., Madison.	Ice cream with gelatin.	13.0	Taken from next 15 gallons frozen.
June 19..	Rendtorff & Zilisch Co., Madison.	Ice cream with gelatin.	13.0	Taken from next 15 gallons frozen.

Table No. 4.

Date.	Bought of	Bought for	Per cent fat.	Remarks.
1911.				
June 20..	Mansfield-Caughey Co., Madison.	Ice cream mixture with gelatin.	13.4	Taken from a mixture ready for freezing.
June 20..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin.	13.0	Taken from first 10 gallons frozen.
June 20..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin.	12.8	Taken from next 30 gallons frozen.
June 20..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin (A).	13.0	Taken from next 65 gallons frozen.
June 20..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin (B).	12.8	Taken from next 2 gallons frozen.
June 23..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin.	12.8	Taken from the bottom portion of a container packed with sample A, after being kept in a frozen condition for 3 days.
June 23..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin.	12.8	Taken from the bottom portion of a container packed with sample B, after being kept in a frozen condition for 3 days.
June 23..	Mansfield-Caughey Co., Madison.	Ice cream with gelatin.	13.0	Taken from the middle portion of a con ainer packed with samples A and B.

ICE CREAM CONES.

Ice Cream Cones Sweetened with Saccharin.

Date.	Bought of	Manufacturer or Jobber.	Remarks.
1910.			
July 18	C. H. Enderline Chippewa Falls	.....	
July 19	A. Steady Co., Eau Claire	.....	Contains boric acid or a salt thereof.
Aug. 4	W. H. Tonne, Medford	Consolidated Wafer Co., Brooklyn.	
Aug. 10	R. L. Meader Co., Eau Claire	Consolidated Wafer Co., Brooklyn.	

Ice Cream Cones Free from Saccharin, and Salicylic, Boric, and Benzoic Acids.

Date.	Bought of	Manufacturer or Jobber.	Remarks.
1910.			
July 18	Hunt Bros., Chippewa Falls	Hunt Bros., Chippewa Falls	
July 18	John A. Mitchell, Chippewa Falls		
July 19	Stamatkos Bros., Eau Claire	Richart & Richter, Minneapolis, Minn.	
July 19	Smith-Dor. Co., Eau Claire		
July 19	S. H. Knox Co., Madison		
July 20	Bellows & Woodruff, Chippewa Falls	Bellows & Woodruff, Chippewa Falls	
July 20	Isaac Kailen, Madison	Consolidated Wafer Co., Brooklyn, N. Y.	
July 20	Madison Candy Co., Madison	Globe Biscuit and Specialty Co., Baltimore, Md.	
July 21	Model Creamery Co., Madison	Boston Biscuit Co., Chicago	
July 26	G. O. Gustafson, Rice Lake	Brooklyn Manufacturing Co., Brooklyn, N. Y.	Contains artificial color.
July 26	B. Drocck, Rice Lake		
July 26	John Poulis, Ashland Candy Kitchen, Ashland	Begstedt Bros., St. Paul	Contains artificial color.
July 27	B. Anderson, Ashland	Begstedt Bros., St. Paul	
July 27	B. F. Judd, Ashland	Anger Baking Co., New York	
July 27	Hoppenyan Drug Store, Ashland	Hawkins, Minneapolis, Minn.	Contains artificial color.
July 27	Quincy W. Frost, Washburn		
July 27	George Mertz, Washburn	Coleman Cone & Candy Co., Duluth	
July 28	R. E. Johnson, Bayfield		
July 28	Anderson Bros., Bayfield		
July 28	Jos. Brendt, Bayfield		

JELLIES, PRESERVES AND MIXTURES.

Date.	Bought for	Labeled.	Bought of	Manufacturer or Jobber.	Brand.	Remarks.
1911.						
Mar. 22	Imitation fruit jelly.	Imitation fruit jelly 35% apple juice, 60% corn syrup, 5% sugar. Preserved with phosphoric acid.	Nendeck Bros., Neenah.	D. B. Scully Syrup Co., Chicago.	.....	Misbranded as to percentage of glucose. A glucose jelly in imitation of a genuine apple jelly.

Mar. 29	Preserves	Preserves. Apple juice from trimmings, red raspberry, sugar and 1-10 of 1% citric acid.	O. Kopplin, Portage.	Roundy, Peckham & Dexter Co., Milwaukee	Challenge	Not a preserve. Misbranded.
Mar. 29	Pure fruit plum jelly flavor.	Pure fruit plum jelly flavor 8% plum juice, 37% apple juice, 55% cane sugar.	O. H. Meyer, Portage.	Emery Food Co., Chicago.	.....	Misbranded. Fruit juices used not stated on label in order of their preponderence.
Mar. 29	Pure fruit jelly raspberry flavor.	Pure fruit jelly, raspberry flavor.	E. W. Moran, Portage.	Geo. I. Robinson & Co., Milwaukee.	Narragansett ...	Tested for preservatives, none found. Not labeled as required by law.
Mar. 29	Pure apple jelly...	Pure apple jelly.	E. W. Moran, Portage.	Geo. I. Robinson & Co., Milwaukee.	Narragansett ...	Tested for preservatives. None found.
Mar. 29	Strawberry preserves.	Preserves. Strawberries ...	O. H. Meyer, Portage.	St. Louis Syrup & Preserving Co., St. Louis.	Tiger	Contains benzoic acid or a salt thereof.
Mar. 29	Peach preserves ...	Preserves. Peaches	O. H. Meyer, Portage.	St. Louis Syrup & Preserving Co., St. Louis.	Tiger	Tested for preservatives and saccharin. None found.
July 24	Imitation fruit jelly.	Imitation fruit jelly. Compound: Glucose, apple trimmings juice. 1-10 of 1% phosphoric acid. Colored with harmless amaranth color.	Meyer & Shakman, New Lisbon.	Oelrich & Berry Co., Chicago.	Premium	Artificially colored to make it appear better or of greater value than it really is.
Oct. 2	Imitation fruit jelly.	Imitation fruit jelly.....	Jake Kromefski, Madison.	Oelrich & Berry Co., Chicago.	Lily	Not labeled as required by law.
Oct. 2	Imitation fruit jelly.	Imitation fruit jelly.....	Globe Bakery, Madison.	Oelrich & Berry Co., Chicago.	Premium	Not labeled as required by law.
Oct. 2	Glucose, sugar, fig and apple jelly.	Glucose, sugar, fig and apple jelly.	Globe Bakery, Madison.	Chapman & Smith Co., Chicago.	Rolling Pin	Tested for preservatives and coal tar dye. None found. Not labeled as required by law.
Oct. 2	Apple, glucose jelly	Apple, glucose jelly, apple trimmings juice, corn syrup (glucose) colored with fruit juices. Contains 1-10 of 1% phosphoric acid.	Nic. Webber, Madison.	Hulker & Bletsch Co., Chicago and Cincinnati.	Crescent	Not labeled as required by law. Made from apple trimmings and contains added phosphoric acid.
Oct. 2	Apple, glucose jelly	Apple, glucose jelly, apple trimmings juice, corn syrup (glucose), colored with fruit juices. Contains 1-10 of 1% phosphoric acid.	Tip Top Bakery, Madison.	Hulker & Bletsch Co., Chicago and Cincinnati.	Crescent	Not labeled as required by law. Made from apple trimmings and contains added phosphoric acid.

Jellies, Preserves and Mixtures.—Continued.

Date.	Bought for	Labeled.	Bought of	Manufacturer or Jobber.	Brand.	Remarks.
1911.						
Oct. 24	Jelly	.....	City Bakery, Stoughton.	.....	.....	Not jelly. Contains glucose.
Oct. 24	Jelly	.....	Home Bakery, Stoughton.	.....	.....	Not jelly. Contains glucose.
Oct. 24	Jelly	.....	City Hall Bakery, Stoughton.	.....	.....	Not jelly. Contains glucose.
Dec. 7	Jelly	Jelly. Apple jelly from trimmings. Grape flavor.	D. C. Jones, Tomahawk.	Franklin MacVeagh, Chicago.	Charm	Misbranded. Made from apple trimmings.
1912.						
Feb. 14	Pure fruit jelly....	Pure fruit jelly.....	Evansville Mercantile Co., Evansville.	McNeill & Higgins Co., Chicago.	Blossom	No adulteration found.

LARD.

Date.	Bought of or Submitted by	Remarks.
1910.		
Oct. 25	*Dr. H. C. Reich, Sheboygan.....	No adulteration found.
Nov. 28	*F. Traubman, Shell Lake.....	No adulteration found.
1911.		
Jan. 5	M. L. Shakman, New Lisbon.....	Contains little or no lard. The product is composed mainly of cottonseed stearin.
Mar. 22	G. Ulrich & Co., Neenah.....	No adulteration found.
Oct. 23	*Edward Hoffman, Monroe	No adulteration found.

* Submitted sample.

LINSEED OILS.

Linseed Oils, Not Standard.

FOUND TO CONTAIN MINERAL OIL.

Date.	Bought for	Bought of or Submitted by	Manufacturer or Jobber.	Remarks.
1910.				
Oct. 8	Boiled linseed oil	M. P. Hollrith, Grafton	Midland Linseed Co., Minneapolis.	
Dec. 27	Boiled linseed oil	Matt. Schmitz, Waunakee		Heavily adulterated.
1911.				
Feb. 3	Boiled linseed oil	Schneller, Felix & Co., Prairie du Sac.	Archer Daniels Co., Minneapolis	
Apr. 13	Boiled linseed oil	*Mautz Bros. Co., Madison	Midland Linseed Co., Minneapolis.	
Apr. 13	Boiled linseed oil	*Mautz Bros. Co., Madison	Midland Linseed Co., Minneapolis.	
Apr. 28	Boiled linseed oil	B. Fleckenstein, Dorchester	Red Wing Linseed Oil Co., Red Wing, Minn.	
Apr. 28	Boiled linseed oil	Mrs. Anna Crackenberger, Dorchester.	Douglas Linseed Oil Co., Minneapolis.	
June 11	Boiled linseed oil	Geo. S. Uebele, Tomah		
June 13	Boiled linseed oil	Central Hardware Co., Tomah		
June 13	Boiled linseed oil	F. O. Drowatzky, Tomah		
July 25	Boiled linseed oil	Dan Smith, Mauston	The Alston-Lucas Paint Co., Chicago.	
July 25	Boiled linseed oil	Van Hey Drug Store, Hammond		Heavily adulterated.
July 25	Boiled linseed oil	Becker & Johnson, Turtle Lake		
July 26	Boiled linseed oil	Rudolph Andres, Tomah	Red Wing Linseed Oil Co., Red Wing, Minn.	
July 26	Boiled linseed oil	E. Nelson Hardware Store, Barron		
July 26	Boiled linseed oil	Ed. Post, Cameron		
Aug. 2	Boiled linseed oil	Luenberger & Wurst, De Forest		Heavily adulterated.
Aug. 2	Boiled linseed oil	Luenberger & Wurst, De Forest		Heavily adulterated.
Aug. 2	Boiled linseed oil	Luenberger & Wurst, De Forest		Heavily adulterated.
Nov. 29	Boiled linseed oil	Ira Parker & Sons Co., Oshkosh		
Dec. 5	Boiled linseed oil	Geo. S. Uebele, Tomah	Red Wing Linseed Oil Co., Red Wing, Minn.	

* Submitted samples.

Linseed Oils, Not Standard —Continued.

FOUND TO CONTAIN MINERAL OIL.

	Bought for	Bought of or Submitted by	Manufacturer or Jobber	Remarks.
1911.				
Dec. 5	Boiled linseed oil.....	Rudolph Andres, Tomah	Red Wing Linseed Oil Co., Red Wing, Minn.	
Dec. 8	Boiled linseed oil.....	A. F. Radke, Neillsville.....	Red Wing Linseed Oil Co., Red Wing, Minn.	
Dec. 13	Boiled linseed oil.....	The Kraft Mercantile Co., Menomonie.	Red Wing Linseed Oil Co., Red Wing, Minn.	
Dec. 16	Boiled linseed oil.....	Remington Drug Co., Fond du Lac	Central Oil Co.	Heavily adulterated.
Dec. 28	Boiled linseed oil.....	A. F. Radke, Neillsville.....	Red Wing Linseed Oil Co., Red Wing, Minn.	
1912.				
Jan. 1	Boiled linseed oil.....	Joseph Skibba, Junction City.....	.....	Heavily adulterated.
Apr. 12	Raw linseed oil.....	Chas. C. Hotchkiss, Elkhorn.....	.....	Heavily adulterated.
Apr. 12	Boiled linseed oil	Ben. B. Kraus	.....	Heavily adulterated.
Apr. 12	Boiled linseed oil.....	Chas. C. Hotchkiss, Elkhorn.....	.....	Heavily adulterated.
Apr. 16	Boiled linseed oil.....	John Scantleton, Cataract.....	.....	Heavily adulterated.
Apr. 16	Boiled linseed oil.....	L. O. Reidler, Token Creek.....	American Linseed Oil Co., Omaha, Neb.	Heavily adulterated.
May 8	Raw linseed oil.....	Cumberland Supply Co., Cumberland.	A. M. Hurlbut Co., Omaha, Neb.	Heavily adulterated.
May 16	Raw linseed oil	J. J. Pitts, Kenosha.....	American Linseed Oil Co., Omaha, Neb.	Heavily adulterated.
May 17	Boiled linseed oil	Abbotsford Coöperative Co., Abbotsford.	The F. Dohman Co., Milwaukee..	
June 11	Boiled linseed oil	Remington Drug Co., Fond du Lac.	.....	

FOUND TO CONTAIN MINERAL OIL AND ROSIN OIL.

Date.	Bought for	Bought of	Manufacturer or Jobber.	Remarks.
1911.				
Jan. 3	Boiled linseed oil.....	Conger-Grotophorst Co., Prairie du Sac.	Holland Linseed Oil Co., Chicago	Heavily adulterated.
Feb. 3	Raw linseed oil	Jacob Hatz, Prairie du Sac.....	Holland Linseed Oil Co., Chicago	Heavily adulterated.
June 8	Boiled linseed oil.....	Joseph Skibba, Junction City.....	.....	Heavily adulterated.

FOUND TO CONTAIN A VOLATILE PETROLEUM PRODUCT

1910.				
July 11	Boiled linseed oil.....	Fred Klein Co., Madison.....	.....	
Oct. 26	Boiled linseed oil.....	Enno Dorestan & Son Co., Milwaukee.	Enno Dorestan & Son Co., Milwaukee.	
1912.				
June 19	Boiled linseed oil.....	J. A. Mack, St. Croix Falls.....	.....	Heavily adulterated.

FOUND TO CONTAIN MORE THAN 2.5 PER CENT UNSAPONIFIABLE MATERIAL.

Date.	Bought for	Bought of	Manufacturer or Jobber.
1910.			
June 14	Boiled linseed oil	Herman J. Stecker, Sauk City.....	
Oct. 26	Boiled linseed oil	O'Neil Oil & Paint Co., Milwaukee.....	O'Neil Oil & Paint Co., Milwaukee.
1911.			
Apr. 21	Boiled linseed oil	A. F. Radke, Neillsville	Red Wing Linseed Oil Co., Red Wing, Minn.
Apr. 25	Boiled linseed oil	Wilkinson & Schwartz, Spring Green.....	
June 1	Boiled linseed oil	Nickel Hardware Co., Wausau.....	Red Wing Linseed Oil Co., Red Wing, Minn.
June 6	Boiled linseed oil	Victor S. Prais, Stevens Point.....	Ira Parker, Oshkosh.
June 7	Boiled linseed oil	E. D. Howland, Merrill.....	Foreman & Ford, St. Paul, Minn.
June 7	Boiled linseed oil	H. & W. F. Steffenhaugen, Merrill.....	Midland Linseed Co., Minneapolis, Minn.
June 7	Boiled linseed oil	Gust. Wenzel, Merrill	Red Wing Linseed Oil Co., Red Wing, Minn.
June 7	Boiled linseed oil	R. H. Tranton, Merrill.....	Douglas Linseed Co., Minneapolis, Minn.
June 9	Boiled linseed oil	Wm. C. Raue & Sons, Watertown.....	
June 13	Boiled linseed oil	J. Ballentine, Mauston	
June 13	Boiled linseed oil	Behnke Bros., Mauston	
July 25	Boiled linseed oil	A. E. Stronks, Baldwin.....	
July 25	Boiled linseed oil	Christensen's Pharmacy, Baldwin	
Aug. 2	Boiled linseed oil	Luenberger & Wurst, DeForest.....	

Linseed Oils, Standard.

Date.	Bought for	Bought of or Submitted by	Manufacturer or Jobber.
1910.			
June 14	Raw linseed oil	Hahn, Rischmueller & Meyer, Sauk City	
Oct. 26	Boiled linseed oil	W. F. Zummach Co., Milwaukee	W. F. Zummach Co., Milwaukee.
Oct. 26	Boiled linseed oil	Jas. E. Patton Co., Milwaukee	Jas. E. Patton, Milwaukee.
Oct. 26	Boiled linseed oil	Patek Bros., Milwaukee	Patek Bros., Milwaukee.
Nov. 2	Boiled linseed oil	Frank Dan, 261 3rd St., Milwaukee	
1911.			
Feb. 3	Raw linseed oil	Ragatz & Gasser, Prairie du Sac	Holland Linseed Oil Co., Chicago.
Apr. 21	Boiled linseed oil	Dennis Touringy, Neillsville	Minnesota Linseed Oil Co., Minneapolis.
Apr. 25	Boiled linseed oil	Sherwood Bros., Spring Green	
Apr. 25	Boiled linseed oil	W. Correll, Spring Green	
Apr. 27	Boiled linseed oil	J. O. Nelson, Park Falls	
Apr. 27	Boiled linseed oil	Vincent & Vincent, Park Falls	
June 2	Boiled linseed oil	Edward Everson, Tomahawk	O'Neill Oil & Paint Co., Milwaukee.
June 9	Boiled linseed oil	Schmutzler & Heissman, Watertown	
June 9	Boiled linseed oil	Chas. David, Watertown	
July 12	Boiled linseed oil	J. B. Murphy Co., Watertown	
July 19	Boiled linseed oil	Wm. C. Raue & Sons Co., Watertown	J. B. Murphy Co., Watertown.
July 19	Raw linseed oil	Wm. C. Raue & Sons Co., Watertown	J. B. Murphy Co., Watertown.
July 25	Boiled linseed oil	Baldwin Coöperative Co., Baldwin	
July 26	Boiled linseed oil	Dahl Hardware Co., Barron	
July 27	Boiled linesed oil	Edw. Leibly, Rice Lake	
Oct. 26	Boiled linseed oil	The Coöperative Mercantile Co., Black Earth	
Oct. 26	Raw linseed oil	The Coöperative Mercantile Co., Black Earth	
Nov. 29	Raw linseed oil	Ira Parker & Sons Co., Oshkosh	
Dec. 6	Boiled linseed oil	C. G. Pier, Wausau	Midland Linseed Oil Co., Minneapolis.
Dec. 6	Boiled linseed oil	O. C. Callies, Wausau	Minnesota Linseed Oil Co., Minneapolis.
1912.			
Jan. 1	Raw linseed oil	Victor Prais, Stevens Point	The Red Wing Linseed Co., Red Wing, Minn.
Mar. 27	Boiled linseed oil	I. L. Grosse, Eagle	O'Neil Oil & Paint Co., Milwaukee.
Mar. 27	Raw linseed oil	I. L. Grosse, Eagle	O'Neil Oil & Paint Co., Milwaukee.
Mar. 27	Boiled linseed oil	Smart Bros., Eagle	Douglas & Co., Minneapolis, Minn.
Mar. 27	Boiled linseed oil	Smart Bros., Eagle	Douglas & Co., Minneapolis, Minn.
Apr. 12	Raw linseed oil	Ben. B. Kraus, Elkhorn	
Apr. 25	Boiled linseed oil	L. N. Pomeroy & Co., Edgerton	

Apr. 25	Raw linseed oil	L. N. Pomeroy & Co., Edgerton	Spencer-Kellogg & Sons, Buffalo and Minneapolis.
Apr. 29	Boiled linseed oil	R. S. Young, Darien	
Apr. 29	Boiled linseed oil	R. S. Young, Darien	
Apr. 29	Boiled linseed oil	M. A. Thorpe, Darien	Chicago White Lead & Oil Co., Chicago.
May 2	Boiled linseed oil	K. N. Hollister, Delavan	
May 2	Boiled linseed oil	Flack's Pharmacy, Elkhorn	
May 2	Boiled linseed oil	Lyon Drug Co., Elkhorn	
May 7	Raw linseed oil	Kaufman Bros., Edgerton	
May 7	Boiled linseed oil	J. D. Hain Estate, Edgerton	Minnesota Linseed Oil Co., Minneapolis.
May 9	Boiled linseed oil	The Fair Store, Rice Lake	Spencer-Kellogg & Sons, Buffalo and Minneapolis.
May 15	Boiled linseed oil	Schulz & Ungrodt, Medford	Minnesota Paint & Oil Co., Minneapolis.
May 15	Boiled linseed oil	O. Greisser & Son, Medford	Midland Linseed Oil Co., Minneapolis.
May 16	Boiled linseed oil	J. A. Pitts, Kenosha	Spencer-Kellogg & Sons, Minneapolis.
May 17	Boiled linseed oil	Phillips Hardware Co., Phillips	Wadhams Oil Co., Milwaukee.
May 17	Boiled linseed oil	Prentice Mercantile Co., Prentice	
June 6	Boiled linseed oil	August Schwedes, Plum City	

Linseed Oils, Submitted.

Date.	Sample of	Submitted by	Remarks.
1910.			
July 18	Boiled linseed oil	G. O. Gordon, Lodi	No adulteration found.
July 18	Raw linseed oil	G. O. Gordon, Lodi	No adulteration found.
Aug. 24	Raw linseed oil	Jerome Fitzgerald, Kilbourn	Not standard.
Aug. 25	Boiled linseed oil	W. C. Raue & Sons Co., Watertown	Not standard.
Sept. 17	Boiled linseed oil	Edward L. Tracy, 815 Pabst Bldg., Milwaukee	No adulteration found.
Sept. 23	Boiled linseed oil	F. A. Wilde, Jr., Milwaukee	Contains mineral oil.
Sept. 30	Boiled linseed oil	F. E. Joannes, Green Bay	Contains mineral oil.
1911.			
Feb. 23	Boiled linseed oil	A. L. Goddard, Madison	Contains rosin.
Mar. 5	Boiled linseed oil	Victor L. Prais, Stevens Point	Contains mineral oil.
Mar. 17	Raw linseed oil	W. A. Kalk, Columbus	Contains mineral oil.
Mar. 24	Raw linseed oil	J. V. D. Wymelenberg & Son, Wrightstown	Contains mineral oil.
Mar. 24	Boiled linseed oil	J. V. D. Wymelenberg & Son, Wrightstown	Contains mineral oil.
Mar. 24	Boiled linseed oil	J. V. D. Wymelenberg & Son, Wrightstown	Contains mineral oil.
Apr. 13	Raw linseed oil	Mautz Bros. Co., Madison	No adulteration found.

Linseed Oils, Submitted—Continued.

Date.	Sample of	Submitted by	Remarks.
1911.			
Apr. 14	Raw linseed oil	Moers, Pritchard, Brandon, Racine	Contains mineral oil.
May 1	Boiled linseed oil	James Nevins Madison	Contains mineral oil.
July 3	Boiled linseed oil	Thos. Thoen, Hammond	Contains mineral oil.
July 11	Linseed oil	Little Falls Co., Amery, R. D. 2	Contains mineral oil.
July 31	Linseed oil	A. O. Hamre, De Forest	Contains mineral oil.
Sept. 22	Boiled linseed oil	R. S. Cowie, Whitehall	Contains mineral oil.
Oct. 27	Linseed oil	Edward Lawler, Mazomanie	No adulteration found.
Nov. 7	Boiled linseed oil	H. Lappley, Mazomanie	No adulteration found.
Nov. 7	Raw linseed oil	H. Lappley, Mazomanie	No adulteration found.
Nov. 19	Raw linseed oil	F. E. Waite, Oshkosh	Contains benzine.
Dec. 8	Boiled linseed oil	J. R. Pike, Fond du Lac	Contains mineral oil.
Dec. 16	Raw linseed oil	John A. Pahl, Sister Bay	Contains mineral oil.
Dec. 21	Boiled linseed oil	E. W. Stewart, Madison	Contains excessive amount of foots.
1912.			
Mar. 1	Boiled linseed oil	Kier & Jaeger, Oconomowoc	Contains mineral oil.
Mar. 8	Raw linseed oil	Henry Grube, Auburndale	No adulteration found.
Mar. 8	Raw linseed oil	J. P. Mullenbach, Stanley	No adulteration found.
Mar. 27	Boiled linseed oil	J. H. Arent, West De Pere	Contains mineral oil.
Mar. 27	Raw linseed oil	J. H. Arent, West De Pere	Contains mineral oil.
Apr. 1	Raw linseed oil	McKichan & Miller, Patch Grove	Contains a large amount of nondrying seed oil.
Apr. 2	Raw linseed oil	R. Connor Co., Auburndale	No adulteration found.
Apr. 15	Boiled linseed oil	Dr. B. G. Stockman, Woodville	Contains mineral oil.
Apr. 16	Raw linseed oil	Wm. Rhodes & Co., Marshfield	No adulteration found.
Apr. 29	Boiled linseed oil	Schweer's Hardware Co., Shawano	Contains mineral oil.
May 1	Raw linseed oil	Herman Eulloff & Sons, St. Nazianz	No adulteration found.
May 5	Boiled linseed oil	Chas. Hoehn, Fall Creek	Contains mineral oil.
May 5	Raw linseed oil	Chas. Hoehn, Fall Creek	Contains mineral oil.
May 7	Raw linseed oil	S. P. Sanders, Amos	No adulteration found.
May 13	Boiled linseed oil	Grinder & Iverson, Perry	No adulteration found.
May 23	Boiled linseed oil	S. O. Sveum, Stoughton, R. D. 5	Contains excessive amount of foots.
May 27	Boiled linseed oil	R. S. Scheibel, Madison	No adulteration found.
June 4	Linseed oil	Matt. Powell, Avoca	Contains mineral oil.
June 17	Raw linseed oil	Quinn & Cunningham, Rice Lake	No adulteration found.
June 17	Raw linseed oil	H. G. Oaks, Tunnel City	Contains mineral oil.
June 19	Raw linseed oil	Jacobson & Swenson, Nelsonville	No adulteration found.
June 25	Boiled linseed oil	N. J. Berge, Deerfield	No adulteration found.
June 25	Raw linseed oil	N. J. Berge, Deerfield	No adulteration found.

MEATS AND MEAT PRODUCTS.

Chopped meats free from boric acid and sulphites.

Date.	Bought for	Bought of
1910.		
Sept. 13	Hamburger steak	J. Doolittle, State Fair Park, Milwaukee.
Sept. 13	Hamburger steak	Baker & Little, State Fair Park, Milwaukee.
Sept. 13	Hamburger steak	A. Johnson, State Fair Park, Milwaukee.
Sept. 13	Hamburger steak	Baker & Little, State Fair Park, Milwaukee.
Sept. 13	Hamburger steak	F. Coplen, State Fair Park, Milwaukee.
Sept. 13	Hamburger steak	Frank Wagner, State Fair Park, Milwaukee.
1911.		
Mar. 22	Beef and pork sausage	John Koepsel, Neenah.
Mar. 22	Beef sausage	John Koepsel, Neenah.
April 4	Hamburger steak	J. T. Holstein, Menomonie.
April 4	Hamburger steak	J. G. Inenfeldt & Son, Menomonie.

Sausage.

BOUGHT FOR SAUSAGE. FOUND TO BE SAUSAGE WITH CEREAL. TESTED FOR BORIC ACID AND BORATES. NONE FOUND.

Date.	Bought of
1910.	
Oct. 19	J. S. Bongay, Deerfield.
Oct. 19	J. S. Bongay, Deerfield.
Oct. 19	J. S. Bongay, Deerfield.
1911.	
Feb. 1	Wm. Weisemann, Watertown.
Feb. 1	Wm. Bittner, Watertown.
Feb. 1	R. F. Block, Watertown.

Sausage—Continued.

BOUGHT FOR SAUSAGE. FOUND TO BE SAUSAGE WITH CEREAL. TESTED FOR BORIC ACID OR BORATES; NONE FOUND.

Date.	Bought of
1912.	
Feb. 1	Julius Bayers, Watertown.
Mar. 31	People's Market, Sheboygan.
Mar. 31	People's Market, Sheboygan.
April 28	John Dick, Middleton.
July 28	T. Davenport, Soldiers Grove.
July 29	T. Davenport, Soldiers Grove.
Aug. 1	Stelzman & Davidson, Soldiers Grove.
Sept. 1	Chicago Market, Racine.
1912.	
May 23	Millers' Sixth Ward Market, Oshkosh.
May 23	Friedrich Market, Oshkosh.
May 23	Frank Miller, Oshkosh.
May 23	Ernest Siewert, Oshkosh.
May 23	F. W. Witte, Oshkosh.
May 23	George A. Alert, Oshkosh.

BOUGHT FOR SAUSAGE. FOUND TO CONTAIN POTATO FLOUR.

1912.	
May 23	People's Cash Market, Oshkosh.

BOUGHT FOR SAUSAGE. FOUND TO CONTAIN MORE THAN 4 PER CENT OF CEREAL. TESTED FOR BORIC ACID AND BORATES; NONE FOUND.

Date.	Bought of or Submitted by
1911.	
Jan. 27	*J. D. Cannon, New London.
Feb. 1	J. O'Brien, Watertown.

* Submitted sample.

Feb. 1	Otto Schultz, Watertown.
Mar. 17	People's Meat Market, Watertown.
Mar. 30	People's Meat Market, Kenosha.
Mar. 30	Cudahy Meat Market, Kenosha.
Mar. 30	Cudahy Market, Racine.
Mar. 30	Cudahy Market, Racine.
Mar. 31	Cudahy Market, Port Washington.
1912.	
May 23	Oscar Ernest, Oshkosh.
May 23	J. Wichert, Oshkosh.
May 23	Chas. Taube, Oshkosh.
May 23	Nic. Pfell, Oshkosh.
May 23	J. F. Borsack, Oshkosh.
May 23	B. J. Muller, Oshkosh.
May 23	G. Ulrich, Oshkosh.
May 23	The Utz Market, Oshkosh.

BOUGHT FOR SAUSAGE. FREE FROM CEREAL, POTATO FLOUR, BORIC ACID OR BORATES.

1911.	
Jan. 12	J. C. Inenfeldt, Menomonie.
Jan. 12	C. G. Tilleson, Menomonie.
Jan. 12	C. Krause, Menomonie.
Jan. 12	C. Krause, Menomonie.
Jan. 12	J. C. Inenfeldt, Menomonie.
Jan. 12	S. Schneider, Menomonie.
Jan. 12	J. T. Holstein, Menomonie.
Jan. 18	P. F. Becher, 1704 Vliet St., Milwaukee.
Feb. 1	M. Nowack, Watertown.
Mar. 30	Cudahy Market, 925 Salem Ave., Kenosha.
Mar. 30	Cudahy Market, 907 Market St., Kenosha.
1912.	
Mar. 8	Halle & Berg, Rio.
May 23	Bartells Market, Oshkosh.

Sausage with Cereal

BOUGHT FOR SAUSAGE WITH CEREAL.

Date.	Bought of	Remarks.
1910.		
Oct. 19	G. W. Gilbert & Son, Deerfield.....	
Oct. 19	G. W. Gilbert & Son, Deerfield.....	
Oct. 19	G. W. Gilbert & Son, Deerfield.....	
Oct. 19	G. W. Gilbert & Son, Deerfield.....	
Oct. 22	Jacob Wichert, Oshkosh.....	Found to contain no cereal.

Miscellaneous Meats and Chopped Meats.

Date.	Bought for	Bought of or Submitted by	Remarks.
1910.			
July 18	Corned beef	*Mrs. John Lamp, Deerfield.....	Tested for boric acid and sulphites. None found.
Oct. 4	Boiled meat	*Otto R. Rucks, Oakfield.....	Tested for boric acid and sulphites. None found.
Oct. 19	Pickled pork	G. W. Gilbert & Son, Deerfield.....	Tested for boric acid and sulphites. None found.
Nov. 25	Hamburger steak	*Carl Klofanda, Prairie du Chien.....	Tested for potato flour and cereals. None found.
Dec. 28	Bacon	*C. J. Wells, Tomah.....	Tested for boric acid and sulphites. None found.
1912.			
Mar. 7	Meat	*Harry G. Smith, Madison.....	Tested for boric acid and sulphites. None found.
Mar. 16	Bacon	*W. B. Davisson, Spring Green.....	Tested for preservatives. None found.

*Submitted sample.

MILK.

City Milk.

BELOW STANDARD.

Date.	Bought of	City	Sp. G.	Per cent fat.	Per cent total solids	Per cent solids not fat.	I. R. of whey (20° C.)	Remarks.
1910.								
Aug. 5	E. W. Dill	Manitowoc	1.0315	2.4	10.87	8.47	41.5	
Aug. 5	H. Klackner	Manitowoc	1.0325	2.45	11.26	8.81	42.5	
Aug. 19	Eichhorst Bros.	Stevens Point	1.0247	3.55	10.68	7.13	37.5	Watered. See herd sample.
Aug. 23	Donohu & Sons	Wausau	1.0335	2.6	11.57	8.97	.....	See herd sample.
Aug. 26	Henry Doulski	Green Lake	1.0321	1.9	10.48	8.58	40.4	
Aug. 27	C. H. Christenson	Chippewa Falls	1.0332	2.9	11.73	8.83	41.2	
Aug. 30	Chas. Carlson	Superior	1.0310	3.30	11.75	8.45	39.8	
Aug. 30	H. Koffoed	Superior	1.0310	3.0	11.28	8.28	40.7	
Aug. 30	C. C. Simon	Superior	1.0331	2.5	11.34	8.84	41.3	
Aug. 30	Lars Krarnstrom	Superior	1.0294	3.0	11.09	8.09	38.7	
Sept. 1	Chas. Thiex	Oshkosh	1.0315	2.6	11.07	8.47	40.3	
Sept. 1	Chas. A. Kuhl	Lake Mills	1.0285	3.95	11.78	7.83	38.5	
Sept. 22	D. Sorensen	Oconto	1.0333	2.65	11.55	8.90	41.7	Skimmed. See herd sample.
Sept. 28	Balzer Wirtz	Sheboygan	1.0325	2.75	11.25	8.50	40.4	Skimmed. See herd sample.
Sept. 29	Aherns Bros.	Prairie du Chien	1.0340	2.1	11.17	9.07	41.6	
Oct. 24	Peter De Boer (Pure Food Co.)	La Crosse	1.0290	3.2	11.10	7.9	38.2	Watered. See herd sample.
Oct. 31	Peter De Boer (Pure Food Co.)	La Crosse	1.0318	3.4	11.83	8.43	39.4	See herd sample.
Nov. 2	R. Griffin	Sturgeon Bay	1.0273	3.9	11.67	7.77	37.7	
Nov. 2	Frank Haasl	Park Falls	1.0252	3.6	10.72	7.12	37.1	Watered. See herd sample.
Nov. 3	Theo. Gloeckler	Portage	1.0273	4.2	11.68	7.48	37.6	Watered. See herd sample.
Nov. 3	Jas. Hanley	Hurley	1.0257	3.25	10.33	7.08	35.5	Watered. See herd sample.
Nov. 7	Al. Hunsaker	Lancaster	1.0237	4.1	11.18	7.08	35.8	Watered.
Nov. 7	Al. Hunsaker	Lancaster	1.0259	4.15	11.66	7.51	36.6	Watered.
Nov. 10	Russell Cry. Co	Superior	1.0275	3.1	10.46	7.36	37.3	Watered.
Nov. 10	Chas. Carlson	Superior	1.0290	3.2	11.34	8.14	39.0	
Nov. 10	John Lund	Superior	1.0294	2.9	10.93	8.03	38.6	Watered. See herd sample.
Nov. 16	Mike Hahn	Sturgeon Bay	1.0262	3.8	11.05	7.25	36.35	Watered. See herd sample.

City Milk—Continued.

BELOW STANDARD—Continued.

Date.	Bought of	City	Sp. G.	Per cent fat.	Per cent total solids	Per cent solids not fat.	I. R. of whey (20° C.)	Remarks.
1910.								
Nov. 16	Mike Hahn	Sturgeon Bay	1.0280	4.0	11.73	7.73	38.3	Watered. See herd sample.
Nov. 29	T. J. Paulson	Superior	1.0321	2.65	11.50	8.85	.....	
Nov. 29	A. F. Schmidt Cry. Co.	Superior	1.0320	2.9	11.49	8.59	40.5	
Nov. 29	C. C. Simon	Superior	1.0336	2.75	11.84	9.09	.....	
Dec. 27	J. R. Merriam	Grand Rapids	1.0330	2.75	11.73	8.98	.....	Skimmed. See herd sample.
Dec. 30	H. A. Towsley	Kaukauna	1.0210	2.7	8.37	5.67	32.0	Watered. See herd sample.
1911.								
June 24	Vincent Dvorack	Racine	1.0290	2.6	10.40	7.80	40.0	
Dec. 16	J. L. Bonham	Baraboo	1.0293	3.0	10.9	7.9	40.25	
1912.								
Mar. 16	S. F. Hewitt	Neillsville	1.0250	3.6	10.44	6.84	36.3	Watered. See herd sample.
Apr. 3	B. Miller	Madison	1.0301	3.9	11.78	7.88	40.0	
May 14	Mrs. F. Pech	Manitowoc	1.0322	2.40	10.98	8.58	39.8	
May 14	Wm. Hills	Manitowoc	1.0328	2.4	10.82	8.42	40.7	
May 21	J. G. Uecke	Oshkosh	1.0328	2.75	11.35	8.60	.....	
May 21	J. G. Uecke	Oshkosh	1.0340	2.7	11.77	9.07	.....	
May 21	J. G. Uecke	Oshkosh	1.0339	2.7	11.61	8.91	.....	

City Milk.

STANDARD.

Date.	Bought of	City.	Sp. G.	Per cent fat.	Per cent total solids.	Per cent solids not fat.	I. R. of whey (20° C.)
1910.							
Aug. 5	C. Schroeder	Manitowoc	1.0310	3.65	12.2	8.55	41.55
Aug. 5	S. A. Morris	Manitowoc	1.0304	3.4	11.90	8.5	41.9
Aug. 25	A. B. Chamberlain	Menomonie	1.0336	3.0	11.86	8.86	42.2
Aug. 30	T. J. Paulson	Superior	1.0324	3.10	12.19	9.09	41.9
Sept. 9	Appleton Pure Milk Co	Appleton	1.0334	3.0	11.83	8.88	41.2
Nov. 10	E. Naslund	Superior	1.0335	3.65	12.88	9.23	.....
Nov. 25	A. W. Clayton	Madison	1.0321	3.9	12.84	8.94	.....
Nov. 29	E. J. Mills	Superior	1.0333	3.9	13.12	9.22	.....
Nov. 29	E. J. Mills	Superior	1.0326	4.4	13.57	9.17	.....
Nov. 29	F. Berg	Superior	1.0320	4.7	13.78	9.08	.....
Nov. 29	J. H. Carlsgaard	Superior	1.0316	5.1	14.16	9.06	.....
Nov. 29	F. Johnson	Superior	1.0316	4.5	13.44	8.94	.....
Nov. 29	A. Christensen	Superior	1.0341	3.1	12.36	9.26	.....
Nov. 29	Ed. Kamler	Superior	1.0320	4.4	13.42	9.02	.....
Nov. 29	Pitts & Son	Superior	1.0321	4.1	13.06	8.96	.....
Nov. 29	Aug. Simon	Superior	1.0319	4.2	13.18	8.98	.....
Nov. 29	Russell Cry. Co	Superior	1.0325	3.3	12.2	8.9	.....
Nov. 29	Russell Cry. Co	Superior	1.0302	4.1	12.6	8.5	.....
Nov. 29	L. Kahle	Superior	1.0331	4.2	13.48	9.28	.....
Nov. 29	Nels Sorensen	Superior	1.0308	4.5	13.24	8.74	.....
Nov. 29	C. C. Simon	Superior	1.0325	3.05	12.20	9.15	41.5
Nov. 29	Mrs. Mary Albeck	Superior	1.0315	4.5	13.44	8.94	.....
Nov. 29	H. Koffoed	Superior	1.0322	4.0	13.04	9.04	.....
Nov. 29	B. Knutson	Superior	1.0320	4.2	13.16	8.96	.....
Nov. 29	Aug. Simon	Superior	1.0310	4.1	12.81	8.71	.....
Nov. 29	Chas. Carlson	Superior	1.0315	3.6	12.36	8.76	.....
Nov. 29	G. Peterson	Superior	1.0321	4.1	13.06	8.96	.....
Nov. 29	E. Naslund	Superior	1.0330	4.2	13.43	9.23	.....
1911.							
Feb. 7	J. Godersky	Port Washington	1.0337	3.4	12.66	9.26	42.1
April 18	J. G. Smith	Sparta	1.0325	4.8	13.89	9.09	.....

City Milk—Continued.

STANDARD—Continued.

Date.	Bought of	City.	Sp. G.	Per cent fat.	Per cent total solids.	Per cent solids not fat.	I. R. of whey (20° C.)
1911.							
April 18	J. G. Smith	Sparta	.....	3.6	12.38	8.78	.....
April 18	J. G. Smith	Sparta	.....	4.2	13.30	9.10	.....
June 22	F. Pederson	Kenosha	1.0324	3.2	12.26	9.06	42.3
July 1	Bowman & Owee	Madison	.....	3.0	.....	.....	.....
July 7	Geo. New	Kenosha	1.0310	3.75	12.07	8.32	40.5
July 7	Frank Smith	Kenosha	1.0313	4.0	12.53	8.53	42.0
July 7	J. Maurer	Kenosha	1.0300	4.55	12.76	8.21	40.0
July 18	Peter Christopher	Stoughton	1.0310	4.2	12.93	8.73	.....
1912.							
Mar. 16	S. F. Hewitt	Neillsville	1.0329	3.3	11.8	8.5	42.0
May 2	C. H. Shaver News Co	Janesville	1.0312	3.8	12.24	8.44	41.5

Milk Delivered to Creameries or Cheese Factories.

BELOW STANDARD.

Date.	Sold or delivered by	Delivered to	Sp. G.	Per cent milk fat.	Per cent total solids.	Per cent solids not fat.	I. R. reading of whey.	Remarks.
1910.								
Aug. 11	F. Maternowski, Green Bay.	Maternowski Cheese Fac.	1.0280	3.15	11.03	7.88	40.6	See herd sample.
Aug. 11	Andrew Mancheski, Green Bay.	Maternowski Cheese Fac.	1.0246	3.0	10.14	7.14	36.6	Watered. See herd sample.
Aug. 19	Ernest Bartling, Riley.....	Gausman's Cheese Fac.	1.0246	3.45	10.52	7.07	36.3	Watered. See herd sample.
Aug. 24	Fred Krats, New Franken	F. Appleham Cheese Fac	1.0175	3.0	8.21	5.21	31.4	Watered. See herd sample.

Aug. 31	John Burnes, Livingston..	Dennis Cheese Fac...	1.0283	3.30	11.22	7.92	38.2	Watered.
Sept. 6	Fred Kratz, New Franken	Appleham Cheese Fac.	1.0194	2.55	7.76	5.21	30.6	Watered. See herd sample.
Sept. 9	Edward Stuelke, Lake Mills.	Chas. Kuhl, Jefferson	1.0252	3.98	11.22	7.24	37.0	Watered. See herd sample.
Sept. 26	Aug. Brandt, Monroe.....	Pengra Cheese Fac..	1.0277	3.2	10.8	7.6	37.8	Watered. See herd sample.
Oct. 31	Howard Edwards, Evansville.	Meyers Cheese Fac...	1.0218	3.2	9.36	6.16	32.9	Watered. See herd sample.
Oct. 31	John Hart, Evansville.....	Meyers Cheese Fac...	1.0280	3.1	10.9	7.5	37.8	Watered. See herd samples.
Nov. 1	Fred Shutz, Evansville.....	D. E. Wood Cry. Co.	1.0231	3.1	9.82	6.72	34.1	Watered. See herd sample.
Nov. 1	Chas. Webb, Evansville...	D. E. Wood Cry. Co.	1.0256	3.45	10.79	7.34	37.0	Watered. See herd sample.
Nov. 1	R. Anderson, Evansville...	D. E. Wood Cry. Co.	1.0230	3.2	9.99	6.79	34.1	Watered. See herd sample.
Nov. 19	N. M. Ellis, Northport....	Nat. Condensed Milk Co., New London.	1.0223	3.5	9.92	6.42	33.5	Watered. See herd sample.
Dec. 15	Wm. DeGroot, Union Grove.	Bowman Dairy Co...	1.0240	3.0	9.47	6.47	35.0	Watered. See herd sample.
1911.								
Feb. 28	Ed Westby, Clinton.....	Clinton City	1.0315	2.95	11.31	8.36	40.4	See herd samples.
Mar. 1	Mrs. H. Paulson, Clinton.	Clinton Cry.	1.0304	2.9	10.88	7.98	41.0	
Mar. 1	G. Fossman, Clinton.....	Clinton Cry.	1.0319	2.85	11.60	8.75	40.6	
Mar. 14	Mrs. G. Peterson, Stoughton.	Gordon & Parish Milk Depot.	1.030	3.0	11.10	8.10	39.8	See herd samples.
Mar. 14	Peter Nygard, Stoughton.	Gordon & Parish Milk Depot.	1.030	2.5	10.63	8.13	39.8	See herd samples.
Mar. 14	Andrew Nettem, Stoughton	Gordon & Parish Milk Depot.	1.031	2.55	10.92	8.37	40.3	See herd samples.
Mar. 14	Andrew Nettem, Stoughton	Gordon & Parish Milk Depot.	1.0315	3.6	11.99	8.39	41.6	See herd samples.
Mar. 21	H. G. Emerson, Capron, Ill.	Sharon Cry., Sharon	1.0272	2.9	10.33	7.43	37.0	Watered. See herd sample.
April 11	Peter Blinkenheim, Johnson Creek.	Mansfield Cry.	1.0290	3.1	10.88	7.78	38.7	Watered.
April 11	Jul. Haubenschild, Johnson Creek.	Mansfield Cry.	1.0290	3.0	10.75	7.75	41.4	See herd sample.
April 11	Herman Stande, Johnson Creek.	Mansfield Cry.	1.0285	3.4	11.42	8.02	40.0	See herd sample.
April 11	H. Mueller, Johnson Creek	Mansfield Cry.	1.0286	3.1	11.00	7.90	39.3	See herd sample.
April 11	H. Emmert, Johnson Creek.	Mansfield Cry.	1.0300	3.2	11.60	8.40	41.4	See herd sample.
April 11	Aug. Nadler, Johnson Creek.	Mansfield Cry.	1.0300	3.05	11.17	8.12	40.0	See herd sample.
April 11	A. Voelker, Johnson Creek	Mansfield Cry.	1.0287	3.1	11.03	7.97	40.4	See herd samples.
April 11	E. Schaefer, Johnson Creek.	Mansfield Cry.	1.0286	2.8	10.60	7.80	40.0	See herd sample.

Milk Delivered to Creameries or Cheese Factories—Continued.

BELOW STANDARD—Continued.

Date.	Sold or delivered by	Delivered to	Sp. G.	Per cent milk fat.	Per cent total solids.	Per cent solids not fat.	I. R. reading of whey.	Remarks.
1911.								
April 11	Geo. Broom, Johnson Creek.	Mansfield Cry.	1.0280	2.8	10.52	7.72	38.8	See herd sample.
April 11	Lee Boutelle, Johnson Creek.	Mansfield Cry.	1.0295	3.1	11.28	8.18	42.0	See herd sample.
May 2	Robt. Anderson, Greenwood.	Woodside Cheese Fac.	1.0320	2.8	11.48	8.68	41.5	See herd sample.
May 24	Chas. Luebcke, Madison..	Zilisch Cry.	1.0320	2.0	10.35	8.35	40.0	See herd samples.
May 24	Chas. Luebcke, Madison..	Zilisch Cry.	1.0315	2.0	10.33	8.33	40.0	See herd samples.
May 24	Chas. Luebcke, Madison..	Zilisch Cry.	1.0312	2.1	10.40	8.30	39.8	See herd samples.
June 10	Jule. Splitgerber, Embarrass.	Wolf River Cheese Fac.	1.0250	2.6	9.40	6.80	35.7	Watered. See herd sample.
June 13	A. Zimbrich, Waterloo....	Fountain Cry.	1.0320	2.7	11.04	8.34	.....	See herd sample.
June 13	J. Fridel, Waterloo.....	Fountain Cry.	1.0310	2.6	10.93	8.33	.....	See herd sample.
June 13	W. Krause, Waterloo.....	Fountain Cry.	1.0270	2.95	10.52	7.57	37.0	Watered. See herd samples.
June 13	Wm. Hohnke, Waterloo...	Maple Grove Skim.	1.0288	3.90	11.81	7.91	39.1	See herd samples.
July 18	Albert Wolf. Rubicon.....	Fremont Cheese Fac.	1.0285	3.2	11.20	8.00	39.8	
July 18	Geo. Loos, Rubicon.....	Fremont Cheese Fac.	1.0280	3.25	10.88	7.63	39.3	
July 19	Wm. Hoff, Hartford.....	Oak Cheese Fac.	1.0281	3.3	10.91	7.61	39.0	
July 19	Fred Melius, Hartford....	Oak Cheese Fac.	1.0260	3.25	10.34	7.09	38.0	Watered.
July 28	Fred Roder, Belleville.....	Holstein Cheese Co.. Fac.	1.0280	3.8	11.57	7.77	39.5	Watered. See herd sample.
Aug. 2	Nic. Wagner, Rubicon....	Pleasant Hill Cheese Sta.	1.0297	3.4	11.37	7.97	40.2	
Aug. 9	Jos. Skinkas, Pulaski.....	Elm Dairy Cry.	1.0235	2.5	9.12	6.62	34.7	Watered. See herd sample.
Aug. 9	Anton Gobick, Pulaski....	Elm Dairy Cry.	1.0240	3.0	10.07	7.07	34.3	Watered. See herd sample.
Aug. 9	Jacob Zielinski, Pulaski...	Elm Dairy Cry.	1.0260	3.25	10.31	7.06	35.4	Watered. See herd sample.
Aug. 25	John Dietsche, Spencer....	Sherman Cheese Fac.	1.0270	3.45	10.96	7.51	38.2	Watered. See herd sample.
Aug. 25	John Dietsche, Spencer....	Sherman Cheese Fac.	1.0275	3.45	11.03	7.58	38.6	Watered. See herd sample.
Aug. 29	Barney Rutter, Little Chute.	Pleasant View Fac.	1.0278	2.85	10.42	7.57	37.0	Watered. See herd sample.

Sept. 23	Wm. Tilly, Green Bay, R. D. 9.	Howard Coöperative Cry. Co.	1.0155	2.6	7.11	4.51	28.0	Watered. See herd sample.
Oct. 11	Arthur Draught, Lloyd...	Loyd Cheese Fac...	1.0280	4.0	11.93	7.93	38.75	Watered.
Oct. 20	J. P. Byrns, Livingston...	Dennis Cheese Fac..	1.0290	4.05	12.20	8.15	39.0	
Nov. 27	Earl A. Paddock, Elkhorn	Elkhorn Milk Plant.	1.0262	2.6	9.61	7.01	35.7	Watered. See herd sample.
Dec. 23	Wm. Hoffman, Kewaunee..	Pleasant View Cheese Fac.	1.0225	3.3	9.48	6.18	33.7	Watered. See herd sample.
1912.								
Jan. 26	Wm. Gugel, Madison.....	Rendtorff & Zillisch Co.....	1.0286	3.4	11.54	8.14	39.3	
Jan. 26	Otto F. Toepfer, Madison	Rendtorff & Zillisch Co.....	1.0300	3.15	11.29	8.14	40.3	
Jan. 26	F. Bohn, Watertown.....	Moldenhauer Cheese Fac.	1.0260	3.0	10.09	7.09	37.0	Watered. See herd sample.
Feb. 14	W. Kulker, Jr., Watertown	Poplar Grove Cheese Fac.	1.0295	2.9	10.85	7.95	39.9	
Feb. 20	Fred Melius, Rubicon.....	Oak Cheese Fac. ...	1.0267	2.7	9.88	7.18	37.3	Watered. See herd sample.
Feb. 20	Wm. Hoff, Hartford.....	Oak Cheese Fac. ..	1.0260	3.6	10.87	7.27	36.5	Watered. See herd sample.
Mar. 6	Chas. Benedum, Allenton..	Wayne & Addison Cheese Fac.	1.0320	2.7	11.24	8.54	.....	See herd sample.
Mar. 6	Robt. Repe, Allenton.....	Wayne & Addison Cheese Fac.	1.0320	2.1	10.52	8.42	.....	Skimmed. See herd sample.
Mar. 15	Jos. Ray, Kewaunee.....	Alaska Cheese Fac..	1.0310	3.4	11.79	8.39	.....	See herd sample.
Mar. 15	Chas. Geier, Kewaunee....	Alaska Cheese Fac..	1.0305	3.2	11.23	8.03	.....	See herd sample.
Mar. 15	Jos. Blahnek, Kewaunee...	Alaska Cheese Fac..	1.0295	3.0	10.82	7.82	.....	See herd sample
Mar. 18	Fred Fach, Marshfield.....	North Hewitt Cry...	1.0259	2.2	9.27	7.07	37.3	Watered. See herd sample.
Mar. 20	Lewis Schmidt, Woodland	Maple Shade Cheese Fac.	1.0290	2.90	10.38	7.48	.....	
Mar. 28	Louis Clark, New Franken, R. 2.	A. Sindzincki Cheese Fac.	1.0262	2.9	9.93	7.03	36.5	Watered. See herd sample.
Apr. 3	Gottliv Piescher, Granton, R. 1.	Granton Cheese Fac.	1.0320	2.50	11.27	8.77	41.5	
Apr. 3	Adolph Schlinsog, Granton	Granton Cheese Fac.	1.0299	3.05	10.92	7.87	41.3	See herd sample.
Apr. 22	Otto Toepfer, Madison...	Rendtorff & Zilisch Co.	1.0300	3.05	11.02	7.97	39.1	See herd sample.
Apr. 22	Otto Toepfer, Madison...	Rendtorff & Zilisch Co.	1.0293	3.10	11.03	7.93	39.1	Watered. See herd sample.
Apr. 30	Gottliv Piescher, Granton R. 1.	Granton Cheese Fac.	1.0309	2.09	11.32	8.42	40.6	
June 18	James Kraunick, Denmark	Buckman Cheese Fac.	1.0301	2.35	10.34	7.99	39.0	Partly skimmed. See herd sample.

Milk Delivered to Creameries or Cheese Factories—Continued.

BELOW STANDARD—Continued.

Date.	Sold or delivered by	Delivered to	Sp. G.	Per cent milk fat.	Per cent total solids.	Per cent solids not fat.	I. R. reading of whey.	Remarks.
1912.								
June 18	Thomas Gaffney, Denmark	Buckman Cheese Fac.	1.0335	2.6	11.51	8.91	40.4	Partly skimmed. See herd sample.
June 18	Jas. Buresch, Denmark...	Buckman Cheese Fac.	1.0324	2.9	11.68	8.78	40.6	Slightly skimmed. See herd sample.
June 25	Chas. Crabb, West De Pere.	Fox River Valley Cry.	1.0309	2.9	10.99	8.09	39.5	

Milk Delivered to Creameries or Cheese Factories.

STANDARD.

Date.	Delivered by	Delivered to	Sp. G.	Per cent fat.	Per cent total solids.	Per cent solids not fat.	I. R. reading of whey (20° C)
1911.							
Jan. 18	H. Stichart, Granton, R. D. 1.....	Banner Creamery	1.0345	3.05	12.27	9.22	42.1
Jan. 18	H. Stichart, Granton, R. D. 1.....	Banner Creamery	1.0335	3.55	12.60	9.05	41.8
June 13	J. Wellhoefer, Waterloo.....	Fountain Creamery	1.0338	3.05	12.29	9.24	.....
July 15	H. Schumacher, Cazenovia.....	Swenink Cheese Fac.	1.0306	4.75	13.38	8.63	41.4
July 15	H. Schumacher, Cazenovia.....	Swenink Cheese Fac.	1.0326	3.15	12.05	8.90	41.4
Aug. 9	Fred Roder, Belleville	Holstein Cheese Co.	1.0310	4.0	12.55	8.55	.....
1912.							
Jan. 26	Aug. Toepfer, Madison.....	Rendtorff & Zilisch Co.	1.0310	3.65	12.40	8.75	41.1
Jan. 26	Chas. Dreger, Madison.....	Rendtorff & Zilisch Co.	1.0312	3.35	11.99	8.64	41.0
Mar. 6	Nick Hohner, Allenton	Wayne & Addison Cheese Fac.	1.0320	3.0	11.60	8.60	.....
Mar. 15	Louis Zuzanek, Kewaunee.....	Alaska Cheese Fac.	1.0330	3.5	12.49	8.99	.....
Apr. 22	E. D. Mayne, Fitchburg.....	Rendtorff & Zilisch Co. ...	1.0322	3.0	11.61	8.61	41.0
June 18	Martin Cherney, Denmark.....	F. N. Buckman Cheese Fac.	1.0321	3.15	11.88	8.73	40.7

Herd Samples Collected in Presence of Inspectors.

Date.	From herd of	Sp. Gr.	Per cent milk fat.	Per cent total solids	Per cent solids not fat.	I. R. of whey (20° C.)	Remarks.
1910.							
Aug. 11	Frank Maternowski, Green Bay	1.0306	3.3	11.98	8.68	41.7	
Aug. 11	Andrew Marcheski, Green Bay.....	1.0280	3.2	11.33	8.13	39.1	
Aug. 25	Ernest Bartling, Riley	1.0305	4.0	12.50	8.50	41.3	Morning's milk.
Aug. 25	Ernest Bartling, Riley	1.0310	4.0	12.76	8.76	42.0	Night's milk.
Aug. 29	Eichhorst Bros., Stevens Point.....	1.0321	4.2	12.97	8.77	41.1	Night's milk.
Sept. 2	Donohu & Son, Wausau.....	1.0334	3.25	12.35	9.10	.....	Night's milk.
Sept. 6	Fred Kratz, New Franken, R. D. 2.....	1.0312	4.0	12.84	8.84	42.0	
Sept. 10	Edward Stuelke, Lake Mills.....	1.0315	4.6	13.33	8.73	40.9	
Sept. 22	D. Sorensen, Oconto.....	1.0320	4.2	13.09	8.89	42.1	Night's milk.
Sept. 27	A. C. Brandt, Monroe.....	1.0320	4.15	13.16	9.01	41.2	Morning's milk.
Sept. 28	Balzer Wirtz, Sheboygan	1.0313	4.15	12.88	8.73	41.3	
Oct. 31	Peter DeBoer, Midway.....	1.0331	4.1	13.12	9.02	42.4	
Nov. 1	Howard Edwards, Evansville.....	1.0315	4.25	13.09	8.84	40.8	Night's milk.
Nov. 2	John Hart, Evansville	1.0328	4.0	12.88	8.88	42.3	Morning's milk.
Nov. 3	James Hanley, Hurley.....	1.0316	4.85	13.88	9.03	41.7	
Nov. 4	Frank Haasl, Park Falls	1.0298	5.70	14.20	8.50	41.3	Night's milk.
Nov. 7	Fred Shutz, Evansville	1.0311	4.25	13.36	9.11	41.0	Night's milk.
Nov. 7	Chas Webb, Evansville	1.0312	4.3	13.1	8.8	41.5	Night's milk.
Nov. 7	Rasmus Anderson, Evansville.....	1.0317	4.7	13.96	9.26	42.5	Night's milk.
Nov. 10	Theo. Gloeckler, Portage	1.0320	4.8	13.45	8.65	41.3	
Nov. 10	Theo. Gloeckler, Portage	1.0320	4.9	13.56	8.66	.....	
Nov. 11	E. Naslund, Superior	1.0335	4.15	13.49	9.34	.....	
Nov. 11	John Lund, Superior	1.0301	4.9	13.74	8.84	42.0	
Nov. 22	W. M. Ellis, Northport.....	1.0337	5.0	14.77	9.77	43.1	Morning's milk.
Nov.	M. Hahn, Sturgeon Bay.....	1.0331	5.4	14.71	9.31	43.9	Night's milk.
Dec. 15	Wm. DeGroot, Union Grove.....	1.0320	4.2	13.08	8.88	42.6	
Dec. 28	J. R. Merriam, Grand Rapids.....	1.0320	4.4	13.27	8.87	.....	
1911.							
Jan. 17	Henry Townley, So. Kaukauna.....	1.0330	5.4	14.78	9.38	44.0	
Mar. 6	Edward Westby, Clinton	1.0310	3.5	11.95	8.45	.....	Night's milk.
Mar. 7	Edward Westby, Clinton.....	1.0309	2.95	11.30	8.35	.....	Morning's milk.
Mar. 15	Mrs. G. Peterson, Stoughton.....	1.0301	3.65	11.99	8.34	.....	Night's milk.
Mar. 15	Andrew Nettun, Stoughton	1.0299	3.35	11.62	8.27	.....	Morning's milk.
Mar. 15	Andrew Nettun, Stoughton	1.0307	4.0	12.13	8.13	.....	Night's milk.
Mar. 16	Peter Nygard, Stoughton	1.0312	3.8	12.51	8.71	43.7	Morning's milk.

Herd Samples Collected in Presence of Inspectors—Continued.

Date.	From herd of	Sp. Gr.	Per cent milk fat.	Per cent total solids.	Per cent solids not fat.	I. R. of whey (20° C.)	Remarks
1911.							
Mar. 16	Peter Nygard, Stoughton	1.0288	3.35	11.0	7.65	40.4	Night's milk.
Mar. 16	Mrs. G. Peterson, Stoughton	1.0297	3.8	12.07	8.27	.....	Morning's milk.
Mar. 21	H. G. Emerson, Capron, Ill., R. 1	1.0310	3.2	11.49	8.29	40.6	Night's milk.
Mar. 22	Peter Nygard, Stoughton	1.0310	2.75	11.05	8.30	40.35	Night's milk.
Apr. 14	H. Mueller, Johnson Creek	1.0290	3.0	10.85	7.85	.....	Night's milk.
Apr. 14	Leon Boutelle, Johnson Creek	1.0300	3.0	11.10	8.10	.....	Night's milk.
Apr. 14	H. Emmert, Johnson Creek	1.0310	3.3	11.71	8.41	.....	Night's milk.
Apr. 14	Geo. Broom, Johnson Creek	1.0290	2.9	10.73	7.83	39.8	Night's milk.
Apr. 14	Emil Schaefer, Johnson Creek	1.0290	3.4	11.33	7.93	.....	Night's milk.
Apr. 14	A. Voelker, Johnson Creek	1.0295	3.35	11.39	8.04	.....	Night's milk.
Apr. 14	A. Voelker, Johnson Creek	1.0300	3.5	11.70	8.20	.....	Night's milk.
Apr. 14	Aug. Nadler, Johnson Creek	1.0290	3.1	10.97	7.87	40.2	Night's milk.
Apr. 15	Jul. Haubenschild, Johnson Creek	1.0300	3.4	11.54	8.18	41.3	Morning's milk.
Apr. 15	Herman Stande, Johnson Creek	1.0285	3.3	11.08	7.78	.....	Morning's milk.
May 2	Robert Anderson, Greenwood	1.0313	3.4	12.03	8.63	40.7	Night's milk.
May 24	Chas. Luebcke, Middleton	1.0315	2.6	10.78	8.18	.....	Night's milk.
May 24	Chas. Luebcke, Middleton	1.0316	2.8	11.66	8.56	.....	Night's milk.
June 14	Jul. Splitgerber, Shawano, R. D.	1.0323	3.6	12.44	8.84	41.4	
June 19	Wm. Hohnke, Marshall	1.0291	3.9	11.65	7.75	.....	Night's milk.
June 20	Wm. Hohnke, Marshall	1.0296	4.35	12.18	7.83	.....	Morning's milk.
June 20	John Wellhoefer, Waterloo	1.0320	3.5	12.57	9.07	.....	Night's milk.
June 21	John Wellhoefer, Waterloo	1.0320	3.8	12.95	9.15	.....	Morning's milk.
June 21	A. Zimbrick, Waterloo	1.0304	2.8	10.96	8.16	.....	Night's milk.
June 22	A. Zimbrick, Waterloo	1.0310	3.05	11.59	8.54	.....	Morning's milk.
June 22	Wm. Krause, Waterloo	1.0310	3.0	11.34	8.34	41.0	Night's milk.
June 23	Wm. Krause, Waterloo	1.0310	3.3	11.88	8.58	41.7	Morning's milk.
June 23	John Friedel, Waterloo	1.0299	2.6	10.76	8.16	.....	Night's milk.
June 24	John Friedel, Waterloo	1.0307	2.65	10.95	8.30	.....	Morning's milk.
July 17	H. Schumacher, Cazenovia	1.0320	3.6	12.4	8.8	41.0	
July 17	H. Schumacher, Cazenovia	1.0316	3.4	12.12	8.72	.....	
Aug. 1	Fred Roder, Belleville	1.0310	4.0	12.50	8.55	40.6	Morning's milk.
Aug. 17	Anton Sobek, Pulaski	1.0310	3.8	12.52	8.72	41.0	
Aug. 17	Jos. Shinkas, Pulaski	1.0290	3.6	11.62	8.02	40.1	
Aug. 18	Jac. Zilinski, Pulaski	1.0316	4.0	12.62	8.62	40.6	

Aug. 25	John Dietsche, Spencer	1.0327	3.95	12.87	8.92	42.3	
Aug. 25	C. Mueller, Monroe	1.0300	3.7	11.96	8.26	40.4	Morning's milk.
Sept. 6	Barney Rutten, Little Chute	1.0313	4.05	12.69	8.64	40.5	
Sept. 25	Wm. Tilly, Green Bay, R. D. 8	1.0300	6.35	15.04	8.69	41.0	
Dec. 6	E. A. Paddock, Elkhorn, R. D.	1.0308	2.40	10.66	8.26	39.5	Morning's milk.
Dec. 6	E. A. Paddock, Elkhorn, R. D.	1.0294	2.80	10.82	8.02	38.5	Night's milk.
Dec. 27	Wm. Hoffman, Kewaunee, R. D. 6	1.0305	5.5	14.30	8.80	41.5	
1912.							
Jan. 26	F. Bohn, Watertown	1.0295	4.0	12.37	8.37	41.0	Night's milk.
Jan. 27	F. Bohn, Watertown	1.0293	3.6	11.83	8.23	41.0	Morning's milk.
Feb. 14	W. Kulkee, Jr., Watertown	1.0295	3.4	11.45	8.05	40.2	Night's milk.
Feb. 15	Wm. Kulkee, Jr., Watertown	1.0295	3.3	11.33	8.03	40.0	Morning's milk.
Feb. 20	Fred Melius, Rubicon	1.0310	3.4	11.92	8.52	42.0	Night's milk.
Feb. 21	Fred Melius, Rubicon	1.0328	3.5	12.58	9.08	42.8	Morning's milk.
Feb. 21	Wm. Hoff, Hartford	1.0315	3.5	12.19	8.69	41.7	Night's milk.
Mar. 6	Robt. Repe, Allenton	1.0299	3.6	11.79	8.19	.....	Night's milk.
Mar. 7	Nic. Hohner, Allenton	1.0324	3.3	12.06	8.76	.....	Morning's milk.
Mar. 7	Robt. Repe, Allenton	1.0306	2.7	11.99	8.29	.....	Morning's milk.
Mar. 7	Nic. Hohner, Allenton	1.0316	4.0	12.70	8.70	.....	Night's milk.
Mar. 8	Chas. Benedum Allenton	1.0329	2.65	11.40	8.75	.....	Morning's milk.
Mar. 15	Jos. Ray, Kewaunee	1.0310	4.8	13.01	8.21	.....	
Mar. 15	Louis Stoller, Kewaunee	1.0301	2.80	10.68	7.88	.....	Night's milk.
Mar. 18	Fred Fach, Marshfield	1.0296	3.2	10.98	7.78	40.0	
Mar. 19	Jos. Blahnek, Kewaunee	1.0295	3.05	10.99	7.94	.....	
Mar. 19	Chas. Geier, Kewaunee	1.0295	3.3	11.25	7.95	.....	
Mar. 20	S. F. Hewitt, Neillsville	1.0321	4.0	12.77	8.77	42.4	
Apr. 1	Louis Clark, New Franken, R. 2	1.0310	4.1	12.57	8.47	40.5	Night's milk.
Apr. 3	G. Piescher, Granton, R. D. 1	1.0314	3.4	11.92	8.52	41.3	Night's milk.
Apr. 4	Adolph Schlinsog, Granton	1.0313	2.8	10.72	7.92	40.4	Night's milk.
Apr. 4	G. Piescher, Granton, R. D. 1	1.0335	3.5	12.58	9.08	43.7	Morning's milk.
Apr. 5	Adolph Schlinsog, Granton	1.0308	2.5	10.70	8.20	41.3	Morning's milk.
Apr. 26	Otto Toepfer, Madison	1.0305	3.3	11.18	7.88	40.0	Night's milk.
June 4	Mrs. F. Pech, Manitowoc	1.0334	4.3	13.51	9.21	.....	
June 26	James Kraynik, Denmark	1.0310	3.65	12.36	8.71	41.0	
June 26	Thos. Gaffney, Denmark	1.0328	3.15	12.04	8.89	41.6	
June 27	Jos. Buresch, Denmark	1.0331	3.6	12.51	8.91	41.2	
June 27	Martin Cherney, Denmark	1.0337	3.6	12.65	9.05	42.0	

Submitted Milks.

Date.	Submitted by	Sp. G.	Per cent milk fat.	Per cent total solids.	Per cent solids not fat.	Remarks.
1910.						
July 11	American Milk Products Co.	.....	.....	.....	.....	Tested for formaldehyde. None found.
July 14	John Streit, Riley	1.0275	3.0	10.475	7.475	
July 15	Martin Leichtman, Abbottsford	.....	3.4	.....	.....	
July 20	E. V. Harpold, Camp Douglas	.....	.08	.....	.....	Skimmed milk.
Aug. 16	Robt. E. Peat, Riley	1.029	3.5	.....	.....	
Aug. 16	Robt. E. Beat, Riley	1.024	3.3	.....	.....	
Aug. 18	M. B. Aldrich, Shawano	.....	4.40	.....	.....	
Aug. 18	M. B. Aldrich, Shawano	.....	3.80	.....	.....	
Aug. 20	Mrs. Breitenbach, Madison	1.031	3.20	10.95	8.39	
Aug. 20	M. B. Aldrich, Shawano	.....	3.80	.....	.....	
Aug.	Frank C. Willie, Fond du Lac	.....	.9	.....	.....	
Sept. 10	D. M. Spicer, Tiffany	.....	3.85	.....	.....	Sample "No. 17."
Sept. 10	D. M. Spicer, Tiffany	.....	3.8	.....	.....	Sample "No. 32."
Sept. 10	D. M. Spicer, Tiffany	.....	3.8	.....	.....	Sample "No. 40."
Sept. 14	State Fair Association	.....	3.6	.....	.....	Tested for preservatives. None found.
Sept. 14	State Fair Association	.....	5.8	.....	.....	Tested for preservatives. None found.
Sept. 14	State Fair Association	.....	3.4	.....	.....	Tested for preservatives. None found.
Sept. 14	State Fair Association	.....	3.6	.....	.....	Tested for preservatives. None found.
Sept. 14	State Fair Association	.....	4.6	.....	.....	Tested for preservatives. None found.
Sept. 14	State Fair Association	.....	4.8	.....	.....	Tested for preservatives. None found.
Sept. 14	State Fair Association	.....	4.8	.....	.....	Tested for preservatives. None found.
Nov. 2	J. T. Lundeberg, Stoughton	.....	3.7	.....	.....	Sample "No. 13."
1911.						
Jan. 3	D. Irvine, Greenwood, R. D. 3	.....	3.6	.....	.....	
Jan. 10	Otto Naffine, Minn. Junction	1.032	3.7	.....	.....	
Jan. 19	Kenosha Creamery, Kenosha	.....	3.4	.....	.....	
Jan. 19	Kenosha Creamery, Kenosha	.....	3.0	.....	.....	
Jan. 23	Robt. Polzin, Minn. Junction	.....	3.6	.....	.....	Sample "No. 1."
Jan. 23	Robt. Polzin, Minn. Junction	.....	3.5	.....	.....	Sample "No. 2."
Feb. 13	Dr. J. V. Stevens, Janesville	1.0340	1.0	9.84	8.84	Skimmed. No preservative found.
Mar. 2	A. F. Boies, Osceola	.....	2.8	.....	.....	
Mar. 5	J. A. Richards, Sparta	.....	.....	.....	.....	Tested for preservatives. None found.
Mar. 10	Jossi Cheese Co., Watertown	1.0265	2.05	9.08	7.03	Marked "Taylor."
Mar. 10	Jossi Cheese Co., Watertown	1.0232	2.75	9.10	6.35	Marked "Hardie No. 1."
Mar. 10	Jossi Cheese Co., Watertown	1.0258	2.9	9.93	7.03	Marked "Hardie No. 2."

Mar. 24	C. A. Zilisch, Madison	1.0304	3.3	11.56	8.26	Marked "No. 19½."
Mar. 24	C. A. Zilisch, Madison	1.0319	3.2	11.81	8.61	Marked "G."
Mar. 24	C. A. Zilisch, Madison	1.0313	3.0	11.35	8.35	Marked "No. 22."
Mar. 29	Frank Schultz, Fond du Lac		2.4			
April 1	B. E. Nelson, Woodruff	1.0317	3.9	12.75	8.85	
April 3	Theo. H. Richter, Burlington		4.4			
April 5	J. A. Richards, Sparta					Tested for preservatives. None found.
April 6	Chas. F. Perren, Waukesha		2.6			
April 14	Olaf Nelson, Madison	1.0320	3.0	11.74	8.74	
April 19	Theo. Richter, Burlington		4.8			
April 26	Henry Schempf Co., Fort Atkinson		0.07			Skimmed milk.
May 1	Theo. H. Richter, Burlington		4.9			
May 9	S. W. Trindle, Sharon		3.3			
May 18	Baltz Hoesly, New Glarus		3.1			Marked "No. 1."
May 18	Baltz Hoesly, New Glarus		2.8			Marked "No. 2."
May 18	Baltz Hoesly, New Glarus		2.9			Marked "No. 3."
May 18	Baltz Hoesly, New Glarus		3.6			Marked "No. 4."
May 18	Baltz Hoesly, New Glarus		3.4			Marked "No. 5."
May 18	Baltz Hoesly, New Glarus		3.2			Marked "No. 6."
May 18	Baltz Hoesly, New Glarus		3.2			Marked "No. 7."
May 19	Jos. Sneberk, Greenwood, R. 3		3.4			
May 24	C. A. Zilisch, Madison	1.0360	1.6	10.91	9.31	Sample marked "X."
May 24	C. A. Zilisch, Madison	1.0354	1.6	10.84	9.24	Sample marked "XX."
July 17	Prof. A. N. Winchell, Madison					Tested for preservatives. None found.
July 24	Clay Tyler, West De Pere, R. D. 1		3.0			
July 25	O. L. Kowalke, Madison					Tested for preservatives. None found.
Sept. 19	Jos. Severson, Dodgeville, R. D. 2		3.5			
Sept. 20	Wm. Brandenburg, Beloit, R. D. 29		3.55			
Oct. 11	Mr. Borden, Madison		5.95			
Nov. 29	J. F. Mirlach, Beaver Dam		5.0			
Dec. 4	Wuethrich Bros., Doylestown	1.0340	1.6			
Dec. 18	Peter O. Schineder, Darien		3.8			
1912.						
Jan. 26	Wisconsin Butter & Cheese Co., Elkhorn		3.0			Marked "No. 1."
Jan. 26	Wisconsin Butter & Cheese Co., Elkhorn		3.3			Marked "No. 2."
Feb. 3	Chas. Wiswell, Elkhorn		3.3			Marked "No. 1."
Feb. 3	Chas. Wiswell, Elkhorn		3.35			Marked "No. 2."
Feb. 3	Chas. Wiswell, Elkhorn		3.7			Marked "No. 3."
Mar. 5	E. G. Erickson, Frederick, R. D. 2		4.15			
Mar. 7	A. G. Palmer, Lake Geneva		3.4			Marked "No. 4."
Mar. 7	A. G. Palmer, Lake Geneva		3.35			Marked "No. 5."
Mar. 7	A. G. Palmer, Lake Geneva		3.5			Marked "No. 6."
Mar. 20	A. G. Palmer, Lake Geneva		3.4			Marked "No. 1."
Mar. 20	A. G. Palmer, Lake Geneva		3.4			Marked "No. 2."
Mar. 29	A. G. Palmer, Lake Geneva		3.2			Marked "No. 3."

Submitted Milks—Continued.

Date.	Submitted by	Sp. G.	Per cent milk fat.	Per cent total solids.	Per cent solids not fat.	Remarks.
1912.						
Mar. 26	Clarence Ward, Madison, R. D. 3.....	1.0363	2.0	11.47	9.47	
Mar. 26	Clarence Ward, Madison, R. D. 3.....	1.0352	3.2	12.64	9.44	
April 24	B. Boemke, Fall Creek.....	.....	4.15	.....	.....	
May 1	Hoard's Creameries, Fort Atkinson.....	.....	3.55	.....	.....	
May 10	G. M. Spier, Tiffany.....	.....	3.9	.....	.....	Marked "No. 15."
May 10	G. M. Spier, Tiffany.....	.....	3.8	.....	.....	Marked "No. 19."
May 17	F. J. Zell, Mosinee.....	.....	1.8	.....	.....	
June 14	J. T. Henderson, Birnamwood.....	.....	3.75	.....	.....	
June 17	Julius Krug, Madison.....	.....	3.2	.....	.....	

MISCELLANEOUS.

Samples Collected by Inspectors.

Date.	Bought for	Bought of	Manufacturer or Jobber.	Brand.	Remarks.
1910.					
July 26	Ice cream powder.....	John Poulis, Ashland.....	B. Heller & Co., Chicago...	Snow	Contains a gum.
Oct. 31	Nabisco	M. L. Nelson, Madison.....	National Biscuit Co., New York.	.....	Tested for saccharin. None found.
1911.					
Jan. 20	Red fruit color.....	P. M. Rohrer, Cochrane....	Spense, McCord Drug Co., La Crosse.	.....	A coal tar dye.
Jan. 26	Currants	A. C. Dixon & Son, Kilbourn.	W. M. Hoyt Co., Chicago..	Mallard	Labeled "Cleaned currants." Not cleaned currants. Misbranded. Mixed with sand, stems and small stones.
Feb. 9	Pickles	A. Puerer & Son, Jefferson..	Wm. Hemming Co., Chicago	.....	Contain benzoic acid and alum.
Feb. 23	Gelatin	John A. Krumholz, Arcadia.	Wixon Spice Co., Chicago...	Wixon	Composed of 86% sucrose (cane sugar) and 9.4% gelatin.
Feb. 28	Bleached raisins	Findlay & Co., Madison....	.....	.....	Bleached with sulphur dioxide, 0.18%.

Mar. 21	Sugar	T. E. George, Madison			Contains 0.00099% sulphur dioxide.
Mar. 21	Sugar	O. R. Jacobson, Madison			Contains 0.00019% sulphur dioxide.
Mar. 21	Sugar	Miss Walker, Madison			Contains 0.0014% sulphur dioxide.
Mar. 22	Lard purifier	G. Ulrich & Co., Neenah	B. Heller & Co., Chicago		Commercial sodium bicarbonate.
Mar. 23	Maple sugar	Frank Henzlik, Chippewa Falls.	The Towle Maple Products Co., St. Paul, Minn.	Towle's	No adulteration found.
Mar. 29	Currants	O. H. Meyer, Portage	The Hills Bros. Co., New York.		Labeled "Perfectly cleaned currants." Misbranded. Not perfectly cleaned currants. Sample contains sand, stems and other dirt.
Mar. 29	Dates	O. Kopplin, Portage	The Hills Bros. Co., New York.	Royal Excelsior selected	Misbranded. Not a selected product. Contains some mouldy and unripe dates.
April 27	Prepared mustard	E. Simonson, Waunakee	W. M. Hoyt Co., Chicago	Mallard	No adulteration found.
Aug. 11	Powder used in ice cream	R. Else & Son, Milton			Composed of corn starch and a gum sweetened with sugar.
Sept. 27	Cocoa	Wm. Steinmeyer Co., Milwaukee.	Wm. Steinmeyer Co., Milwaukee.		No adulteration found.
Oct. 2	Lemon pie filling	J. Morshauser, Madison	Logan-Johnson Co., Boston		Contains Glucose, corn starch, benzoic acid and a coal tar dye.
Nov. 1	Frou Frou	Kelly Grocery Co., Janesville			Contains boric acid or a salt thereof.
Nov. 7	Bourbon whiskey	The Cardinal Hotel, Madison	W. A. Gaines & Co., Frankfort, Ky.	Old Crow	No adulteration found.
Nov. 8	Bourbon whiskey	Brader & Ripp, Madison	W. A. Gaines & Co., Frankfort, Ky.	Old Crow	No adulteration found.
Nov. 9	Lard and tallow purifier	Geo. Ashbacher, Prairie du Chien.	B. Heller & Co., Chicago		Commercial sodium bicarbonate.
Dec. 5	Confectionery sugar	C. S. Nelson, Spooner			Colored with cochineal.
1912.					
Feb. 9	Glaze	Puritan Candy Co., Milwaukee.			Arsenic calculated as the trioxide of arsenic, 25 parts per million.
Feb. 9	Glaze	Badger Candy Co., Milwaukee.			Arsenic calculated as the trioxide of arsenic, 2½ parts per million.
Feb. 9	Glaze	Royal Candy Co., Milwaukee.			Arsenic calculated as the trioxide of arsenic, 5 parts per million.
May 7	Powdered sugar	Ole Bergsug, New Richmond.			No adulteration found.
May 29	Baking powder	Jenzen Co., Milwaukee	Jenzen Co., Milwaukee		Labeled: "This baking powder is composed of the following ingredients and none other—calcium acid phosphate, bicarbonate of soda, corn starch and egg albumen and sodic aluminic sulphate." Contains alum. Not labeled in compliance with law.
May 29	Baking soda	Jenzen Co., Milwaukee	Jenzen Co., Milwaukee		No adulteration found.

Miscellaneous—Submitted Samples.

Date. 1910.	Sample of	Submitted by	Remarks.
July 25	Water	Jacob Jackson, Village Clerk, Independence	Parts per million. Total solids (105° C.) 133.00 Loss on ignition 50.00 Ammonia as free 0.30 as albuminoid 0.082 Nitrogen as nitrates none as nitrates traces Chlorine 2.40 Oxygen absorbed (24 hrs.) 2.00
July 30	Coating from a "McKay's" cream sampler.	H. C. Larson, Madison	Contains a copper compound.
Dec. 12	Oysters	Dr. G. E. Crosley, Milton	Tested for preservatives. None found.
1911.			
Jan. 11	Powdered sugar	Joseph W. Pizer, 851 Sobieski, St., Milwaukee.	No adulteration found.
Jan. 23	Ham sandwich	H. G. Bennett, Milwaukee	No adulteration found.
Mar. 10	Konserverungs salz	E. H. Schwartz & Co., Marinette	Contains sulphite.
Mar. 29	Zero pickle	Fred Dix, Colby	A mixture of sodium chloride (salt) and potassium nitrate (saltpeter).
Apr. 4	"Fresh" eggs	G. A. Lukwitz, La Crosse	Not fresh eggs.
May 13	Drier		
May 13	Drier	Midland Linseed Co., Minneapolis, Minn..	Marked "Atlantic Crusher Drier." Contains 71.6% mineral oil.
		Midland Linseed Co., Minneapolis, Minn..	Marked "Tower Crusher Drier." Contains 78.3% mineral oil.
May 13	Drier		
		Midland Linseed Co., Minneapolis, Minn..	Marked "Linseed oil drier." Contains 1.7% unsaponifiable material.
May 13	Chinese paint oil		
May 24	Asbestos pipe covering	A. M. Ophany, Windsor	Contains a low boiling mineral oil product.
Oct. 19	Granulated sugar	State Board of Control, Madison	Magnesium calculated as calcium magnesium silicate 87%.
		The J. F. Bruss & Sons Co., Cedarburg	No adulteration found.
1912.			
Feb. 15	Table salt	Geo. C. Shutts, Whitewater	Standard.

May 23	Soap chips	State Board of Control, Madison	Moisture, 4.90%. Ash, 18.9%. Unsaponifiable material, 0.2%.
May 23	Soap	State Board of Control, Madison	"White Cloud Laundry." Moisture, 19.3%. Ash, 15.9%. Unsaponifiable material, 0.17%.
May 23	Soap	State Board of Control, Madison	"Borax Laundry." Moisture, 25.1%. Ash, 14.5%. Unsaponifiable material, 0.78%.
June 28	Soap chips	State Board of Control, Madison	Moisture, 13.1%. Ash, 19.2%. Unsaponifiable material, 0.9%.
June 28	Soap	State Board of Control, Madison	"Borax Laundry." Moisture, 28.2%. Ash, 15.2%. Unsaponifiable material, 1.14%.

OLEOMARGARINE.

Oleomargarine Held to be in Semblance of Yellow Butter.

Date.	Bought of	Manufacturer or Jobber.	Brand.
1911.			
Jan. 19	L. M. Shakman, New Lisbon	Swift & Co., Chicago	Jersey.
Nov. 16	Jacob Huber, Wausau	Schwarzschild & Sulzberger, Chicago	Myrtle Leaf.
Nov. 15	D. C. Jones, Tomahawk	Swift & Co., Chicago	Lincoln.
Nov. 16	Jacob Huber, Wausau	Schwarzschild & Sulzberger, Chicago	Majestic.
1912.			
Jan. 18	D. E. Lussier, Merrill	Swift & Co., Chicago	Lincoln.
Jan. 18	Peterman Bros., Merrill	Swift & Co., Chicago	Lincoln.
Jan. 28	Geo. Rothlisberg, Merrill	Swift & Co., Chicago	Lincoln.
Jan. 30	J. J. Stumreiter, Fifield	Armour & Co., Chicago	.....
Feb. 12	Jacobs Bros., De Pere	Swift & Co., Chicago	Lily.
Mar. 18	Fred Will, St. Croix Falls	Armour & Co., Chicago	Silver Churn.

Oleomargarine Tested for Butter fat, Little or None Found.

1911.			
Nov. 24	Allen Hanson, Eau Claire	John F. Jelke Co., Chicago	Imperial.
Nov. 24	T. F. Connley, Eau Claire	John F. Jelke Co., Chicago	Good Luck.
Nov. 24	L. H. Starkey, Eau Claire	John F. Jelke Co., Chicago	Good Luck.
Mar. 16	Mrs. M. C. Boylan, Cumberland	.....	

Oleomargarine Tested for Per Cent of Fat.

Date.	Bought of	Manufacturer or Jobber.	Brand.	Per cent fat.
1911.				
Dec. 20	Chas. Hess, 802 3rd St., Milwaukee.....	Grossenbach & Co., 299 Broadway, Milwaukee....	.....	88.3
1912.				
Jan. 9	Wm. Hintzen, Madison.....	Friedman & Co., Chicago.....	.....	83.8
Jan. 9	Welcher Market Co., Madison.....	Wm. J. Moxley, Chicago.....	Dairy	87.5
Jan. 9	W. P. Lynch, Madison.....	John F. Jelke Co., Chicago.....	Good Luck	86.4
Jan. 9	Olwell Bros., Madison.....	Armour & Co., Chicago.....	Buttercup	87.8
Jan. 9	A. G. Ruter, Madison.....	Swift & Co., Chicago.....	Lily	81.7

OLIVE OIL.

Olive Oil, Not Standard.

Date.	Bought of	Manufacturer or Jobber.	Brand.	Remarks.
1912.				
Mar. 28	Hess Pharmacy, Milwaukee.....	.....	.....	Contains sesame oil.

Olive Oil, Standard.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Brand.
1910.			
Oct. 19	Wm. A. Oppel, Madison	Wm. A. Oppel, Madison	
Oct. 19	Findlay & Co., Madison		
Oct. 19	Piper Bros., Madison	Anouil Courbin Co., Bordeaux, France	White Label.
Oct. 19	M. L. Nelson, Madison	Nicelle Olive Oil Co., New York	Maltese Cross.
Oct. 19	Ott's Pharmacy, Madison	Meyer Drug Co., St. Louis	L. F.
Oct. 19	Hollister Drug Co., Madison	Lautie Fils, Grasse, France	
1911.			
Jan. 19	Stephen S. Cycmanick, La Crosse	Chas. P. Grogan, Los Angeles, California	Purity.
1912.			
Jan. 29	C. P. Schubring, Madison	Glaser & Kohn Co., Chicago	Rugini.
Jan. 29	Wm. Beglinger, Madison	H. J. Heinz Co., Pittsburgh	Heinz.
Jan. 29	John G. Hyland, Madison		Les Trois Croix.
Jan. 29	Wm. Brady Co., Madison	Atwood & Steele Co., Chicago	A S C.
Jan. 30	W. Nehs & Son, Baraboo	Reid, Murdock & Co., Chicago	Couteaux
Jan. 30	F. C. Peck, Baraboo	S. Rea & Co., Leghorn, Italy	
Mar. 7	Love Bros., Waukesha	Sprague, Warner & Co., Chicago	Ferndell.
Mar. 7	Putney Bros. Co., Waukesha	Nicelle Olive Oil Co., New York	Nicelle.
Mar. 7	Hugo Hoeveler, Waukesha	Squibbs & Co., New York	
Mar. 8	The Department Store, Oconomowoc	Rodier Fils et Cie., Nice, France	
Mar. 8	The Coöperative Store, Oconomowoc	Reid, Murdock & Co., Chicago	Dumouron.
Mar. 18	C. Oliva, Madison	Marca Dante, Genoa, Italy	
Mar. 21	Prideaux & Bliss, Mineral Point		
Mar. 21	The Metz Pharmacy, Mineral Point		
Mar. 21	Ivey's Pharmacy, Mineral Point		
Mar. 22	H. A. Robinson, Platteville		
Mar. 22	Youman's Pharmacy, Platteville		
Mar. 23	Brown Drug Store, Highand		
Mar. 28	A. Spiegel Co., Wisconsin St., Milwaukee		
Mar. 28	The A. Schrader Co., Milwaukee		
Apr. 2	H. Ausman & Sons, Elk Mound	Atwood & Steele, Chicago	
Apr. 2	Wm. Seidenberg, Elk Mound	Strohmeyer & Arpe Co., New York	Re Umberto.
Apr. 3	Dana & Worm Drug Co., Fond du Lac		
Apr. 3	Sallade & Ruh, Fond du Lac		
Apr. 3	B. Buchholz & Co., Fond du Lac		
Apr. 4	*W. O. McKenna, Madison		
Apr. 8	C. A. Hogan, Durand	Spence-McCord Drug Co., La Crosse	
May 14	F. Dohman Co., Miwaukee	F. Dohman Co., Milwaukee	

*Submitted sample.

SODA FOUNTAIN CRUSHED FRUITS AND SYRUPS.

Tested for Benzoic Acid, Salicylic Acid, Saccharin, and Artificial Color.

Date	Bought for	Bought of	Manufacturer or Jobber.	Color.	Benzoic acid.	Salicylic acid.	Saccharin
1911.							
May 8	Pineapple fruit juice.	L. Hess, Madison.....	Liquid Carbonic Co., Chicago.	Natural	None	None	None .....
May 8	Cocoa syrup...	L. Hess, Madison.....	Liquid Carbonic Co., Chicago.	Natural	None	None	None .....
May 8	Strawberry crushed fruit.	L. Hess, Madison.....	Liquid Carbonic Co., Chicago.	Cudbear	None	None	None .....
May 8	Lemon syrup...	L. Hess, Madison.....	Liquid Carbonic Co., Chicago.	Natural	None	None	None .....
May 8	Orange syrup...	L. Hess, Madison.....	Liquid Carbonic Co., Chicago.	Natural	None	None	None .....
May 8	Strawberry crushed fruit.	J. L. McCarthy, Madison	Hungerford Smith Co., Rochester.	Cochineal	None	None	None .....
May 8	Wild cherry fruit juice.	J. L. McCarthy, Madison	Hungerford Smith Co., Rochester.	Cudbear	None	None	None .....
May 8	Pineapple fruit juice.	J. L. McCarthy, Madison	Hungerford Smith Co., Rochester.	Natural	None	None	None .....
May 10	Cherries	A. J. Schwoegler, Madison.	Hungerford Smith Co., Rochester.	Cochineal	None	None	None .....
May 10	Cherries	L. Russcs, Madison.....	Hungerford Smith Co., Rochester.	Ponceau 2R or 3R red, a coal tar dye.	Present	None	None .....
May 10	Grape stock	Chas. Waltzinger, Madison.	Habicht & Brain, Chicago.	Natural	None	None	None .....
May 10	Strawberry stock.	Chas. Waltzinger, Madison.	Habicht & Brain, Chicago.	Natural	None	None	None .....
May 10	Cherry stock..	Chas. Waltzinger, Madison.	Habicht & Brain, Chicago.	Natural	None	None	None .....
May 10	Cherry crushed stock.	L. Russcs, Madison.....	L. Russos, Madison.....	Natural	None	None	None .....
May 10	Raspberry crushed fruit.	L. Russcs, Madison.....	L. Russos, Madison.....	Natural	None	None	None .....
May 10	Raspberry crushed fruit.	Palace of Sweets, Madison.	Armour & Co., Chicago	Natural	None	None	None .....
May 10	Cherries	Palace of Sweets, Madison.	Armour & Co., Chicago	**Coal tar dye,** either Ponceau 2R or 3R red.	None	None	None .....

SPICES.

Date.	Bought for	Bought of	Manufacturer or Jobber.	Remarks.
1911.				
Apr. 10	Ground black pepper.....	Farmers' Produce Co., Chippewa Falls.	Wixon & Co., Chicago....	No adulteration found.
Apr. 27	Black pepper	Wm. Rabenowich & Sons, Park Falls.	.....	No adulteration found.
Apr. 27	Cinnamon	E. Simonson, Waunakee.	Wm. Hoyt Co., Chicago....	No adulteration found.
Apr. 27	Jamaica ginger	E. Simonson, Waunakee.	W. M. Hoyt Co., Chicago..	No adulteration found.
Apr. 27	Black pepper	E. Simonson, Waunakee.	W. M. Hoyt Co., Chicago..	No adulteration found.
Nov. 1	Ground pepper	Taylor Bros., Janesville....	.....	Not standard. Contains excessive amount of crude fiber.
Nov. 1	Mustard	Taylor Bros., Janesville....	.....	Not standard. Contains charlock or Dakota mustard.
Nov. 1	Mustard	Kelly Grocery Co., Janesville.	.....	Not standard. Contains charlock or Dakota mustard.
Nov. 1	Ground pepper	Norton & Maloney, Janesville.	Sherer-Gillett Co., Chicago.	Standard.
Nov. 1	Mustard	Norton & Maloney, Janesville.	Chesbrough & Moss Co., Beloit.	Standard.
Dec. 7	Black pepper	H. M. Burrington, Tomahawk.	Henry Wichert, Chicago.	Standard.
1912.				
Mar. 4	Ground mustard	Taylor Bros., Janesville....	.....	No adulteration found.

SYRUPS, MOLASSES, AND SYRUP MIXTURES.

Maple Syrup.

NOT STANDARD OR MISBRANDED.

Date.	Bought of	Manufacturer or Jobber.	Labeled.	Brand.	Remarks.
1910.					
Dec. 28	H. L. Platte, Prescott....	St. Paul Syrup Refining Co., St. Paul, Minn.	Sap Maple Syrup, ¼ Gallon Full Measure.	Virgin pure.....	Short measure. Misbranded.
1911.					
Jan. 26	H. L. Platte, Prescott....	St. Paul Syrup Refining Co., St. Paul, Minn.	Sap Maple Syrup, ¼ Gallon Full Measure.	Virgin	Short measure. Misbranded.
Jan. 26	H. L. Platte, Prescott....	St. Paul Syrup Refining Co., St. Paul, Minn.	Sap Maple Syrup, ¼ Gallon Full Measure.	Virgin	Short measure. Misbranded.
May 6	John H. Murphy, System Hotel, Portage.	.....	.....	.....	Served with meal as maple syrup. Not maple syrup.
1912.					
Mar. 7	The Palmer Hotel, Fond du Lac.	.....	.....	.....	Served with meal as maple syrup. Not maple syrup.

Maple Syrup.

STANDARD.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Brand.
1910.			
July 13	*O. J. Burnham, Richland Center.....	.....	.....
Dec. 15	Ward Grocery Co., Chippewa Falls.....	Griggs, Cooper & Co., St. Paul.....	Home.
Dec. 16	Felix Dorwin, Eau Claire.....	Franklin MacVeagh & Co., Chicago.....	Club House.
1911.			
April 26	C. F. Lohr & Son, Hartford.....	Reid, Murdock & Co., Chicago.....	Bismarck.
April 27	*Hon. A. H. Reid, Wausau.....	.....	.....
May 17	*Clinton B. Ballard, Appelton.....	.....	.....
Sept. 29	*F. M. Buzzell, Chippewa Falls.....	.....	.....

1912.			
Jan. 29	*F. M. Marty, Monroe		
April 25	*Theo. Jensen, River Falls		
April 27	*W. Darling, Mattoon		
April 30	*Dr. Mauermann, Monroe		
May 5	*G. W. Paulus, Grand Rapids		
May 8	*Hon. J. H. Dennhardt, Neenah		
May 9	*C. A. Russell, Winneconne		

Submitted samples.

Miscellaneous Syrups and Molasses.

Date.	Bought for	Labeled.	Bought of or Submitted by.	Manufacturer or Jobber.	Brand.	Remarks.
1910.						
Dec. 16	Cane sugar syrup..	Cane sugar syrup.....	Borgen & Aune, Eau Claire.	Eau Claire Grocery Co., Eau Claire.	Colon	No adulteration found.
1911.						
Jan. 24	"Sorghum molasses."	.....	*P. H. Frowley, Gotham	.....	.....	No adulteration found.
Jan. 25	Pure sugar cane syrup.	Pure sugar cane syrup...	Olwell Bros., Madison...	Gould, Wells & Blackburn Co., Madison	White Hall.....	No adulteration found.
Mar. 20	Cane syrup	Pure sugar cane syrup...	Olwell Bros., Madison...	Gould, Wells & Blackburn Co., Madison	White Hall..... Red Hen.....	Tested for sulphur dioxide. None found. Contains 0.0027% sulphur dioxide.
Mar. 21	Molasses	Louisiana molasses.....	T. E. George, Madison..	Oelrich & Laux, Chicago		
Mar. 21	"Karo corn syrup"	Karo	Thos. Olson, Madison...	Corn Products Refining Co., New York.	Karo	Contains 0.00034% sulphur dioxide.
Mar. 21	Molasses	Molasses	Miss Walker, Madison...	Oelrich & Berry, New Orleans, La.	Uncle Ben.....	Contains 0.0038% sulphur dioxide.
Dec. 14	Sorghum syrup.....	.....	*Charles N. Strong, Chetek.	.....	.....	No adulteration found.
1912.						
Feb. 27	Sorghum syrup.....	.....	*Ewald Green, Spring Green.	.....	.....	No adulteration found.

*Submitted sample.

Syrup Mixtures.

Date.	Bought for	Labeled.	Bought of	Manufacturer or Jobber.	Brand.	Remarks.
1910.						
Dec. 12	Sugar and maple syrup.	Sugar syrup and maple syrup.	Emery & Dewey, Madison.	Sprague, Warner & Co., Chicago.	Monsoon	Labeled as required by law.
Dec. 12	Sugar and maple syrup.	Sugar syrup and maple syrup.	Fred Bartels, Jr., Madison.	Sprague, Warner & Co., Chicago.	St. Croix.....	Labeled as required by law.
Dec. 12	Sugar cane syrup flavored with maple syrup.	Sugar cane syrup flavored with maple syrup.	M. Diederich, Madison..	St. Louis Syrup & Preserving Co., St. Louis, Mo.	Ohio	Not a sugar cane syrup mixture. Not labeled as required by law.
Dec. 15	Sugar and maple syrup.	Sugar syrup and maple syrup.	Ward Grocery Co., Chippewa Falls.	Sprague, Warner & Co., Chicago.	St. Croix.....	Labeled as required by law.
Dec. 15	Maple and cane sugar syrup.	Maple and cane sugar syrup, 50% maple, 50% cane sugar syrup.	Success Store, Chippewa Falls.	Corn Products Co., Chicago.	Kanuck	Labeled as required by law.
Dec. 15	Cane and maple syrup.	Syrup, 15% maple and 85% cane syrup.	Pelletier & Paquette, Chippewa Falls.	Manierre-Yoe Syrup Co.,	Silver Kettle.....	Not a cane syrup mixture. Not labeled as required by law.
Dec. 16	Maple and cane syrup.	Canadian maple and cane syrup.	A. Nelson & Co., Eau Claire.	Wm. R. Manierre, Chicago.	Old Manse.....	Not a maple and cane syrup mixture. Not labeled as required by law.
Dec. 21	Cane syrup and maple syrup.	Cane syrup and maple syrup, a blend of 15% maple and 85% cane syrup.	Huppler & Postel, Muscoda.	Manierre-Yoe Co., Chicago.	Silver Kettle.....	Not a cane syrup mixture. Not labeled as required by law.
Dec. 28	Cane and maple syrup.	Cane and maple syrup..	Mrs. A. F. Carson, Maiden Rock.	St. Paul Syrup & Refining Co., St. Paul, Minn.	Canada Sap.....	Not a cane and maple syrup mixture. Not labeled as required by law.
Dec. 29	Sugar cane and maple syrup.	Sugar cane syrup flavored with maple syrup. Cane syrup 80%, maple syrup 20%.	C. H. Kaste, Alma.....	St. Louis Syrup & Preserving Co., St. Louis, Mo.	Ohio	Not a sugar cane syrup. Flavored with maple syrup. Not labeled as required by law.
1911.						
Jan. 19	Cane and maple syrup.	Cane and maple syrup. Cane 80%, maple 20%.	M. J. Bezpaletz, La Crosse.	Clarence A. Crane Co., Warren, Ohio.	Beaver	Not a cane syrup mixture. Not labeled as required by law.
Dec. 19	Cane and maple sugar syrup.	Fancy sugar syrup, a compound ⅔ cane, ⅓ maple sugar syrup.	E. N. Fredendall, Janesville.	Bay State Maple Syrup Co., Boston, Mass.	Mt. Mansfield.....	Labeled as required by law.

TURPENTINE.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Remarks.
1910.			
July 11	Fred Klein Co., Madison		Tested for mineral oil. None found.
Dec. 21	J. M. Brophy, Lone Rock	W. M. Hoyt Co., Chicago	Tested for mineral oil. None found.
1911.			
Jan. 29	*Geo. La Breche, Manitowoc		Contains approximately 30% of a mineral oil product.
May 13	*A. M. Ophany, Windsor		Contains little or no turpentine.
May 20	Polk & Nelson, Madison	Standard Oil Co	Contains a small amount of a mineral oil product.
1912.			
May 20	*Wm. Tesch, Appleton		Tested for mineral oil. None found.

VINEGAR.

Date.	Bought for or Submitted as	Bought for or Submitted by	Remarks.
1910.			
Sept. 27	*Vinegar	J. Kimball, Briggsville	Below standard in acetic acid.
1911.			
Sept. 29	Cider vinegar	Emery & Dewey, Madison	No adulteration found.
Sept. 29	Cider vinegar	Purcell Bros., Madison	Not a standard cider vinegar. Below standard in apple solids.
Sept. 29	Cider vinegar	Findlay & Co., Madison	No adulteration found.
Sept. 29	Cider vinegar	J. Novick, Madison	Below standard in acetic acid.
Sept. 29	Cider vinegar	H. Lynch, Madison	No adulteration found.
Oct. 12	*Vinegar	C. Snoyenbos, Jr., Hersey	Below standard in acetic acid.
Nov. 22	Vinegar	Trevorrsh & Fish, Footville	No adulteration found.
Nov. 22	Vinegar	E. H. Mattice & Son, Footville	Not a standard cider vinegar. Below standard in apple solids.
Dec. 6	*Cider vinegar	C. E. Thorkelson, Racine	No adulteration found.
Dec. 6	*Vinegar	C. E. Thorkelson, Racine	Tested for acetic acid. Found to contain 5.5 grams per 100 ccs.
1912.			
Feb. 23	Cider vinegar	T. F. Greves, Waterloo	No adulteration found.
Feb. 23	Cider vinegar	C. S. Stacy, Waterloo	No adulteration found.
June 18	*Cider vinegar	G. E. Bible, Cazenovia	Below standard in acetic acid.

*Submitted samples.

WHITE LEAD AND ZINC WHITE.

White Lead.

NOT STANDARD.

Date.	Bought for	Labeled.	Bought of	Manufacturer or Jobber.	Remarks.
1910.					
Dec. 21	White lead.....	Perma White.....	Gus. Gilbertson, Lone Rock	Patek Bros., Milwaukee.....	Contains 22.50% of zinc white and 25.7% of barium sulphate.

White Lead.

STANDARD.

Date.	Bought of or Submitted by	Manufacturer or Jobber.	Brand.
1910.			
July 11	Fred Klein Co., Madison.....	.....	.....
Dec. 12	Polk & Nelson, Madison.....	Eagle White Lead Co., Cincinnati.....	.....
1911.			
May 1	*James Nevins, Madison.....	.....	.....
May 5	Fred Klein, Madison	Sherwin-Williams Co., Chicago.....	.....
May 5	Oldenburg & Doerschlag, Madison.....	National White Lead Co., Chicago.....	Dutch Boy.
May 5	Dresen & Rhodes, Madison.....	Eagle White Lead Co., Cincinnati.....	Eagle.
May 5	Mautz Bros. Co., Madison.....	Carter White Lead Co., Chicago.....	Carter.
May 5	Mautz Bros. Co., Madison.....	National White Lead Co., Chicago.....	Dutch Boy.
1912.			
Feb. 19	A. Pearson, Madison.....	De Voe & Reynolds, New York and Chicago.....	Devoe.
June 26	*State Board of Control, Madison.....	.....	.....

*Submitted samples.

Zinc White.

NOT STANDARD.

Date.	Bought of	Remarks.
1910. July 11	Fred Klein Co., Madison	Contains barium sulphate and calcium sulphate.

REPORTS OF ASSISTANT COMMISSIONERS

REPORT OF U. S. BAER, ASSISTANT COMMISSIONER

During this biennial period, I have been engaged in making inspections of cheese factories, creameries, city milk suppiles, skimming stations, condensing factories, dairy farms and herds, oleomargarine, grocery stores, restaurants and lunch counters, hotels, drug stores, flouring mills, ice houses and ice delivery wagons, meat packing houses, butcher shops, delicatessen stores, slaughterhouses, sausage manufactories, paint and oil stores, pop factories, bottling plants and ice cream plants, as follows:

Oleomargarine stores	384
Cheese factories	88
Creameries	14
City milk supplies	9
Skimming stations	3
Milk-condensing factories	16
Dairy herds and barns	23
Grocery stores	238
Butcher shops	54
Hotels	11
Restaurants and lunch counters	38
Drug stores	9
Flouring mills	2
Fair concessionaries	81
Ice wagons	34
Dairy herd milk samples	7
Second dairy	9
Combined butter and cheese factories	9
Cheese cold storage warehouses	19
Milk, cream, ice cream and whey cream shipping cans	2050
Ice cream manufacturing plants	44
Paint and oil stores and shops	16
Bottling plants and soft drink factories	9

While engaged in the work of inspecting, I have collected and have delivered into the hands of the state chemist 31 samples of food products for analysis.

In connection with the work of farm, factory, and city dairy inspection, I have tested several hundred samples of milk and cream by means of the Babcock test, the lactometer test, the curd test, the acidity test, the formaldehyde test, the borax test, the moisture test and the sediment test.

I have tested a large number of samples of milk, cream, cheese and butter, submitted to the commission from various sources and reported same to you on cards especially prepared for such work.

I have scored approximately five thousand samples of cheese and butter by the official numerical and descriptive score cards for the U. S. Dept. of Agriculture, Wisconsin Experiment Station, Monthly Cheese Scoring Exhibitions, State Fair, and various interstate, intercounty, and county fairs.

A portion of my time has been taken up in work at the office and laboratory, attending to correspondence, compiling statistics, drawing dairy maps, preparing photos and posters for the cheese factories of the state, the preparation of talks or lectures, the answering of inquiries relating to dairying on various topics coming from many quarters, especially from cheese manufacturers, in the mailing of biennial reports, bulletins, posters, pamphlet copies of dairy laws, circular letters and in proof reading.

I have made a number of second inspections of creameries, cheese factories and city dairies with other members of the commisson. As a result, in several cases, prosecutions and convictions followed work of this character. In this connection, I beg to report that some of the prosecutions reported by other members of the commission were the result in part of such work performed by me in accordance with your instructions.

During the period covered by this report, I have made addresses at several creamery and cheese factory picnics, morning and evening creamery and cheese factory patrons' meetings, farmers' gatherings and dairy conventions.

Merchants are generally becoming more and more guarded in making purchases, and jobbers more particular and careful as to shipping goods which do not comply with our food laws. The purchaser of to-day almost universally gets that which he buys and gets it free from poisonous substances, while for years before the law became operative and was vigorously enforced, a great many articles of food were largely adulterated and injurious to health. Food products in this state have been so gradually changed for the better that the consumer does not always fully appreciate to the full extent the work that the commission has done for his health and also for his pocket book.

CHEESE FACTORY CONDITIONS

A marked change has taken place in cheese factory management. Buildings and utensils are kept cleaner, and cheese makers are more generally becoming students of their business rather than imitators of their predecessors.

In general, the cheese factories inspected, so far as cleanliness and methods of management are concerned, with some exceptions, were in good and satisfactory condition, and fully equipped with up-to-date appliances. The live steam and hot water wash sink connections in the cheese factory of to-day insure cleanliness of utensils.

Most cheese factories in the state are now in good repair. Test bottles and milk-testing glassware have been calibrated and are kept clean and bright. Waste matter is not allowed on the soil of the factory premises and the whey tank is as a rule cleaned daily. Wooden floors have been done away with and cement floors have taken their place. Windows and doors have been quite generally provided with screens, thus reducing the number of flies in the building to the minimum. Many new factory buildings have been erected in all the cheese-making districts of the state.

The unclean and rusty condition of cans has been the source of a large amount of the tainted milk supplied to the factories. The inspectors, with the assistance of the cheese makers, have been able

to improve these to a great extent, but they are a source of trouble that will require the constant vigilance of the inspector.

CITY DAIRY AND MILK INSPECTION

The inspection of city dairies included the milk delivery wagons and utensils of the same used in the distribution of the product to the consumer, special attention being given to the sanitary conditions of the cattle, feed and farm or dairy barns. The insanitary bulk or can milk distribution system on dirty, dusty streets is fast being replaced by the more sanitary bottle system. The quality of the milk supply of our cities is certainly improving. Dairymen are as a rule taking pride in furnishing their customers with pure unadulterated milk and cream, and their wagons are generally neat, clean and nicely arranged. It is gratifying to report that a large percentage of the city dairies inspected were provided with stables having improved systems of ventilation, light and drainage, thus insuring the health and comfort of the herds. This particular branch of the inspection work of the commission is fast claiming additional attention and has come to be universally regarded by the people of the state as a most valuable work. The continued vigilance of the department's inspectors during the past two years, coupled with vigorous prosecutions of offenders against the law, has materially reduced the unclean practices of milk producers. However, we still have with us a class of dairymen who are careless with their stables, cows and milk at the time of milking. Dust and dirt are allowed to accumulate in the stables. No particular attention is given to light or ventilation. The cows are covered with dust and dung. A slap or two is given the udder and milking begins. The cans, into which the milk is strained, are allowed to stand in the stable until the milking is completed. No particular attention is given the milk before sending it to the milk depot or retailer. It is a matter of common knowledge among our people that the latter conditions are no longer the rule but rather exceptions to the rule.

DAIRY SHIPPING VESSELS

The rigid inspection of milk cans and milk bottles in cases, creamery and farm dairy cream cans, ice cream cans, whey cream cans and other dairy containers or vessels at various shipping, receiving and distributing stations in different localities of the state goes to show that a great improvement has taken place. The shipping vessels of to-day in the main are free from open seams and rust. They are as a rule in good repair and clean. The former practice of many shippers in disfiguring the outside of tin milk and cream cans with paint has become almost a thing of the past. The majority of retail ice cream dealers do not make their own product, but buy from some large manufacturer. Only recently have the retailers made any attempt whatever to clean the empty cans returned for refilling to the manufacturer. At the present time, with but an occasional exception, inspection discloses the fact that empty ice cream cans are washed and scalded before going into return transit. The present sanitary condition of vessels used for shipping dairy products in this state has been brought about primarily by means of tagging unfit shipping containers at depot platforms, etc., with tags especially prepared for the purpose, supplied by the commission to its inspectors. On the one side of these tags printed instructions are given as to how to properly clean the cans. On the reverse side of the tags is printed the specific law on the subject, together with the

penalty for the violation of same. In the enforcement of the regulations provided in the statute a number of the most flagrant, gross and deliberate offenders of the law were brought into courts of justice.

BABCOCK MILK TEST

Inspection and instruction with vigorous prosecutions of offenders against the law, has materially reduced the number of milk producers who deliver milk below the legal standard to consumers, cheese factories and creameries. Many cheese factories of the state which had formerly received the milk by the quantity, are now using the Babcock milk test. Although not all are buying by butter fat test, yet they are quite generally equipped so that they may know the quality of each patron's milk and are steadfastly refusing to accept milk that does not come up to the standard as prescribed by law.

OLEOMARGARINE

During the period covered by this report I have personally inspected three hundred and eighty four (384) retail oleomargarine markets in several of the larger cities located in both the eastern and western federal districts of the state. These inspections were for the purpose of ascertaining whether the dealers were complying with the state law in regard to the sale of oleomargarine. In most cases the dealers were conspicuously displaying the proper signs. I found five dealers who were selling oleomargarine colored in resemblance of yellow butter. The law was read and explained to each of these dealers. Three of them nailed up the packages or boxes containing the unlawful goods, tagging same for Chicago in my presence. Subsequent inspections showed the other two dealers to be handling lawful goods.

THE CHEESE FACTORY WHEY TANK

Marked improvements in the care and handling of the whey and whey tanks are being made by factory men in every cheese making section of the state. Many of our cheese factories have recently installed the elevated whey tank inside the factory building. A power pump or still better a steam jet is used to elevate the whey from the cheese vat to the whey tank. This is the ideal method of whey disposal. These tanks are more easily kept clean and do not receive the wash water and floor drainage as do some of the whey barrels, tanks and cisterns still in use at some of our cheese factories. Many factorymen have done away with the old filthy wooden tub sunk in the ground equipped with filthy wood pumps and have placed the tank outside the factory building, elevated above ground with sewer connections, so that it may be drained and washed daily. The outside elevated tank permits the air and sunshine to get all around it. To do away with a breeding place for flies, and to prevent rain, dirt and dust from entering the whey, a good tight cover should be provided.

SANITARY CONDITION

In the past two years marked improvement has been made in the sanitary condition of the grocery stores, meat markets, fruit and confectionery stores and other places where food products are sold or served to the consuming public.

REPORT OF H. C. LARSON, SECOND ASSISTANT DAIRY AND FOOD COMMISSIONER

During the biennial period ending June 30, 1912, I have been engaged in work along almost every line over which the Dairy and Food Commission has jurisdiction.

I have personally and in company with Inspectors Dufner, Voigt, VanDuser, Southard, Cannon, Aderhold, Marty, Carswell, Guse, and Scott inspected 157 creameries, cheese factories, dairies and dairy barns; 524 grocery stores, meat markets, slaughterhouses, ice cream factories, canning factories, restaurants and hotels; the cans, milk and cream at twelve creameries; cheese factories and city milk supplies, testing the milk and cream at six of the same, besides a great many samples which have been sent to the office; witnessed the milking and obtained samples of milk from five herds where adulteration was suspected; examined a great many milk, cream and ice cream cans which were found at depots all over the state, the same having been returned from the dealer to the shipper; have attended the State Cheese Makers' and Butter Makers' Association meetings and have scored the butter exhibited in connection with the latter, also at the State Fair and at a number of county butter makers' association meetings; have attended and addressed a number of creamery and butter makers' meetings; have acted as one of three judges who have scored and criticized the butter exhibited in connection with the state butter and cheese scoring exhibtions; have also scored considerable experimental butter at the University Wisconsin dairy school.

Considerable time has been spent investigating complaints charging various kinds of violation of the dairy and food laws which have come to the office from different parts of the state. While engaged in investigation and inspection work, a great many copies of the dairy and food laws, and weights and measures law enacted by the 1911 legislature have been distributed and explained to dealers who were amenable to the same, also a great many copies of the Attorney General's opinion, in which he states that the jurisdiction of the Dairy and Food Commission extends to the enforcement of section 4600 and to 4601 relating to hotels, restaurants, lunch counters, boarding houses, etc., have been handed to the proprietors of hotels, restaurants, etc.

Two hundred and ninety-nine samples of food products suspected of being adulterated have been purchased and delivered to the state chemist for analysis.

Dairymen, milk, cream and ice cream dealers have been prosecuted for the sale of milk below legal standard, of cream from dirty cans and below legal standard in milk fat, and of cream produced by the use of a cream separator not thoroughly washed after previous use in the separation of cream from milk, and for not washing ice cream cans before return shipment; butchers for the sale of meat not protected from filth and flies; dealers in oil for the sale of adulterated linseed oil as and for pure linseed oil; a cheese maker for the manufacture of cheese in an unclean cheese factory; restaurant and hotel proprietors for furnishing oleomargarine without notifiying the guests that the substance so furnished was not butter.

As a result of such prosecutions more than 90% of the defendants have been convicted and have paid fines ranging from $25 to $50 besides the cost of prosecution. A great many second inspections of

places over which this department has jurisdiction have been made with the inspectors before mentioned and have resulted in prosecution and conviction of a number of violators of the dairy and food laws, which are not included in this report but are reported by the inspector bringing the prosecution.

CREAMERIES AND CHEESE FACTORIES

There has been great improvement in the equipment and sanitary condition of the creameries and cheese factories of the state, although not so pronounced as in former years, for the reason that to start with they were in the main equipped with modern machinery and in a fairly sanitary condition. There are, however, conditions and practices at many creameries and cheese factories that should be improved.

PUMPS, PIPES, AND TANKS FOR SKIM MILK, BUTTERMILK AND WHEY

In the great majority of cases the pumps and pipes used for pumping and the tanks for holding the skim milk, buttermilk and whey are found to be not sanitary, being rusty and many constructed so as to make it impossible for the operator to clean the same. Many tanks, although cleaned daily, are rusty and many others are placed in the ground and no attempt whatever made to clean them.

CANS

There is no doubt that large sums of money have been lost in the past on both butter and cheese manufactured from cream and milk contaminated by being cared for in cans which have been used to carry the by-products from the factory to the farm, the patrons not having thoroughly washed the cans after emptying the skim milk or whey and before putting the whole milk or cream into them. When talking this matter over with the factorymen and operators, they have said to me that it was the duty of the patrons to thoroughly wash their cans before putting the milk or cream into them, which is true, but I have pointed out to them that it was no less their duty to handle the skim milk, buttermilk and whey in such a cleanly manner that that the patrons' cans would not become contaminated by having the same put into them. It is my judgment, and I have asserted it whereever opportunity afforded, that these products should be handled under absolutely sanitary conditions and be so clean that the owner or operator of a creamery or a cheese factory would just as soon take a drink of skim milk, buttermilk, or whey at the faucet or pump from which the patron drew the same into his cans as he would from the separator, churn or cheese vat.

SCREENS

Not all the factories are provided with suitable screens to exclude flies. When talking with owners or operators, I have tried to impress upon them the necessity of proper screening by giving a word picture of a day in the life of a fly, such as its visits to all kinds of foul places, becoming contaminated and, if permitted to do so, entering the creamery or cheese factory, the milk or cream, carrying with it contamination of filth and disease, which if unheeded would no doubt continue to result in not only great loss of money but of life.

TESTING

There is still a great deal of carelessness practiced on the part of creamery and cheese factory operators in the taking of samples of milk and cream and in the care and testing of the same. The milk or cream to be sampled is often not properly mixed. Many composite samples are cared for in top jars which permit of evaporation, and in the making of many tests the factors necessary to correctness are more or less ignored. Many cream scales have been found in a more or less rusty condition, also the 9 and 18 gram weights have been found coated with grease and dirt, making it impossible to do accurate work. I have always pointed out to the operators that the law required that all apparatus used be accurate and that correct fat determinations be made, and have shown that such determinations could only be made where the apparatus was clean, the scales sensitive and the greatest possible care taken in all of the work of making the test.

For the purpose of protecting the cream scales from dust and dampness when not in use, I have recommended that a tight stationary box be provided and arranged so that a steam pipe in daily use pass through, or, if that is not possible, a small cup of sulphuric acid be placed in the box to take up the moisture.

SCORING EXHIBITIONS

The work of the state butter and cheese scoring exhibitions to which I have given two or three days each month has resulted in great good to the butter and cheese makers taking part in them, who in turn have been helpful to their patrons in assisting them in the production of better milk and cream, which has resulted in the manufacture of better butter and cheese. The following are typical of letters which I have received from a great number of butter makers taking part in the scoring exhibitions:

"In reply to your letter asking about what good I have received from the scoring held at the University of Wisconsin Dairy School, will say: Will soon have my second year finished and my score will average over one point higher this year than for the one previous. Have been able to control both moisture and salt and I give the scoring contest credit for my improvement. I think it helps the patrons to take better care of their milk and cream. I do not understand why every butter maker in Wisconsin does not send; am sure they could get a great deal of good."

"The benefits I have received from the scoring contests are very great, and I know to continue with the same will mean success and continued interest in my career as a butter maker."

"In reply to yours of the 20th I am glad to state that I have derived great benefits from the judges' remarks on each tub and the letter of information always received. I have 340 patrons and we make 236 tubs in the flush against 118 last year."

"Replying to your inquiry relative to the benefits that I have received from taking part in the state butter scoring exhibitions, I will say, I have been better able to control the composition of the butter with reference to salt and moisture. The letters received with the score sheets from the judges on which they criticised the butter have enabled me to make great improvement. I have often received suggestions as to why my butter did not score higher which in every case has been looked into with good results. From such experience I have been able to talk to the patrons and help them produce better cream and as a result the quality of my butter has been greatly im-

proved. I think every butter maker in the state ought to take part in this work."

Sediment Tests

The sediment tests of the city milks by the use of a little instrument designed for the purpose have been the means of causing the production of very much cleaner milk. From the milk of each producer a pint is taken after all the milk has been well mixed, which is the amount used for every test. The entire pint of milk is forced through a cotton disc which catches all the solid sediment contained in the milk. The amount of sediment thus found is a safe indication of the clean or unclean conditions under which the milk is produced.

Dairy Inspection

Great improvement in the dairy herds and barns of the state has been made. A good dairy sire of one breed or other is found at the head of a great many herds. Many dairymen, by weighing the milk from each cow and testing the same are learning which are good and which are poor. They are weeding out the poor cows, raising the heifer calves from the good ones and are thus building up herds of good and profitable producers. Many barns are being provided with cement floors, better light and a good system of ventilation.

A great many milk houses have been built and cream separators by the thousands have been removed from barns and placed in milk houses or other suitable places. Notwithstanding this great improvement, very, very much yet remains to be made. Therefore, it is my ɹuɐɯsɒnɟ that the dairy inspection work should be given all the time possible, for the reason that the inspector can see just what the conditions are, can make the dairymen acquainted with the dairy laws and can make suggestions as to dairy buildings and as to how to best care for the milk and cream, also how the barns can be improved by whitewashing and putting in cement floors, good gutters, plenty of light and ventilation, which, if followed, will mean less filth, cleaner cows, better milk and more money for it, no matter for what purpose it is used.

Milk, Cream and Ice Cream Cans

The inspection of hundreds of empty milk and cream cans at railway stations goes to show that they are good and clean, having been thoroughly washed before being delivered to the railway station for return shipment. While improvement has been made in the case of ice cream cans, yet many of the retail dealers who purchase ice cream from the wholesalers do not thoroughly wash the cans before returning the same.

Grocery Stores and Meat Markets

There has been a marked improvement in the sanitary condition of grocery stores and meat markets. Food products, including fruits, etc., in the main will be found protected from dust and flies. The front rooms of meat markets are generally kept clean and neat and I am glad to report that many of the back workrooms have been greatly improved and cleaned up; also the instruments used are kept much cleaner.

OLEOMARGARINE

I am glad to report that the oleomargarine law of this state is being complied with practically to the letter. Dealers have the proper signs displayed and the oleomargarine sold is not in imitation of yellow butter.

SLAUGHTERHOUSES

Some of the slaughterhouses have been greatly improved, but many are maintained in a very unclean condition. They are poorly constructed, and in a condition which makes it impossible to keep them clean. When the slaughtering is done, the offal is thrown just outside of the building on the ground where hogs are kept for the purpose of eating the same. Some of these premises that have been in use for years have become so foul that it would seem hardly possible for the men doing the slaughtering to stand the stench. After slaughtering, notwithstanding the foul condition in and around many of these places, and with no protection whatever from flies, the meat is permitted in many cases to remain there over night.

PRICE DISCRIMINATION

Investigation shows that there is need in this state of an effective price discrimination law. The lack of such a law affords buyers of cream an opportunity to pay different prices at different places. For example, one of the large centralizers buying cream in this state paid on a certain day 23 cents a pound for fat at one place and on the same day at another place farther away from the central plant where there was a good local creamery in operation they paid 26 cents a pound for fat, presumably for no other purpose than to cripple the local creamery.

REPORT OF FRED P. DOWNING, CHIEF INSPECTOR OF WEIGHTS AND MEASURES

During the past year great strides have been made toward securing correct weight and measure. The laws relating to weights and measures prior to the enactment of chapter 566, 1911, had no adequate machinery for their proper enforcement. It was practically an impossibility to secure convictions in court owing to the necessity of proving "intent" to defraud. A few cities, notably Milwaukee, had effective ordinances; but aside from this, there was no general system of inspection. As a result of this lack of proper legislaton many frauds were perpetrated upon an unsuspecting and unprotected public.

Certain manufacturers in this state had offered for sale measures that were short, weights that had never been sealed, scales that were inaccurate or designed to short-weight the consumer; grocers were selling commodities in a manner contrary to law; berry growers were offering berries for sale in containers of widely varying sizes; commisson men and wholesalers were importing commodities into the state in barrels and bushel baskets that were usually short; in fact, the evils of short weight and measure had come to a point where the public demanded legislation that would afford relief.

This awakening was brought about to a large extent through the publicity attached to the work that had been done in several other

FIG. 17.—SAMPLES OF CONFISCATED SPRING AND COUNTER SCALES.

states and in a number of the larger cities of the country. Through the efforts of the former state sealer, Professor L. S. Smith, and others, a revised weights and measures bill was prepared and finally enacted into law.

The enforcement of this law was put into the hands of the dairy and food commissioner who was made ex officio state superintendent of weights and measures. It provides for an annual inspection of all weights, scales and measures in the state, the work to be done in the cities of over 5000 inhabitants by city sealers, and in the smaller towns and villages by state inspectors. Provision was made for a chief inspector of weights and measures to assist the state superintendent of weights and measures in the administration of the law. State standards were established and provided for as well as were the proper working outfits for the state sealers. The law provided for state supervision of all sealers of weights and measures and issuing of regulations for their guidance; it prescribed the manner of sale of certain specified commodities and provided penalties for the violation of many of its numerous provisions.

In the enforcement of this law the Wisconsin dairy and food commission has had the support of the general public and of honest business men. Not only does the law protect the consuming public, but it has been an important factor in the uplifting of the ethics of business transactions. The dealer, who in the past has resorted to cutting prices and then short-weighting his customers, has been forced to change his methods or undergo the publicity of a trial in court.

Prior to the organization of the department, a careful, exhaustive study was carried on of the work done in other states possessing effective laws on weights and measures. This investigation covered such subjects as equipment, keeping of records, regulations, and methods of inspection. The equipment now in the office of the state superintendent of weights and measures and the working outfits carried by our state sealers are the best and most serviceable that can be obtained in this country. (See illus., pp. 32, 37, 38.) One of the problems of inspection is to get a working outfit as light and compact as possible and at the same time complete in every detail. Under the Wisconsin weights and measures law the sealer must go to the store, the office or the factory to do his inspecting and testing. One of the chief reasons why the old law on weights and measures proved a dead letter was that under it the merchant was obliged to carry scales or measures to the courthouse of his county to be tested. This of course was rarely if ever done.

A system of keeping records has been carefully worked out. Our files show what cities and villages have been inspected, the number of measuring devices that have been tested and sealed, the number adjusted, and the number either condemned and confiscated or condemned for repairs. A follow-up system of inspection has been instituted. Merchants with defective scales have been given a certain time to make repairs. To avoid unnecessary reinspection trips, cards have been issued to dealers which are filled out and sent to the office of weights and measures as soon as defective scales have been repaired. For the guidance of both city and state sealers a booklet of instructions has been issued. This booklet contains a list of faulty weights and measures likely to be encountered, directions for the proper method of testing weighing and measuring appliances, and the specifications with which all scales, weights and measures used in Wisconsin must comply. The uniform and systematic system of inspection by sealers in all parts of the state can be to a large degree attributed to the issuing and placing of this booklet in the hands of all sealers.

Shortly after the organization of the state department of weights and measures, a circular letter was issued to the mayors of cities having a population of over 5000 inhabitants, calling their attention to sections 1660 and 1661 of the statutes, and requesting them to invite the attention of the city councils to the provisions therein contained. A goodly number of councils responded and made adequate provision for the appointment and equipment of a city sealer. In other places the letter if not the spirit of the law was complied with. To obtain competent men for a responsible office, the salary must be made adequate. That this has not always been done is made manifest in a number of cases shown in Table I. In some instances this apathy and lack of interest on the part of the council was due to misunderstanding. In other cases it became necessary for the chief inspector to make an inspection of the business places of the city, give a report of the same to the local press, and awaken the public sentiment of the city in favor of the office. Frankness compels the admission that the attitude of some of the common councils in the matter of the protection of consumers has been found lacking in both enthusiasm and aggressiveness.

The average annual salary paid to the city sealers of weights and measures in Wisconsin is $658.37. If we exclude the city of Milwaukee, the average is reduced still further and falls to $546.90. These figures reveal the necessity of a minimum salary being incorporated in the state statutes. In six cities of Wisconsin there are as yet no sealers of weights and measures at work. The cities of South Milwaukee and Menasha have made no provision for either salary or equipment of a city sealer; the city of Neenah has made no provision for office or equipment, but has created the office of sealer of weights and measures and determined what the salary shall be. The city of Marshfield has purchased the equipment for the sealer, but the salary is placed so low that no applicants have appeared for the place. Sheboygan is the only one of the larger cities in which the terms of the law have not been complied with. This city had a sealer of weights and measures prior to the enactment of the state law relating to weights and measures. Up to the present time, no appointment has been made by the mayor from the list of those who qualified in a competitive examination.

Table I likewise reveals that inadequate provision has been made for the testing of heavy dormant and wagon scales. It is absolutely necessary that sealers be provided with a conveyance for this line of work. Notwithstanding the discouraging facts mentioned above, many of our city sealers are rendering excellent service and it is to be hoped that the importance of the service rendered will be made so apparent as speedily to bring about a readjustment of matters. The city sealer's work under state supervision is by no means a "joke." He is vastly more than a "sealer" of weights and measures; he is the local officer entrusted with both the enforcement of the city ordinance and the state law. His strict attention to the duties of the office will go a long way toward helping to reduce the present high cost of living.

FIG. 18.—CONFISCATED WORN, PLUGGED AND DRILLED WEIGHTS.

TABLE I.

City.	Population.	Sealer.	Salary per annum.	Office.	Conveyance.
Antigo	7,196	C. S. Leykom	$624	With mayor	Use city team.
Appleton	16,773	E. Schueller	300	City Hall	Hired by city.
Ashland	11,594	A. J. Kull	780		
Baraboo	6,324	F. A. Philbrick	360	None	Hired by city.
Beaver Dam	6,758	Homer B. Hubbell	300	Police station	None.
Beloit	15,125	W. M. VanLone	720	Council room	Hired by city.
Chippewa Falls	8,893	F. R. Hughes	500	City Hall	None.
Eau Claire	18,310	Jos. F. Weizenegger	300	City Hall	Under consideration.
Fond du Lac	18,797	Jos. L. Weber	600	Council room	Hires.
Grand Rapids	6,521	B. Metzger	420		
Green Bay	25,236	John M. Kelliher	720	None	Hired by city.
Janesville	13,894	F. Kennedy (resigned)	200	None	Furnished by city.
Kenosha	21,371	Felix A. Mayer	900	City Hall	None.
La Crosse	30,417	E. H. Derr	1,000	City Att'y.	$200
Madison	25,531	H. L. Thompson	1,200	City Clerk	Maintenance for auto.
Manitowoc	13,027	Henry Mulholland	3 0	None	None.
Marinette	14,610	W. H. Nichol	300	City Engineer.	City team.
Marshfield	5,783				
Menasha	6,081				
Menomonie	5,036	George Shafer	300	City Hall	City
Merrill	8,689	R. W. Barrett	800	City Hall	None.
Milwaukee	373,857	Fred C. Janssen	1,800	City Hall	Automobile, horse and wagon, horse and buggy.
		Wm. F. Steinel	1,200		
		Wm. A. Phillips	1,000		
		E. A. Morgan	1,000		
		Wm. M. Cropper	1,000		
		Fred Nielson	1,000		
		Albert Levick	1,000		
		E. W. Herbst	720		
Neenah	5,734				
Oconto	5,629	John E. Youngs	120	None	City team.
Oshkosh	33,062	Walter R. Meyer	660	City Hall	Hired.
Portage	5,440	Wm. Netzo	600	City Hall	Own.
Racine	38,002	D. E. Fitzgerald	1,000	City Hall	None.
Rhinelander	5,637	H. J. Danfield	300	City Hall	Hired by city.
Sheboygan	26,396		420		
So. Milwaukee	6,092				
Stevens Point	8,692	E. H. Flentie	600		
Superior	40,384	N. G. Penfound	960	Temporary	Hired by city.
Waukesha	8,740	John J. Staub	300	None	$75 appropriation.
Wausau	16,560	J. H. Pomeroy	900	City Hall	Hired by city.
Watertown	8,829	Edw. Gnatzig	720	City Hall	Hired by city.
West Allis	6,645	Wm. R. Baumann	300	City Hall	

Appointees to the position of city or state sealer of weights and measures of necessity were men who had but little previous experience or knowledge of scale testing. State sealers according to law were obliged to qualify as expert butter and cheese makers. After thus qualifying, they were turned into an entirely new and previously unknown field of work. It became necessary therefore to hold a school of instruction before such appointees could be set at work. Assistance of a similar nature has been rendered to the cities, trained and experienced state men being sent to confer with local sealers, assisting them in the proper interpretation of the laws and regulations and giving instruction of a technical nature. The state law relating to weights and measures prescribes that all weights, scales and measures used in trade shall be tested and sealed at least once each year. The combined population of the thirty-five cities required by law to do their own inspection and sealing is 875,667, or approximately one-

third of the total population of the state. With the exception of the above mentioned cities, all the vast and varied weights and measures work in all sections of the state is required to be performed by the state department of weights and measures. For this enormous increase of work, fully doubling the work of the dairy and food department, only seven additional appointees were provided. The absolute impossibility of adequately accomplishing this gigantic task with this limited force should be manifest to all. For the state to make an annual inspection of all weighing and measuring devices and do all that is required by law at least twenty additional men will have to be employed.

The work of the state department has been compiled up to June 30, 1912 and is given below. Table II gives the total number of first inspections from January 1, 1912 to June 30, 1912. Table III gives the percentage of first inspections that have been found correct and sealed, the percentage that have been adjusted by the sealer and the percentage that have been condemned and confiscated or condemned for repairs for the period of time shown in Table II.

TABLE II—*Total number of first inspections from January 1, 1912, to June 30, 1912, inclusive.*

Instrument.	Sealed.	*Adjusted.	Condemned for repairs.	Condemned.	Total.
Scales	3,325	689	470	326	4,121
Dry measures	260	....	37	517	814
Liquid measures	6,589	23	114	2,047	8,750
Weights	7,847	921	346	209	8,402
Linear measures	956	80	1,911	1,151	4,018
Milk bottles	28	.....	.....	.....	28
Measure pumps	714	317	70	32	816
Miscellaneous	18	2	.....	.....	18
Total	19,737	*2,032	2,948	4,282	26,967

* The appliances adjusted have been sealed and in computing totals are included in Sealed column.

The extremely high percentage of incorrect dry and linear measures is due in part to noncompliance with the new regulations issued by the state superintendent of weights and measures. Dry measures falling short of the proper diameter and counter tacks with large heads in dry goods stores have been condemned even though the same were accurate as to cubical contents or linear dimensions. It will be observed that nearly 25% of the liquid measures have been condemned. These measures have in many instances been made short by the manufacturer. Others have been manfactured of such flimsy material that they have become dented the moment they were put into service, and still others, through carelessness on the part of the dealer, have become caked with oil. Many of the measuring pumps for kerosene and gasoline have been found to be inaccurately adjusted. This trouble is now being overcome by requiring manufacturers of such pumps to provide caps for each stop so the same can be properly sealed.

Table III shows that out of a total of 26,967 tests, 9,262 or 34.9% have been found incorrect. This is an appalling percentage and is a startling revelation of the necessity of the work this department is performing. Without laws regulating the testing and sealing of weigh

TABLE III.

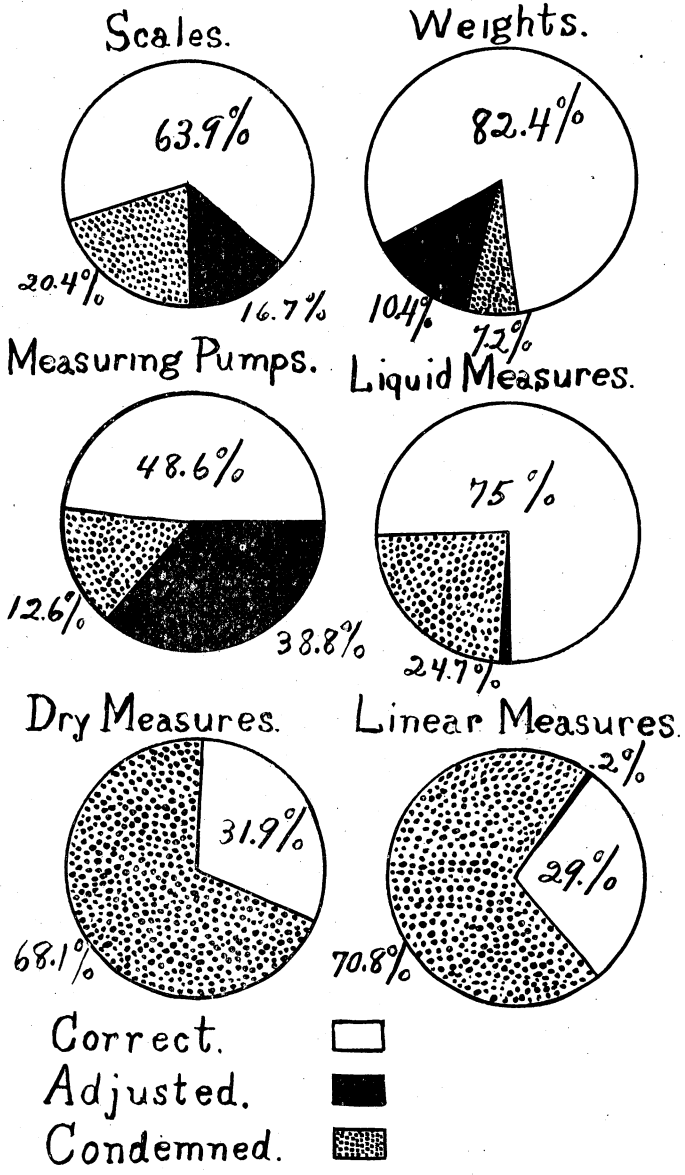


FIG. 19.—DIAGRAM ILLUSTRATING WORK IN TESTING, FIRST SIX MONTHS, 1912, BY WISCONSIN STATE DEPARTMENT OF WEIGHTS AND MEASURES.

ing and measuring appliances, the dealer is often unaware of any defects in his scales. It is a common belief, that a scale in balance weighs accurately, and the only way to dispel this belief is by accurately testing the scale with sealed standards. And this is a common experience of the sealer.

It is not to be implied that all the above mentioned incorrect measuring appliances have been found to be working against the consumer. While this is true in a large percentage of cases, yet many instances are on record where scales were deceiving the merchants. It will be seen from this, that an effective enforcement of the weights and measures law is a protection to the honest merchant as well as to the consuming public.

Table IV shows the number of reinspections made by the state sealers for the period extending from January 1, 1912 to June 30, 1912. It will be observed from a comparison of this table with Table I that the percentage of incorrect measures and weighing devices has been reduced from 34.9% to 11.9%. Owners of scales, weights and measures are now purchasing such appliances under a guaranty that they will pass the state inspection; and after purchasing the same, greater care is exercised by the owner in keeping such instruments in proper condition.

TABLE IV—*Total number of reinspections from Jan. 1, 1912 to June 30, 1912, inclusive.*

Instrument.	Sealed.	*Adjusted.	Condemned for repairs.	Condemned.	Total.
Scales	333	17	97	6	436
Dry measures	68	.....	1	10	79
Liquid measures	1,045	3	43	92	1,180
Weights	448	25	23	.....	471
Linear measures	1,377	23	160	8	1,545
Measuring pumps	94	10	12	1	107
Miscellaneous	4	.....	2	.....	6
Total	3,369	*78	338	117	3,824

* The appliances adjusted have been sealed and in computing totals are included in Sealed column.

Table V reveals the number of tests made in the office of weights and measures at Madison for the year ending June 30, 1912. Office tests require work of a much higher degree of accuracy than field inspection. It has been necessary during the present year to pass on the accuracy of standards purchased by 27 cities of Wisconsin, to make careful tests for manfacturers and others of types of appliances submitted for our approval, and to calibrate and seal large numbers of milk and cream test bottles sent in by the creameries of the state.

The work of testing and sealing of the heavier platform, dormant and wagon scales was not taken up by the department until the beginning of June, 1912. The cost of transporting 1000 pounds of test weights from town to town together with the hiring of a conveyance at each place is excessive and could be performed with a far greater degree of economy were provision made by the state for the purchase of automobile trucks or other vehicles.

FIG. 20.—KEROSENE MEASURE, SHORTAGE SHOWN BY GRADUATE. MILK MEASURE WITH BOTTOM HAMMERED UPWARD. VINEGAR MEASURE MADE SHORT BY SAWING OFF TOP.

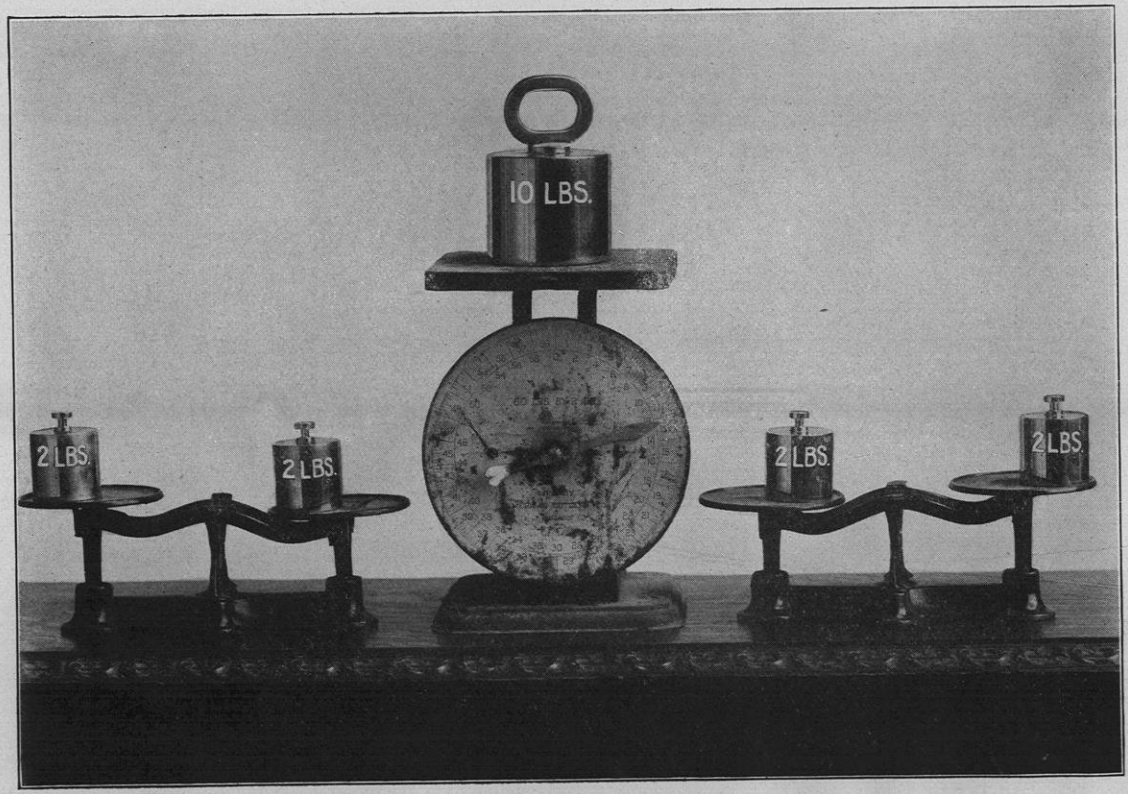


FIG. 21.—MEAT SCALES WHEREON 10 LBS. WERE MADE TO WEIGH 12½ LBS. ALSO TWO EVEN ARM BALANCES SHOWING VARIATION OF 4 OZ. BY SIMPLY SHIFTING PLACE OF WEIGHTS.

TABLE V.—*Office Tests for year ending June 30, 1912.*

Instrument.	Correct.	Incorrect.	Total.
City standards	1,460	51	1,511
Babcock cream test bottles	950	414	1,364
Babcock milk test bottles	603	20	623
Pipettes	28	8	36
Cream test scales	13	3	16
Weights	5	.....	5
Commercial scales	3	.....	3
Liquid measures	3	1	4
Dry measures	15	14	29
Linear measures	5	.....	5
State working standards	253	.....	253
Miscellaneous	30	.....	30
Total	3,368	511	3,879

In addition to the above work which consists of elimination of incorrect types of weighing and measuring appliances, considerable time has been devoted toward the securing of proper use of such appliances. By instituting a system of try-outs in which purchases have been made by the inspectors and in which packages put up for delivery with bills attached have been reweighed, it has been possible to eliminate a large percentage of the inaccuracies due either to carelessness or intent. The force of men to accomplish this work is entirely inadequate. Much of this work has been performed incidentally by the creamery and cheese factory inspectors in connection with their numerous other duties. Of necessity a great deal of this work has been instructional in nature. Below is a statement of the number of inspections made, together with the results of the same:

INSTRUCTIONAL WORK DEALING CHIEFLY WITH SALE OF BERRIES, FRUITS AND VEGETABLES.

Inspections	1,503
Weight or measure given found correct	85
Weight or measure given short of that called for	144
Weight or measure given in excess of that called for	30
Total number of try-outs	1,762

The passage of the new law has had a wholesome effect in regulating the method of sale of many commodities and in correcting certain abuses that have arisen and that were sanctioned by custom. It has been customary for years for grocers to purchase beans and other commodities by weight and then retail them to their customers in liquid quart measures, thus taking from their customers from 10% to 15% of what was their due. A dry quart contains 9.45 cubic inches or nearly 15% more than the liquid quart. Thousands of such illegal measures have been seized and destroyed by officers entrusted with the enforcement of the law and hundreds of others have been destroyed by merchants having them in their possession. It is the exception now for sealers to discover such measures in use anywhere in the state. (See illustration, p. 40.)

The so-called bottomless measure was another device that enabled the retailer to get five pecks out of one bushel. This measure while it contained the proper number of cubic inches was long and narrow, thus preventing any heap as required by law. As a filler for paper

sacks it is admittedly convenient, but as a device for enabling dealers to defraud their customers it has few equals. This form of measure has also been practically driven from use during the past year.

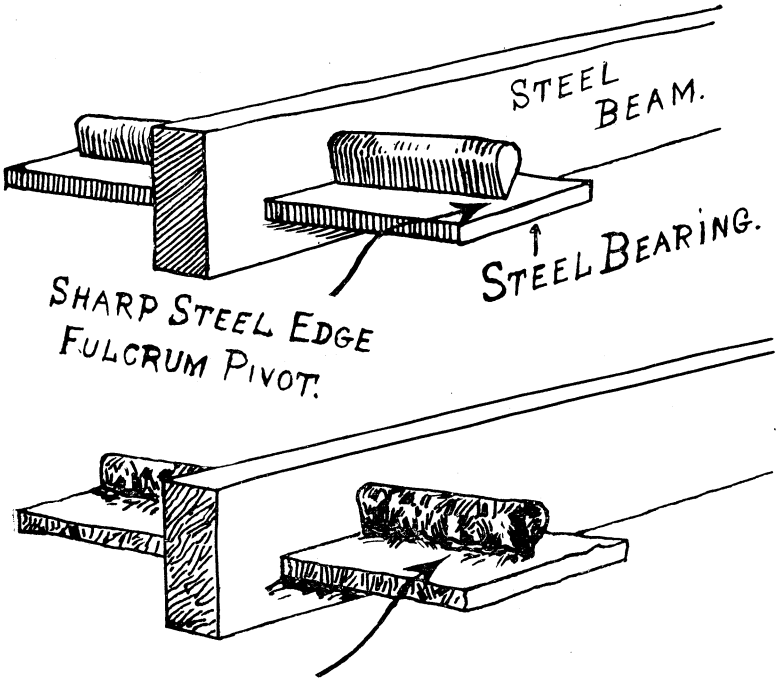
Short bushel and half-bushel baskets so long prevalent everywhere are also gradually disappearing. Our law specifies that in the commodities named the measure of the bushel dry measure is not 2150.4 cubic inches as many suppose, but the number of pounds stated in the law. The enforcement of this provision has practically revolutionized the method of sale of all of our dry commodities such as apples, potatoes, cranberries, etc., Many of our grocers have discarded their measures and now sell all dry commodities by weight or count. Much misunderstanding has arisen as a result of the weight and the volume bushel, and it would undoubtedly be advisable to eliminate dry measures entirely and provide for the sale of all fruits, nuts and vegetables by weight or count. With the two standards it is possible to buy by weight and sell by measure when vegetables are heavy and reverse the method when such vegetables have become light through shrinkage.

Another of the so-called "trade customs" has been the practice of including the weight of heavy paper sacks, wrapping paper and wooden trays in the weight of the commodity purchased. Trays used for butter and lard weigh from one-half ounce to one ounce according to size; heavy sacks for sugar weigh from one to three ounces. When the dealer receives the price of sugar, butter and lard for such wood and paper he is indeed making a large and excessive profit. Effort has been directed towards the elimination of such practices. Anyone selling less than the quantity he represents is liable to prosecution. This provision should entitle the buyer to receive net weight on all purchases put up by the retailer.

Many of the creameries of the state were turning out butter prints short of 16 ounces when the new law was enacted. Some butter prints were found running less than 14 ounces to the pound. Most of the creameries of the state are now furnishing full weight prints for the Wisconsin market and in a number of instances the butter has been found to be over-weight. A few manufacturers still evade the law by putting out short prints and selling them as such instead of by weight. In some instances they receive the regular market quotations for butter and in other cases the price is slightly below the market value per pound. In either instance the practice is unfair both to honest manufacturers and to the public, and legislation is needed forbidding the sale of butter in any other manner than by weight.

It has been customary to sell strawberries, currants, raspberries and other small fruits by the box. A very common size box in this state was the so-called "wine quart" holding 5/8 of a standard dry quart. Other growers used boxes slightly larger holding 60 cubic inches or 9/10 of a dry quart. Many boxes coming into the state from the south were 25% short of a standard dry quart. Probably not a single box in years past held a full quart. This year a large percentage of the berries were sold in standard quart boxes and dealers selling short boxes were obliged to stamp the same to show their true interior capacity. That the public will be the gainer when only full quart boxes are legally sold in the state is made evident by the facts revealed this year, berries in numerous instances being offered for sale in full quart and in 3/4 quart boxes at exactly the same price. The illustration on p. 58 shows different sizes of so-called quart boxes found on the Wisconsin market the past year.

What has been said regarding the sale of berries is likewise applicable to the sale of all our common fruits and vegetables. The placing of such commodities upon the market in containers that are of no definite capacity and then offering the same for sale by the



BEARINGS ON WAGON SCALES.

FIG. 22.—WORN BEARING AND PIVOT OF WAGON SCALE.

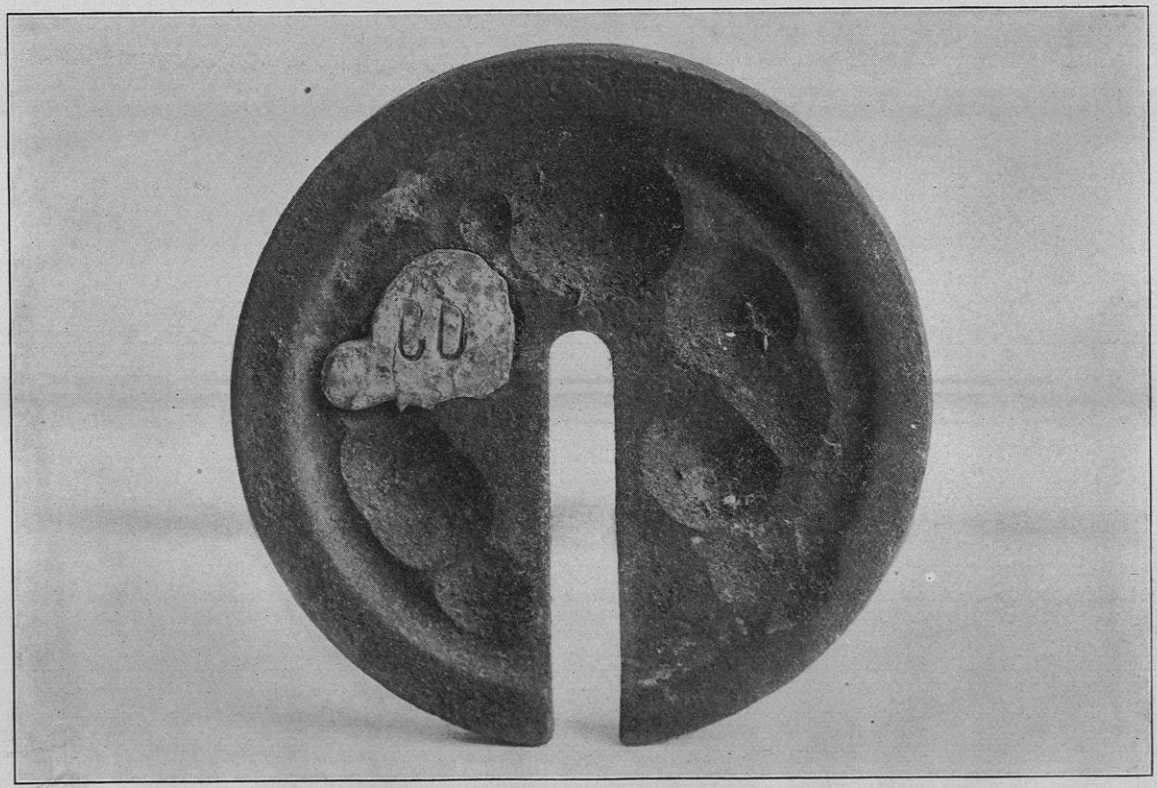


FIG. 23.—PLUGGED WEIGHT USED BY POTATO BUYER, BY WHICH HE GAINED 26 LBS. ON A THOUSAND LBS.

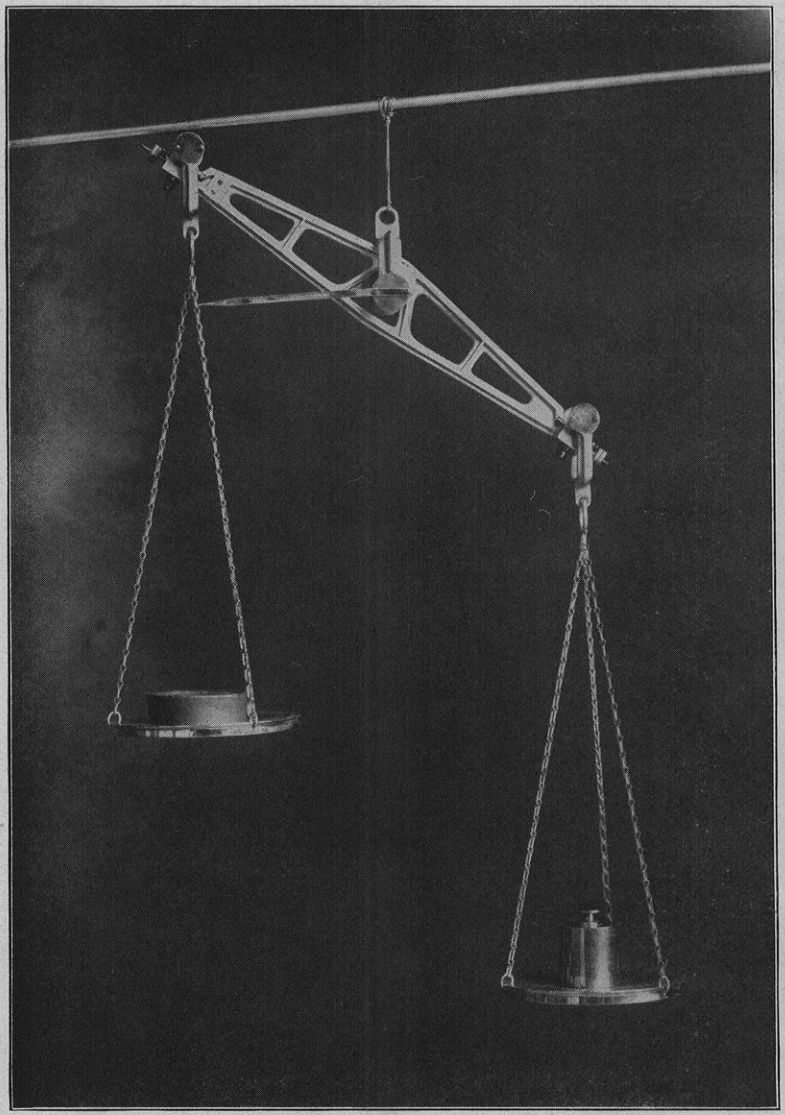


FIG. 24.—CONFISCATED WEIGHT USED IN A GROCERY STORE, SHORT ONE OUNCE ON POUND.

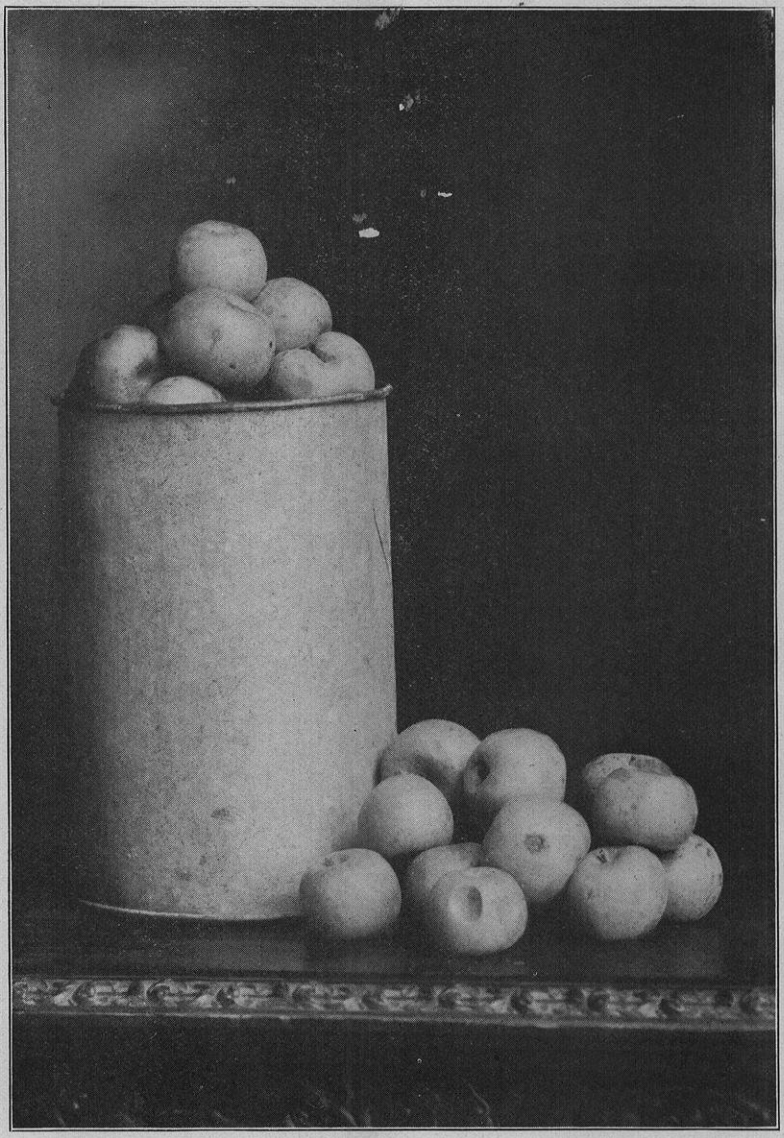


FIG. 25.—SHOWING SHORTAGE IN PECK OF APPLES MEASURED IN "BOTTOMLESS" MEASURE.

basket, box or hamper, instead of by standard weight, standard measure or numerical count, is a common method of deception. People have been encouraged to buy in the above indefinite manner, and until this year such methods were entirely legitimate. The investigation carried on by this department has brought into evidence the great variety of such containers. The illustration on p. 58 portrays a few of such non-standard containers. Repacking baskets used by retailers in transferring fruits from large containers are seldom if ever of standard size. Legislation is necessary to prevent the sale of such non-standard containers in this state. The laws of the state now provide for a standard fruit and vegetable barrel of 105 quarts, a standard crate of 35 quarts, a standard cranberry barrel and standard sized berry boxes. The enforcement of the law relating to such standards would be greatly simplified by national legislation. A bill providing for a standard barrel for fruits, vegetables and other dry commodities is now before Congress with a fair prospect of passage. But the neglect of Congress to perform its duty in the above matter should not deter the state from passing laws that will aid in the protection of its citizens.

REPORTS OF INSPECTORS

REPORT OF F. M. BUZZELL, CHIEF FOOD INSPECTOR

I herewith submit to you this report of work done by me as chief food inspector for the dairy and food commission, for the biennial period ending June 30, 1912.

My time has been devoted to the inspection of groceries, drug stores, meat markets and other places where food products were being prepared, stored and sold; also to the inspection of linseed oils, paints, etc., and to the procuring of samples for analysis.

In connection with this work, much time has been given along sanitary lines. Under your direction Inspectors Cannon, Linzmeyer, P. A. Larson, Southard and Voigt reported to me sanitary inspections made by them of places where food products were being sold in their territory. From their reports, in many cases a second and sometimes a third inspection was required. The systematic campaign of sanitary inspections by the above named inspectors resulted in much good.

Reviewing the work done in the territory that I have been able to cover, I am able to report a marked improvement in the quality of foods on sale, as well as better conditions under which foods are being protected from flies, dust and other contaminations. These changes were more noticeable in groceries than elsewhere. There exists, however, a necessity for improvement among the groceries in some localities. These conditions are found in meat markets as well.

Where such unsanitary conditions were found to exist and the dealer persisted in disregarding the warnings to clean up and protect his foods from dirt, etc., prosecutions followed, resulting in conviction in every case.

I have forwarded to the laboratory 339 samples for analysis, and have caused to be brought 25 prosecutions, resulting in 23 convictions.

REPORT OF E. L. ADERHOLD, CHEESE FACTORY, DAIRY AND FOOD INSPECTOR

Following is a report of work done by me as cheese factory, dairy and food inspector for the biennial term ending June 30, 1912:

Summary.

Cheese factory inspections	210
Creamery inspections	44
City milk plant inspections	36
Patrons' cans and milk inspected	2975
Dairy separators inspected	115
City milk wagon with utensil inspections	167

Samples of city milk and cream tested	113
Dairy barns inspected	194
Grocery store inspections	338
Oleomargarine inspections	140
Fruit dealers' premises inspected	88
Number of stores where berry boxes were inspected	87
Number of slaughterhouses inspected	33
Number of meat markets inspected	206
Farmers' Institute meetings addressed	82
Dairy conventions addressed	18

Prosecutions:

For unsanitary dairy conditions	47
For selling adulterated milk	2
For offering for sale meat from a diseased animal	1
For operating unsanitary meat market	2
For selling fruit not protected from flies, filth, etc.	1
Total	53

The above court cases resulted in one dismissal, one disagreement by jury, and fifty-one convictions.

DAIRY BARNS

During the period covered in this report I have observed that in many localities the improvement of out-of-date dairy barns has been carried on at a satisfactory pace. Cement floors are displacing filthy and unspeakable floors; windows are crowding darkness out of barns; and unsuitable stalls, which for many years were thought "good enough," are yielding their places to more modern equipment. A large number of handsome new barns that are a credit to the dairy industry have been constructed.

There are, however, localities where progress along this line has been too slow; where in the winter time there are more filthy cows than clean ones; where it will be necessary to instil into the milk producers a more profound appreciation of the meaning of cleanliness in dairying, and with it considerable more respect for our dairy laws.

UTENSILS

I am unable to report much progress in the improvement of dairy utensils as I have found a great many milk cans that were extremely rusty or that had open seams filled with filth.

CHEESE FACTORIES

The betterment of these plants in a general way is easily noticeable. A number of the most dilapidated cheese factory buildings have been entirely abandoned and new ones erected in their stead.

At many factories there is room for improvement in the handling of whey, the whey tank being filthy much of the time. At some factories during the fore part of June surplus whey is dumped near the factories, befouling the soil and causing most disgraceful surroundings.

SLAUGHTERHOUSES

The old-time slaughterhouse, the synonym of filth and stench, while not so common as it was a few years ago, is still to be found in scat-

tering localities. Many butchers have improved their slaughterhouses with cement floors and more sanitary walls. In some cases entirely new plants have been constructed, and the surroundings are much less objectionable than formerly.

RETAIL STORES

As to grocery stores, fruit stores, and meat markets, I can say in a general way that they are reasonably sanitary, and where I have found them otherwise the operators have been, with rare exceptions, willing to make the improvements I suggested.

The custom of displaying fruits and certain other wares where they are exposed to street dust and flies has been generally discontinued.

With reference to retailers of foods I can say that, with rare exceptions, I have found them heartily in sympathy with the sanitary laws, striving individually and, in some cities, collectively to furnish to the trade foods that are wholesome and clean.

REPORT OF J. D. CANNON, CHEESE FACTORY, DAIRY AND FOOD INSPECTOR

Following is a report of my work as cheese factory, dairy and food inspector for the biennial term ending June 30, 1912:

Cheese factories and creameries inspected	215
Milk fat determinations made	452
City milk and cream samples purchased and tested	161
Herd samples taken and expressed to chemist	12
Sediment tests made at factories and city milk plants	894
Patrons' and dealers' milk cans inspected	10,000
City milk wagons and utensils inspected	264
Cheeses scored at national and international dairy shows, cheese makers' conventions, Minnesota state and county fairs	650
Farmers' cream separators and premises inspected	53
Oleomargarine inspections	194
Berry box inspections	125
Meat markets and grocery stores inspected	450
Dairy barns inspected	247
Ice cream plants and parlors inspected	130
Fruit dealers' premises inspected	40
Slaughterhouses inspected	5
Butter samples purchased for analysis	8
Ice cream samples purchased for analysis	3
Sausage samples purchased for analysis	2
Prosecutions	25
Convictions	25

In my territory, which comprises Outagamie, Waupaca, Oconto, Shawano, Marinette, Forest, Langlade, Oneida, Florence, and Vilas counties, progress has been quite satisfactory, especially in the last named counties and in regard to better and cleaner conditions in stores and meat markets.

In the last two years I have inspected 450 grocery stores and meat markets, and in a few cases I have found meat markets in an undesirable condition, especially the rear part of the building, where all

the trimmings of the meat are brought to be manufactured into sausage. Where such conditions existed after second inspection was made, prosecution was brought. Occasionally an unclean and carelessly kept grocery store is found, the cellars especially, where food stuffs are stored, being mouldy, dirty and emitting a strong odor.

During this time I have inspected 212 cheese factories and creameries, mostly the former, and will say that I found seven-eighths of them in a good sanitary condition. But there are always a few who keep just a short distance from the danger line, while others get way beyond that line. The latter ought not to be allowed to manufacture cheese or any other food, as they are naturally dirty and have no regard for cleanliness. This is where a license law would work well, —a law which I believe we ought to have and will have in time. Where these bad cases exist, (and there are only a few in my territory) I always give the parties responsible an opportunity to meet a judge or justice, as the case may be.

I have made it a practice during factory inspection to remain at the factory part of the day, if I thought the maker needed instruction. In one case which I recall, I found a cheese maker using a thermometer that was twenty degrees out of the way, and was coagulating his vat of milk at 100° F. and cooking to 120°. On examining his rennet test, I found the hole where the milk runs off to determine the acidity partly clogged with a straw from a broom. On further investigation, I found that it took one hour and ten minutes to draw off the vat of whey. This maker had previously complained to me, stating that he was absolutely sure some patron must be delivering his milk from diseased cows. But after being shown the condition of his thermometer he realized he was entirely to blame. I remained at the factory during the process of manufacturing that day's cheese. This cheese sold at the market price and represented a saving of fifteen dollars to the maker on that day's make. Up to this time he had been very discouraged at his losses, and felt much relieved when he knew they could from that time on be prevented.

This is only one of the large losses I have remedied the past two years, and I take occasion to mention this because it was something unusual.

I had visited this same factory prior to this time, then under different management, and during inspection condemned twenty cans, some of which had been in use twenty years and were covered with rust from top to bottom. Gave instruction in regard to manufacturing of cheese, whey disposal and location of whey tank, and suggested many other changes. My instructions were followed out exactly and on my next visit to this factory I found that the maker was having great success. His cheese which previously had been scoring 91 and 92 now scored 95 and 96 which entitled him to many prizes which were being offered at the monthly scoring contests and cheese makers' convention of that year.

We have a great many good cheese makers in this state,—men who are making fancy cheese the year around, but these men are masters of their business. They demand of their patrons good, clean, wholesome milk, and are always ready to give advice to their patrons regarding better feeding for the cattle and a betterment of barn conditions. On the other hand, we have young boys making cheese who have spent probably a few months as helper under some poor, unsuccessful maker, and who have the idea they are masters of their vocation. They start out and rent a factory or hire out to some concern which pays them considerably less wages than they have been in the habit of paying. Some of these young men get along fairly well, while weather conditions are good, but just as soon as the warm

season arrives and things do not work well, they are at a loss to know what the trouble is, ofttimes losing from three to five cents per pound on cheese. Much trouble comes from the keeping of composite samples. They allow them to remain where the temperature rises to 95° or 100° F. and probably make fat determinations at this temperature, and in most all cases the samples are black and cloudy, this being no test at all. Cheesemakers should realize that when they make a fat determination of composite samples, they should be made accurately, as it means much to the patrons when they are paid for their milk on the fat basis.

When inspecting factories, I also test all patrons' milk by using the sediment test. When more sediment is found than should be, an inspection of the patron's barn and premises is made, and in nearly all cases where unclean milk is delivered to the factory, conditions on the farm correspond. The stables are equipped as they were twenty years ago,—high mangers, cows tied with ropes or chains and standing on earth floors having no drop or gutter. In most cases the barn is reported cleaned daily, but occasionally places are found that are only cleaned once or twice a month. Such conditions are quite common in some localities, although most of the people are gradually making some improvements.

Along with barn inspection comes the inspection of the dairy utensils, especially the cream separator and its location. In quite a number of cases the dairy separator law has been ignored entirely. Many farmers think that the dairy separator belongs with the cow, but after explaining the law it is not a hard matter to convince the average farmer that he is wrong, and in all cases where the law has been explained, the separator has been removed to some clean place.

At different times I have purchased samples of city milk supplies and examined all the utensils, and must say that the practice of adulterating milk is gradually disappearing. Occasionally I find utensils that are rusty and battered and poorly washed, but vast improvement in this line has taken place during the last two years.

During the biennial period covered by this report I have made 195 oleomargarine inspections and have found, with the exception of a few, all dealers complying with the law. Occasionally oleomargarine was found that was somewhat colored, but in all cases the dealer claimed to be innocent, stating that he did not think the manufacturer ought to ship him oleomargarine that did not comply with the state law. But in every case the dealer of his own volition reboxed the oleomargarine and returned it to the manufacturer, demanding lawful goods in its place.

REPORT OF FRED MARTY, CHEESE FACTORY, DAIRY AND FOOD INSPECTOR

Following are the totals of inspections and work done by me during the biennial period ending June 30, 1912, in itemized form, a full report of each inspection and test having been submitted to you upon the respective form sheets and cards:

Cheese factory inspections	414
Creamery inspections	21
City milk venders' samples tested, utensils and wagons inspected	138
Dairy herds and barns inspected	57

Samples of milk and cream purchased and tested	500
Grocery stores, meat markets and oleomargarine inspections	356
Samples of food products sent to chemist	26
Conventions addressed	3
Fairs and conventions, judging cheese	10
Condensing factories inspected	2
Weights and measures inspections	93
Prosecutions	7
Convictions	7

In connection with the above inspections, I have also inspected thousands of milk and cream cans at different cheese factories, creameries and depots in which milk and cream are delivered and shipped to cheese factories, creameries and ice cream manufacturing plants. Where dirty, rusty, or open-seamed cans were found, suitable action was taken in each case.

CHEESE FACTORY AND CREAMERY INSPECTIONS

The inspection of cheese factories and creameries has mostly to do with sanitary conditions existing in the process of the manufacture of cheese and butter, the utensils of the patrons in which the milk and cream were delivered to the cheese factory and creamery, and sanitary conditions surrounding the premises.

During the two years covered by this report, remarkable progress has been made in my territory as to the condition of the cheese factories, with special reference to screen doors and windows to exclude flies from the cheese making room; separators for the manufacture of whey butter are to-day the rule instead of the exception, and the old gravity system will soon be a thing of the past, thus assuring protection to the manufacturers of cheese, since the whey by the separator system is returned to the patron from fourteen to fifteen hours after delivering; whereas, under the tank gravity system, the whey remained at the cheese factory from twenty-six to forty hours before it would be returned to the patron. This system means thousands of dollars to our industry, as practically all of the fat is now made into butter and the whey when returned to the patrons contains a much higher per cent of milk sugar than under the gravity system. Under the gravity system, a large percentage of the fat would adhere to the patrons' milk utensils, which in connection with the age of the whey, has undoubtedly often been the direct cause of gassy trouble in the cheese, and last, but not least, the consuming public, under the separator system, is assured of a more sanitary product. Floors in factories are found of good, substantial cement and sewage disposal found with few exceptions in good condition.

NECESSITY FOR PRACTICAL INSTRUCTIONS

The manufacture of Swiss cheese is a very delicate one, since it is dependent upon the fermentation process in developing the eyes or holes in the finished product. Swiss cheese makers and coöperative companies that experience gassy troubles in the manufacture of Swiss cheese or other sweet curd cheese have become accustomed to at once call for my assistance, which in the last ten years has given me a varied assortment of experiences in locating the various gassy troubles.

I shall cite here one case in particular of gaseous trouble in the manufacture of Swiss cheese which caused a damage of thousands of dollars. A coöperative cheese company located in the township of

Wayne, LaFayette county, Wisconsin, requested the manager and cheese maker to get my assistance to help locate the trouble. In this case there seemed to be a misunderstanding between the cheese maker and the patrons, each blaming the other for the cause of the trouble, until after a period of nearly two and a half months of serious trouble, they decided to stop making cheese, which they did. After branching out to some three cheese factories for fifteen days and finding that the cheese was working fine at all the factories where they had branched out, they decided to start up again at their own factory, which they did the first of August. After operating the factory a few days, the same trouble again appeared, which meant almost a total loss. It was at this time that the patrons and cheese maker agreed to a show down, as neither would take the blame. Responding to their request for my assistance, I found after examining the cheese that the trouble was all of the same nature,—a very pronounced gassy fermentation with a very tough, ropy texture, the flat side as well as the sides cracked open. As it had been very hot and dry for a long time, the nature of the cheese called my attention to impure water, which is very often the cause of such fermentation. Preparing to start for the investigation of the cause, I left the cheese cellar accompanied by the maker. I asked him for a drink of water, as I noticed the pump was stationed in the cheese making room. After being offered a drink from that pump, I decided not to extend my investigation any further, as I felt I had located the trouble. Samples of this well water were later sent to the Wisconsin Experiment Station and pronounced to be heavily contaminated with gas-producing organism. As it is the practice in the manufacture of Swiss cheese to use about one-third water in preparing the home-made rennet, which is left in a jar from two to three days, you will see that that water, mixed with whey and a calf stomach, set aside for three days at a temperature most favorable to the ripening process, will propagate into the highest stage of gas-producing organisms. In connection with the addition of this preparation of home-made rennet, it is the custom by the best of makers to add to the milk at time of setting from one to two pails of water, which is done for different reasons,—some to guard against "glass" others to cool down the milk, etc. The following results will show that all their trouble and thousands of dollars of loss was due to the water in the well at the cheese factory; as the very first cheese that was made after I got there was made with rennet that I had brought with me and the water was brought to the factory by a nearby patron, turned out absolutely normal and sound as a dollar, as all the rest thereafter until the close of the season: sterilization of whey and utensils of course followed to stop all possible propagation of that gas-producing organism. Investigation of the well in the factory, after breaking up the cement floor around the pump, brought to light the fact that a sewage pipe from a department of that factory which passed directly by the pump had sprung a leak and entered into the pump, while another sewage outlet was clogged up and backed the sewage from the factory into the well. After all the foul dirt and slush was dug out down around the pump stock and refilled with unslacked lime, the pump had a thorough cleaning and after a course of two weeks of more or less pumping, the water was again used.

DAIRY HERD AND BARN INSPECTIONS

The inspection of dairy herds and barns was mostly made in connection with city milk inspections, calling upon producers of milk furnished to city milk dealers. Considering the absolute necessity of producing sanitary milk and cream for city supplies, due credit must

be given to a number of city milk producers who have equipped themselves with modern, up-to-date barns with proper floor and gutter arrangements (which eventually means a clean herd); a proper ventilation system and sufficient light; also a suitable place for dairy utensils and for keeping and cooling milk and cream.

Many herds furnishing milk to city milk supplies were found to have been tuberculin-tested. In the course of inspections, I found and reported many herds and barns in filthy, dirty conditions, barns in very dilapidated condition with leaky floors and gutter arrangements, with ineffective ventilation and insufficient light.

CITY MILK INSPECTIONS

The inspection of city milk and cream supplies was chiefly to ascertain the quality and purity of the milk and cream delivered. The unsanitary bulk or can milk distribution system on dirty, dusty streets is fast on the decline and is being replaced by the more sanitary bottle system.

Milk peddlers and dealers are beginning to take considerable pride in keeping their vehicles and utensils in neat, attractive condition. However, I found some milk peddlers of whom sanitary condition of milk and utensils could hardly be expected, and who would hardly be improved much by prosecution, as they themselves were found untidy. Repeated warning and prosecution affect such men only to such an extent as to be considered by them as unnecessary hardship forced upon them. For the production and handling of milk that is intended for direct consumption, such men as above described are a menace to the public and have sadly missed their calling.

THE POOLING SYSTEM

The system of buying milk by the hundred pounds irrespective of the quality, in my territory, prevails to a large extent. Numerous requests are made of Commissioner Emery by cheese factory managers or owners from this territory for testing milk suspected of adulteration. The cheese makers are yet to a large extent without testing apparatus or even a knowledge of these appliances and have been accustomed to look to the commission to do their testing for them. Apparatus for making these tests should be installed in every factory and operated by competent persons.

OLEOMARGARINE, SANITARY STORE AND MEAT MARKET INSPECTIONS

During the period covered by this report my time was also devoted to visiting three hundred fifty-six (356) oleomargarine dealers, grocery stores and meat markets in the different cities of my territory. These inspections were for the purpose of ascertaining whether the dealers were complying with the law in regard to the sale of oleomargarine, and whether their places of business were kept in a sanitary condition. Grocery stores are fast doing away with the old system of exposing and displaying food: sanitary counters have been installed in practically every store. Meat markets have shown a marked improvement in sanitary conditions of sausage room, sausage machines, utensils in general, and refrigerators.

REPORT OF JAMES VANDUSER, CREAMERY, DAIRY AND FOOD INSPECTOR

I have been engaged during the biennial period ending June 30, 1912, in inspecting creameries, cheese factories, skimming stations, dairy barns, milk depots, city milks, cream routes, oleomargarine, sanitary inspection of groceries, meat markets, slaughterhouses, and utensils used for handling and transporting dairy products, and in try-out work on weights and measures.

CREAMERY AND CHEESE FACTORY INSPECTION

I have made 209 inpections in this line of work during this period besides making a great many tests and inspecting the testing of composite samples by butter makers. Have also assisted Inspectors Dufner, Marty and Guse in reinspection work and they in turn have assisted me.

Am pleased to report a decided improvement in the sanitary condition of creameries and cheese factories. More attention is being paid to putting on screen doors and windows, repairing drains and the disposal of sewage, the installation of better and more up-to-date machinery such as sanitary piping, modern cream ripeners, sanitary pumps, and butter testers; also better floors, mostly cement. Buildings have been remodeled and painted. Buttermilk, skim milk and whey tanks are kept cleaner; as galvanized tanks are taking the place of the old wooden tanks. There is still some chance for improvement at some cheese factories, as they still stick to the old wood tank sunk in the ground which is very difficult to clean properly and ofttimes neglected.

The method at many factories of getting the whey to the patrons' cans from these tanks is very unsanitary as a pump with buckets is used which is very unhandy to clean and sometimes found very unclean.

The introduction of the sediment test is very helpful at cheese factories and milk depots as the patron witnesses the operation and the sediment filtered is there to convince him.

I have had to make several reinspections at creameries and cheese factories, and in all but one was able to convince the operator, owner or manager that it was better to comply with the law than to appear in court. In this one case the man was prosecuted and fined.

The old method of taking composite samples of cream and holding same in a metal-covered jar is very unsatisfactory and is fast going out of use. The method now practiced by nearly all creameries of testing every delivery is much better, as the operator is able to check up each day.

I have done some reinspection work at cheese factories with Inspector Guse which resulted in convictions as will appear in his report.

CREAM ROUTE INSPECTION

During the period covered by this report I have made 353 such inspections, in most instances accompanying the cream hauler on his route. A copy of the dairy laws was left with each patron. Suggestions were made for bettering the conditions in a sanitary way where needed, and the patron instructed in the proper method of caring for cream. One of the faults in handling hand-separator cream is the

mixing of warm and cold cream before properly cooling the former. Another is in not thoroughly stirring and cooling and holding at a low enough temperature, to both of which faults the patron's attention was called. As nearly all the creameries in this section gather their cream at least every other day, a little effort on the part of the patron makes a decided improvement. A result of this inspection is the removal of a great number of separators from the barns and placing them in buildings built for that purpose only. At most of the farms visited I was able to make some suggestions for improvement at the barns, such as providing more light, better ventilation, whitewashing walls and ceilings, and suggesting the replacing of old wood floors with cement. All of this has brought good results as I have been informed by the owners and managers where such work has been done.

CITY MILKS

The milk of thirty cities has been sampled, fat tests made, and lactometer readings taken. A decided improvement is noticeable in the quality of milk and cream furnished these places over former years, as I had to swear out complaint for only one man for selling milk or cream below the legal standard, who pleaded guilty and paid his fine. This man was delivering milk to a party who was bottling it and, with milk produced by himself and others, was supplying his customers. The milk was bought on the street in the usual way and found below standard. I went to the milk dealer's place of business and took samples as each patron delivered his milk and in this way located the guilty party.

The old system of storing milk in cans and delivering from cans carried from house to house accompanied by an old graduated measure is fast becoming a thing of the past, as nearly all the city milk and cream in my district is bottled and there is not the chance of the product becoming contaminated. Nearly all the places where milk or cream was being produced for city use were inspected, also cans, coolers and other utensils used. In a number of cities the milk dealers have made great improvement in their dairy houses and barns by employing more sanitary methods in handling the product, installing modern stalls, letting in more light, better ventilation and keeping the cows cleaner. Most of the cities in my territory make the tuberculin test compulsory.

DAIRY BARNS

I have made 88 inspections of dairy barns since the last report and where reinspections have been made have noticed a decided improvment. In some instances hundreds of dollars have been spent in improvements and a general trend toward better sanitary conditions around the barns on most farms is noticeable.

SANITARY INSPECTIONS

During the period covered by this report 300 such inspections have been made. I am able to report a decided improvement. Where formerly fruits and vegetables were displayed on the sidewalks in front of the place of business subject to all unclean street conditions, the display is now mostly made inside. A few dealers have shelves or tables built two or three feet above the sidewalk. Dealers are fast coming to realize that the buying public is taking notice. The sign "Sanitary Grocery" is often seen.

About two hundred of these groceries were handling oleomargarine. Where signs were not displayed the dealer's attention was called to the fact and the law read. In two cases the oleomargarine sold was in semblance of yellow butter. In both cases the product was promptly boxed and shipped back to the wholesaler.

MEAT MARKETS

As a rule I have found the markets to be conducted in a sanitary way, but some men have no conception of cleanliness. I have made a number of reinspections in company with Mr. H. C. Larson, some of which have resulted in prosecutions and convictions.

WEIGHTS AND MEASURES TRY-OUT WORK

A good deal of time the last three months has been devoted to try-out work on berry boxes. Nearly every groceryman in my territory has been visited and the law explained. In the cities of Racine and Kenosha I was accompanied by Inspectors Voigt and Winder. The dealers as a whole were anxious to learn the requirements and ready to comply. I have made 100 such inspections.

REPORT OF P. A. LARSON, CREAMERY, DAIRY AND FOOD INSPECTOR

The following is a report of work done by me from June 30, 1910, to April 30, 1911:

Creameries inspected	99
Cheese factories inspected	21
Meat markets inspected	86
Grocery stores inspected	142
Restaurants and confectioneries inspected	8
Sausage factory inspected	1
Samples sent to chemist	54
Samples of city milk and cream bought and tested	216
Samples tested at creameries	159
Prosecutions for adulteration	8
Prosecution for maintaining unclean and unsanitary cheese factory	1

REPORT OF W. F. SCOTT, FOOD INSPECTOR

I hereby submit a report of work performed by me as food inspector during the biennial period ending June 30, 1912.

I have inspected grocery stores, meat markets, drug stores, bottling works, slaughterhouses, places where paints and oils were sold; have also done some work in bakeries, confectionery stores and lunch rooms.

I have collected 359 samples of foods, drinks, drugs, linseed oil, white lead and turpentine suspected of being adulterated or misbranded, and have delivered the same to the chemist for analysis.

Much of my time has been spent in the bringing of 41 prosecutions against violators of law, as follows:

Selling adulterated pop	7
Selling adulterated sausage	13
Selling adulterated canned cherries	5
Selling adulterated mustard	1
Selling unlawful flavoring extracts	2
Maintaining unclean and unsanitary meat market	1
Selling adulterated linseed oil	9
Selling adulterated white lead	3

I have made inspections in 96 cities, (some of which I have visited a number of times), in my territory which covers southern and eastern Wisconsin, and have done work in some northern counties. I have also investigated many complaints received at the office and referred to me by you.

I am pleased to report that there is great improvement along food and drug lines and in the character of the products sold for linseed oil and white lead.

The sanitary conditions in places where foods are sold are very much improved. The display of foods on the streets and sidewalks in most cities is more sanitary. Meat markets as a rule are kept in better condition as regards the cleanliness of tools, refrigerators, etc. But there are some dealers who do not keep their places clean unless brought under strict supervision.

REPORT OF R. B. SOUTHARD, CHEESE FACTORY, DAIRY AND FOOD INSPECTOR

During the period, July 1, 1910, to July 1, 1912, my work has been more varied than during the two previous years, when cheese factory and creamery inspections formed its principal part. Sanitary inspections of grocery stores, meat markets, sausage kitchens, dairy barns and utensils used in handling milk and cream on the farms, have been given a large share of my time the past two years.

In making inspections of cheese factories and creameries, when possible, I have been at the factory in the morning in order to inspect the milk as delivered from farm to factory, and have inspected cans as to cleanliness, freedom from rust, and as to their seams,—whether closed and filled with solder. Where cans had been previously inspected or parties had been warned, and cans were still found unclean or open-seamed, I have brought prosecutions. From my observation of conditions at creameries and factories, will say that the majority of the makers take pride in their creameries and cheese factories and keep them in good condition, and at such places there is little use of watching farmers' cans, as makers watch the conditions and talk to their patrons and generally have good, bright, clean cans, and good milk brought to their factories. It is at the factory where both the premises and the maker look as though they needed a good scrubbing that most of the unclean cans are found, for the maker takes no interest in the factory further than to get through with the day's work as soon as possible and collect his wages when due.

While making inspections of dairy barns, and utensils used in the handling of milk at the farm, I have noted conditions and find a

large and growing sentiment among the farmers to handle the milk and cream under sanitary conditions, such as keeping barns and cattle clean, adding more and larger windows to barns and putting in some good system of ventilation.

In the fall of 1910, working with Mr. Cannon, we collected samples of the milk supply of thirty cities and towns, and in addtion to testing samples for adulteration, we tested same for preservatives. There were no samples found to contain preservative. A few were found adulterated and the parties selling same were prosecuted. The cans and utensils used were nearly all found to be in good condition.

While making sanitary inspections of grocery stores and meat markets, have also inspected oleomargarine as to color.

Upon first inspections of grocery stores I have always seen all storage rooms and basements and if food products were carelessly stored or left uncovered, I have called the proprietor's attention to the law, and to the danger of contamination from dust, flies or other unclean conditions. The condition of food products in storage rooms or basements or exposed for sale was found to be far better at the time reinspections were made.

When inspecting meat markets I have always examined saws, knives and steel used at meat block as well as condition of room and cooler. Where sausage was manufactured I have examined inside and outside of machines, benches or tables used to cut or mix meats on, and if unclean or in unfit condition, have shown same to the proprietor and have usually found him willing to make improvements. Some, however, did not see the use of cleanliness as the people who bought meats did not see the condition of machines and workroom. In places where conditions were bad and no improvements had been made at time of reinspection, the proprietors have been prosecuted.

The few slaughterhouses inspected by me have nearly all been in poor condition,—floors and walls unclean and bad odors in and around the premises. Where the butcher's attention has been called to such conditions improvement has been made, but the slaughterhouse as a rule is built back in the woods where nobody sees it and few know where it is or see the conditions under which the meat they buy is slaughtered and handled.

For the past two months nearly all my time has been taken measuring berry boxes and measures and instructing merchants and dealers how to stamp containers if of other than standard capacity. In nearly all cases dealers were willing to comply with law but did not understand what was required of them.

While making inspections in the different lines of work I have delivered copies of laws and circular letters to ice cream parlors, grocery stores, hotels, and meat markets, calling attention to laws relating to the line of work in which these people were engaged.

Following is a brief statement of inspections and other work performed by me for the two years:

181 inspections of cheese factories.
101 inspections of creameries.
225 inspections of dairy barns.
533 inspections of grocery stores and meat markets.
362 reinspections of grocery stores and meat markets.
227 samples milk and cream from 30 cities and towns.
11 inspections of slaughterhouses.
172 stores were visited and where fruits were sold, containers and measures were inspected and the law explained as to stamping if containers were of other than standard capacity.
34 prosecutions were brought for the following causes:
Maintaining unclean and unsanitary cheese factories and creameries 4

Maintaining unclean and unsanitary farm separators	9
Maintaining unclean and unsanitary meat markets and sausage rooms	5
Selling or delivering unsanitary milk in unclean cans	7
Selling or delivering adulterated milk and cream	7
Serving oleomargarine at hotel	1
Displaying fruits outside place of business without protection	1

REPORT OF S. J. DUFNER, CREAMERY, DAIRY AND FOOD INSPECTOR

During the biennial period ending June 30, 1912, I have been engaged in inspecting creameries, cheese factories, city milk supplies, farm dairies, ice cream factories, meat markets, slaughterhouses, grocery stores, oleomargarine and during the latter part of the period have given considerable time to the inspection of weights and measures.

CREAMERIES

I am pleased to be able to report that nearly all of the creameries in my territory are in very good condition and much progress and improvement has been made during the two years just past along all lines of creamery work. Quite a number of new creameries have taken the place of old ones which had become unfit places in which to manufacture human food. Many new floors of concrete have taken the place of worn-out wooden floors. In many instances drainage systems have been improved or completed which had previously been unsanitary and a menace to health. Creameries, and in particular the weigh-rooms, have been screened as a protection from flies. Many of the old weight-rooms were not so constructed as to be easily screened. The best weigh-rooms that I have found are those made by partitioning off a part of the creamery room large enough to conveniently accommodate the scales and weigh can, with plenty of room for test jars and a hot water tank for washing the cans. My observations have led me to the conclusion that all cans in which milk or cream is delivered at creameries, cheese factories city milk depots or other places, should be thoroughly washed at the place where delivered, as at such place an abundance of hot water may be easily supplied. At creameries where the cream is brought in by haulers in the large, jacketed cans, I recommend the installing of a weigh can and scales of sufficient capacity to weigh up at one draft any load delivered. This system will enable the creamery man to keep an accurate check on haulers as to weight of cream and fat delivered and will also enable him to keep a check on his own work.

The testing apparatus should be located in a room adjacent to the weigh room, and should be supplied with windows to admit all of the light possible. I have induced many of the creamery operators in my territory to make daily tests of all cream delivered, it being nearly impossible to obtain accurate results from composite samples. In order that composite samples may give accurate results, it is necessary that each sample taken be in proportion to the weight of the cream samples, also that there be no loss of moisture by evaporation, —conditions that are practically impossible. An example that I fre-

quently use to demonstrate the inaccurate results of composite sampling is as follows: We will assume that on one day a patron delivers 20 pounds of 40% cream, which would contain 8 pounds of fat. On another day he delivers 40 pounds of 20% cream which would contain 8 pounds of fat. Now, we will assume that the same amount of cream is taken for a test sample from each delivery, which would give an average for the two tests of 30%. Now, as the two deliveries 40 pounds and 20 pounds would make 60 pounds of cream and the test 30% we would have 18 pounds of fat by the composite method, and we know that only 16 pounds of fat has been delivered. I think that it is safe to predict that by another two years very few creameries will be making composite tests.

Another evil that I have encountered is the skimming of a very thin cream. I have found many creameries where the average test of all cream delivered was less than 20% fat. In the first place, by skimming a cream so low in fat the farmers lose much valuable skim milk which should be kept on the farm. A thin cream will not keep nearly as well as a cream containing from 30 to 35 per cent of fat, owing to the fact that all bacterial changes occur in the serum and not in the fat of cream. The loss of fat in buttermilk at the creamery from thin cream is something enormous. At a creamery receiving very thin cream, I recently made some tests with the following results: 5940 pounds of cream had been received on the day previous to my visit, the average test of which was 18% fat; 1246 pounds of butter were made from the 5940 pounds of cream; therefore, there were 4694 pounds of buttermilk. A sample of buttermilk taken at intervals while it was running from the churn showed that it contained .75% of fat. Consequently, there were lost in the buttermilk on this particular day 35 pounds of fat which at that time was worth 30 cents per pound, or $10.50. If this cream had contained 30 to 35 per cent fat, so that it could have been churned at a temperature of from 50° to 52° F., the loss would not have exceeded one tenth of what it was and as this was a coöperative creamery, the short-sighted farmers were the losers. This condition had probably been going on day after day and we can easily estimate what enormous proportions this loss would assume for a year or a period of years. I have addressed a number of farmers' meetings with regard to their cream and have urged them to skim a cream that will contain from 30 to 35% butter fat. Some progress in the right direction has been made, but there is a prejudice in that territory among farmers against a heavy cream that will take some time to overcome.

I have made quite a number of cream route inspections, going over the routes with the drivers, making observations on the farms as to the conditions under which the cream is produced, and in some cases bringing prosecutions for violations of law. My opinion is that there will be need of much of this kind of work on cream routes in the future.

CHEESE FACTORIES

There has been considerable improvement in the cheese factories in my territory, especially in the addition of concrete floors and the screening of intakes to keep out flies. Quite a number of cheese factories are using the Babcock test as a means of determining the value of the milk, but some are still run on the pooling system, which is detrimental to all concerned and encourages the patrons to keep cows that will give milk containing as near as possible the minimum of fat and other solids.

BARNS

I have visited quite a number of barns and find the general conditions gradually improving, though in many instances there is still much to be done. Many modern, sanitary barns have been built, equipped with concrete floors, abundant light and ventilation. Many barns are frequently whitewashed, which is a most commendable practice. The U. S. government formula for whitewash is to be recommended and it is best applied with a spray pump operated by some power other than hand. Whitewash should be applied twice a year to the walls and ceilings of all buildings where milch cows are housed. Many dairy houses have recently been built on farms and all producers of milk should provide them. Such a building should be used only for milk and milk utensils and should be provided with a tank of water in which the milk or cream should be kept at a temperature of 55° F. or lower until delivered to the place where sold. My opinion is that milk and cream are usually spoiled by lack of sufficient cooling. Cream is often spoiled by being kept too long on the farm. All cream should be delivered before it is more than forty-eight hours old, and should in all cases be perfectly sweet, in clean utensils and entirely free from any foreign taints or odors. The use of ice is resorted to by many farmers where abundant supply of well or spring water cannot be had. In my territory considerable cream is handled by centralizers, most of them outside of the state. They usually pay less per pound for butter fat than the local creameries and are willing to handle cream in any stage from good to rotten.

CITY MILK SUPPLIES

The supply of milk used in towns and cities has been much improved in recent years. It is nearly impossible at this time to find adulterated milk or cream on the market, whereas a few years ago there were nearly always prosecutions to follow a city milk inspection. Nearly all of the milk handled for city trade at this time is in bottles, which is a much more sanitary way than the old method of peddling from a can into which dust could blow each time the cover was removed.

Great improvement has been made in the manner of caring for cows from which city milk supplies are obtained, nearly all cows being kept under conditions which are quite sanitary.

I have found the sediment test a great help in city milk and cheese factory work, as by its use we are able to show the milk producer just how much solid dirt his milk contains, and when this is presented to him in such a way as to be entirely visible, he is usually in a receptive mood for information as to how such dirt may in the future be eliminated.

The use of sanitary barns, daily brushing of cows, clean utensils, the use of closed top milk pails and thorough cooling of milk will about solve the milk problems of any city.

ICE CREAM FACTORIES

I have visited many ice cream factories and find most of them operated in a cleanly manner. The most undesirable part of the ice cream business that I have observed is brought about by people who peddle the article in cones not protected from "filth, dirt and flies" as the law provides.

MEAT MARKETS

I have visited nearly all of the meat markets in my territory and have found most of them in good condition, though in a few cases I have found sausage rooms and back rooms that were far from sanitary. I have had very little trouble in getting these people to comply with the law in so far as sausage rooms and back rooms were concerned.

SLAUGHTERHOUSES

Quite a number of slaughterhouses that I have visited were in an unsanitary condition, being old buildings with poor floors, inadequate drainage and often connected with hogpens where the refuse was thrown, without regard to sanitation. In all such cases I have recommended the installing of concrete floors with provision for drainage, the removal of the hogpens to a distance of at least fifty feet, and the use of a little carrier for carrying the refuse to the pens; also the screening of the slaughterhouse doors and windows in warm weather as a protection from flies. A number of slaughterhouses of the above description have recently been built in my territory.

GROCERY STORES

I have visited most of the grocery stores, making a sanitary inspection of all food products sold and have found the grocery business generally conducted in a sanitary manner. In all cases where conditions were bad I have after reading the law to the proprietor made a second inspection within a few days and have in all cases obtained compliance with the law.

OLEOMARGARINE

I have visited nearly all the oleomargarine dealers and in some places have found the signs not posted. In other cases the letters used in such signs were not of the size prescribed by law, and in two cases I found the goods of a shade of yellow which was unlawful. After the law had been read to these parties, they in all cases complied.

WORK DONE AS SEALER OF WEIGHTS AND MEASURES

Since my appointment as a sealer of weights and measures I have devoted such time as I have been able to spare from my other duties to that line of work. Most of this work has consisted of inspections of containers used for fruits and berries. As the law was new, many persons handling such commodities were not aware of the existence of laws governing their sale. In most cases the dealers have willingly complied after they have been made acquainted with the requirements of the law.

SUMMARY

The following is a summary of my work from July 1, 1910, to June 30, 1912:

Creameries inspected	287
Cheese factories inspected	47
Cream routes inspected	20
Barns and dairies inspected	42
Oleomargarine inspections	75
Grocery stores inspected	98

Meat markets inspected	51
Slaughterhouses inspected	12
City milk supplies inspected	24
Milk and cream samples tested	700
Cans inspected	5,000
Weights and measures inspections	68
Samples submitted to chemist	52
Prosecutions for unsanitary conditions	4
Prosecutions for adulterations	5
Convictions	9

REPORT OF W. A. VOIGT, CREAMERY, DAIRY AND FOOD INSPECTOR

Ex Officio Sealer of Weights and Measures

As creamery, dairy and food inspector, from July 1 to November 6, 1911, I made the following inspections:

Creameries and skimming stations	184
Cheese factories	65
Groceries, meat and oleomargarine markets	536
Dairies, barns, separators and utensils	42
City milk wagons and utensils	52

Have bought and tested 126 samples of milk and cream from city milk supplies; tested 135 samples of milk and cream at factories, and collected 5 herd samples at farms. Have sent 51 samples of milk, cream and butter to chemist. Have judged dairy products at Northern Wisconsin State Fair, also at Marathon county and Clark county fairs and county butter makers' meetings. Have brought 10 prosecutions and secured 10 convictions, 6 for unclean and unsanitary conditions at creameries and cheese factories, 3 for selling adulterated milk and 1 for maintaining an unsanitary meat market. Have also made a number of second inspections, creameries, cheese factories, groceries, and meat markets together with Inspectors Buzzell and Southard, which in various cases resulted in prosecution and conviction.

I was unable to perform my duties as dairy and food inspector for nearly three months during the winter of 1911 owing to sickness.

While making creamery and cheese factory inspections, I have wherever possible examined the milk and cream and cans containing the same; have inspected hundreds of cans at buying stations and depots. Wherever conditions were found unsatisfactory, suggestions were made to overcome the same, open-seamed and rusty cans and cans that were dirty were tagged and the owners' attention called to the law in regard to the same. In most instances compliance with the requirements of law was obtained without recourse to the courts.

The conditions at creameries and cheese factories as a whole were very satisfactory, as a good number of the makers take great pride in their work, in keeping their factories clean and in using their skill to avoid all losses possible and to improve the quality of their output. More than two-thirds of the creameries of this territory are coöperative and many are well equipped with modern buildings and apparatus, but some seem to have only one object in view, to keep down expenses as much as possible regardless of results,—electing incompetent managers and employing poor, inexperienced makers. These factories

as a rule are unsuccessful through losses incurred by ill management and a failure to employ strict business principles and methods in their operation.

The following are a few illustrations of the incompetence and unbusinesslike methods observed: Arriving at a certain creamery I found that the butter maker made two churnings a day. Not having sufficient vat room to properly ripen the cream, he added considerable ice to the cream in the vat separated in the morning at the factory, and added to this, to make a churning, the cream from one of the routes brought in at noon. I found the temperature to be 52° F after the cream from the route had been added. This unripened cream was put in the churn at once to make room for the loads of cream from other routes. The management tried to save the expense of a larger or additional ripener, or perhaps their attention had not been called to the fact that losses are always very great in churning unripened cream. The buttermilk taken from said churning showed a loss of 2.8% and the loss in the wash water was .4%. At this rate of waste, it was found that the maker lost in this one churning considerably more than the wages paid to the butter maker, helper and haulers. After the figures were presented to the management they were much surprised and remedied conditions at once.

In another creamery which had started two cream routes but was uncertain as to whether same would be a paying proposition, they tried to get along as cheaply as possible, and hired to gather the cream an old man known to be honest but who did not know the first thing about cream or sampling or testing the same. Sometime later the butter maker discovered that the overrun was not as high as it should be. He had been negligent in checking up the work of the haulers, especially the one above referred to. The haulers either through ignorance or negligence were not always taking the cream samples properly and accurately. In this particular case the hauler was sampling day after day from the cans of separator cream set out for delivery to the creamery by the patrons. Some patrons also set out cans containing the whole of the evening's milking. The cream collected by the hauler from these cans of milk the following day was separated by the gravity system, which would almost invariably test considerably lower in butter fat than the separator cream. The inexperienced hauler delivered both the separator and gravity cream to the creamery having sampled only the separator cream or the higher testing cream of the two lots. The butter maker weighed up both lots, multiplying the total number of pounds of cream by the fat test of the separator cream only, thereby charging the churn with more butter fat than went into it, hence the low overrun.

I am pleased to report that these and numerous other sources of loss were stopped at once after attention was called to them.

In my work among the creameries and cheese factories I found about the same rate of improvement as in former years. Up-to-date apparatus takes the place of the old whenever new is installed. More care is given to drainage and good floors. The quality of the butter and cheese has improved, especially from factories whose makers have taken part in the monthly scoring contests conducted in this state.

The sanitary conditions of grocery stores and meat markets were in many instances not good on first inspection, especially in regard to the protection of food from dust, filth, flies, etc., but on second inspection in most instances decided improvements had been made, although in some cases only with the purpose of escaping prosecution, as there is a certain class of people who will obey the laws only so long as strictly enforced.

WORK DONE AS SEALER OF WEIGHTS AND MEASURES

I beg to report the following work done by me as sealer of weights and measures from November 6, 1911, to June 30, 1912:

Number of establishments inspected	648
Number of measuring devices inspected	6,677
Number condemned	985
Number condemned for repairs	923
Number adjusted	617
Number sealed	4,769
Number of stores visited on try-out inspections	196

Of the total number of measuring appliances tested, the per cent condemned was 14.8. Of these about 70% were liquid and dry measures. It was surprising to find so many of the liquid and dry measures short, but the dry measures are now being done away with entirely and the dealers are acquiring the habit of selling by weight only. Wherever new liquid measures have replaced the old, I have found them correct. About 20% of the apparatus condemned were spring scales, balance counter scales, and weights.

The per cent condemned for repairs was 13.8. Of this a large number were counter tacks with too large or incorrectly placed heads, and scales which were found incorrect.

Nine and two-tenths per cent of the total number inspected were adjusted by me and then sealed. In nearly all cases this apparatus consisted of different types of scales. Occasionally incorrect scales were found which registered in favor of the purchaser but much more often the error was in the dealer's favor. Weights found incorrect were usually light—either worn from constant use, the adjusting lead gone, had been sent from the factory incorrectly adjusted, or had been deliberately tampered with.

The 4769 pieces of measuring apparatus reported as sealed include 617 which were first adjusted by me and then sealed. So that it will be seen that the number of appliances actually found correct as in use by the dealers was 4152, or 62.2% of the total number inspected.

Am pleased to report that I find the majority of the people, merchants and consumers alike, clearly see the benefits to be derived from a strict enforcement of the weights and measures act, which protects the honest merchant as well as the consumer.

REPORT OF P. W. GUSE, CREAMERY, DAIRY AND FOOD INSPECTOR

During the period covered by this report I have made the following inspection and prosecutions:

Creameries	134
Cheese factories	226
Condenseries	2
City milk plants	10
City milk and cream supplies	15
Samples tested at creameries and cheese factories	385
Grocery stores and meat markets inspected	249
Samples submitted to chemist	49
Herd samples procured	16
Prosecutions	14
Convictions	*14

*In two cases defendants pleading nolo contendere.

In addition to the above, I made inspections of the sanitary conditions of lunch counters and confectionery stands at the State Fair Park; also assisted in the mailing of biennial reports, circular letters, pamphlets, etc., for the commission.

There has been a marked improvement in regard to sanitary conditions and management of creameries and cheese factories during the time covered by this report. Sanitary piping is used to conduct the milk and cream in the place of the rusty pipe and rubber hose that at one time were in common use. The open cream vat is fast disappearing and is being replaced by the modern cream ripener. Practically all factories have screens on windows and doors and the operators are making an effort to keep out the flies. Wood floors have largely been replaced by cement; also sewage disposal has received more attention than formerly. In places where streams are not available for carrying off sewage, cess wells or septic tanks are being used with good success. This does away with the bad odor that was formerly found around some of these places.

In that section of my territory where milk is bought by the pooling system, about sixty-five Babcock testers have been installed during the last year. Although not paying on fat basis, it gives the factory operator a means of detecting adulterated milk and has greatly reduced this source of trouble.

Skim milk, buttermilk and whey tanks as a rule are kept in a clean condition. But the whey tank that is set in the ground is still in existence. It is hard to clean and is very often found in an unclean condition. In many cases the whey tank has been elevated and the whey pumped either with a steam jet or rotary pump. This system has been found to be more satisfactory as elevated tanks can be easily drained and washed. An unclean whey tank is the root of a large portion of the trouble found at cheese factories, very often causing a heavy loss to both makers and patrons. In several cases a yeast ferment developed from this cause, inoculating the patrons' milk cans. These, not being properly washed and scalded, in turn contaminated the milk delivered to the factory and in this way the trouble was carried on for weeks and months at a time. Another disadvantage that the underground whey tank has, is the use of pumps. Many factories use a pump that is equipped with an endless chain of wooden buckets, these being constructed in such a way that they are almost impossible to clean and this style of pump is generally found in an unclean and filthy condition.

Where possible milk and cream cans and their contents were inspected. In several cases prosecutions were necessary, but the percentage of open-seamed, rusty and unclean cans is rapidly growing smaller.

Instruction was also given along with the work of inspection, and help given makers and managers where possible.

The inspection of city milk and cream supplies consisted of buying and testing samples of milk and cream and in the inspection of wagons and utensils for sanitary conditions. With but a few exceptions utensils were found to be clean. The dealer's attention was called to these unclean conditions and upon second inspection this trouble had been overcome. Sediment tests were also made of the milk supply at a number of city milk plants. This resulted in much good as the farmer could be shown the amount of dirt the milk delivered by him contained, which caused him to exercise greater care.

The displaying of food stuffs in grocery stores and meat markets has undergone a great change. Where formerly goods were displayed in open boxes, barrels, on top of counters and on platforms in front of buildings, exposed to dust, flies and other contamination, they are

now displayed under glass covers or protected in such a way that the dust and flies do not reach them.

REPORT OF J. B. LINZMEYER, CHEESE FACTORY, DAIRY AND FOOD INSPECTOR

During the biennial period ending June 30, 1912, I inspected 176 cheese factories, 19 creameries, 143 dairy barns and the utensils used in the handling of milk and cream, or butter, at those places; tested 1,035 milk and cream samples; made 187 inspections of meat markets and stores as to the sanitary condition of same; made 85 inspections under the weights and measures department, which resulted in one prosecution and conviction; inspected a number of city milk wagons and depots and their utensils; also tested a large number of samples of milk with the sediment tester.

A number of prosecutions were necessary and convictions obtained with the little cotton disc of the sediment tester as the chief and indisputable evidence.

There is a marked general improvement in the cheese factories and creameries, throughout my territory, including a few places where radical improvements were made. One specific instance being in Brown county where the receiving-room floor was poor and the leakage of milk through it caused an unsanitary condition and bad odor in the creamery. Operations were suspended on the morning of my visit and the necessary improvements made at once.

In another instance where upon first inspection about one-third of the milk cans at a creamery were found unclean or open seamed, upon a second visit only one dirty can was found and the owner of that can was prosecuted and convicted.

In another case a cheese factory in Kewaunee county where a prosecution was the result of my visit, the cheese maker and owner of the factory told me later that the prosecution was the best thing that ever happened in his factory, as it helped to better the condition in general.

Another instance was a dirty meat market in Manitowoc county which was cleaned up without prosecution but with the help of the district attorney and the local health officer. Also, a grocer in the same county who kept some of the groceries in bulk, exposed to the dust and flies, was induced, with the help of the district attorney, to protect said food from dust, flies and other contamination.

In the grocery stores there is a noticeable improvement in keeping foodstuffs protected from flies and dirt and also in keeping same well out of the reach of dogs.

In the dairy barns, the improvement is slow, but constant and permanent, so that the percentage of dirty cows is gradually getting less and the milk offered for sale is cleaner in the same proportion.

REPORT OF S. B. COOK, DAIRY AND FOOD INSPECTOR

During the period from November 6, 1911 to June 30, 1912, I have been engaged in the inspection of creameries, cheese factories, cream-buying stations, dairies, city milk supplies, meat markets, grocery stores, oleomargarine markets and in measuring berry boxes and fruit containers and explaining the provisions of the new weights and measures law relating thereto.

INSPECTIONS

Ceameries	74
Cream-buying stations	6
Cheese factories	14
Meat markets	71
Grocery stores and meat markets combined	9
Grocery stores	129
Oleomargarine markets	174
City milk supplies	4
Dairies	9
Cream routes	2
Weights and measures try-outs	55

Wherever it has been possible to be at a creamery or cheese factory when the milk or cream was being received, I have done so and inspected the same as received. Much of the cream being received at the creameries is gathered by haulers and the weighing and sampling is done by them. I have made a few trips out on the routes with the haulers on their cream gathering days and have found this to be very satisfactory as in this way I have been able to inspect the utensils used, such as pails, cans, separator, and the place where separator is kept; also where cream is kept. I have found in most instances the cream is kept in the cellar. Where this is the case I have suggested the building of a small concrete tank and placing it between the pump and large stock tank. In some instances I have found the separator in the feed alley or stall of the barn, and have made the owner or manager familiar with the law in regard to the sanitary production of cream.

In my work among the creameries and cheese factories I have found most of them in clean, sanitary condition. Some of the old frame buildings are being torn down and replaced with brick and concrete. The old wood floor is disappearing and is being replaced with cement. Where the cheese factory or creamery is built on low land, some trouble exists in the securing of proper drainage. A number of the creameries have installed septic tanks but are having trouble with them on account of their being too small. The septic tank should be large enough to hold the sewage of five or six days, and to get good results all clear water should run out to a cesspool.

In my work among the grocery stores and oleomargarine dealers this last winter, I found conditions very good in most places as to sanitary conditions. I found some stores where boxes and barrels containing sugar, coffee, oatmeal, etc., were not protected with coverings. I drew the merchants' attention to the necessity of protecting same from dust, and found them ready and willing to do so.

In my work among the oleomargarine dealers I only found a few packages in semblance of yellow butter. I drew the merchants' at-

tention to the law relating to selling oleomargarine in semblance of yellow butter (Section 4607d, statutes of 1898) and in most instances, what was left was ordered shipped back to tne packer. In some instances the signs were not properly displayed. After reading the law to the dealers, they immediately put up the proper signs or sent for same.

Much time has been spent in connection with the new law relating to weights and measures. In all places where possible berry boxes and fruit containers have been measured and the laws relating thereto explained.

I have attended Wisconsin Cheese Makers' Association, presided at Wisconsin Butter Makers' Association and attended the North Western Wisconsin Butter Makers', and Polk County Butter and Cheese Makers' Association meetings, taking part at each.

REPORTS OF SEALERS OF WEIGHTS AND MEASURES

REPORT OF WILLIAM WINDER, SEALER OF WEIGHTS AND MEASURES

Following is a report of work done by me as sealer of weights and measures from the date of my appointment, November 6, 1911, to June 30, 1912.

Cities and villages where work has been done	130
Establishments inspected	992
Stores where various commodities have been reweighed and remeasured for the purpose of detecting shortage	120
Articles, including package goods, sugar, coffee, potatoes, meats, butter, and fruit packages, reweighed and remeasured to detect possible shortage	152
Articles found short weight or measure	63
Scales inspected and sealed	543
Scales inspected and condemned	199
Liquid measures sealed	1,410
Liquid measures condemned	354
Dry measures sealed	46
Dry measures condemned	65
Linear measures sealed	1,286
Linear measures condemned	562
Automatic measuring pumps and tanks sealed	115
Automatic measuring pumps and tanks condemned	34
Automatic measuring pumps and tanks adjusted	36
Scale weights sealed	844
Scale weights condemned	145

Of the period covered by this report about two weeks were spent at the office at Madison in getting instructions and preparing for the work to be done and, in company with other sealers and the chief inspector, visiting various manufacturing plants and repair shops for the purpose of getting a working knowledge of the mechanical construction of the various makes of scales.

In the above summary the figures do not give the true percentage of incorrect scales and measuring devices. The proportion of incorrect articles found upon the first inspection is much in excess of that shown by the above figures. In explanation of this, would say that since Jan. 18 my work has been reinspection, or, at an interval of a few weeks, to follow the other sealers with the purpose of inspecting new and repaired scales, measures and measuring devices, and seeing that the necessary corrections were being made as required by law. As would be expected, the percentage of incorrect articles found on this second visit is very much smaller than at the first visit.

In this, the first inspection under a new law, the work has been to a great extent what might be termed missionary or educational, and in large part has been to explain to the public the requirements of the law.

Numerous times I have been detailed to do special work in the way of investigating claims from various parts of the state regarding shortage in weights and other infringements of the law.

Considerable time has also been spent in visiting various large cities in connection with the enforcement of the berry box regulations and in an inspection of several fruit package manufacturing concerns, with the view of ascertaining the sizes of various boxes and baskets to be used as fruit containers.

REPORT OF JOHN E. BOETTCHER, SEALER OF WEIGHTS AND MEASURES

Received preliminary instruction in sealing of weights and measures in the office of the Weights and Measures Department from Nov. 6th to Dec. 6th, 1911. Started actual work of sealing Dec. 7th, 1911 and continued during the remainder of the biennial period, with the exception of thirty days from the 4th of May, during which time work was done at the office.

Summary.

Appliances inspected.	Sealed.	Adjusted.	Condemned for repairs.	Condemned.	Total.
Scales	600	80	147	34	781
Dry measures	16	.....	.....	43	59
Liquid measures	812	.....	23	314	1,149
Automatic pumps	42	12	40	.....	82
Linear measures	107	2	427	.....	534
Weights	1,697	161	96	28	1,821
Total					4,426

Cities visited, 40. No. of establishments, 573.

REPORT OF HENRY L. BORNHEIMER, SEALER OF WEIGHTS AND MEASURES

The following is an itemized report of the work done by me during the period beginning November 7, 1911, and ending June 30, 1912:

After spending two weeks at the office testing and sealing the various standards that were to be used by us and studying the law and regulations relating to weights and measures by which we were to be guided in our work, also getting instructions as to the mechanical principles of scales at the office and by visiting some of the scale factories and repair shops in the state, Chief Inspector Downing gave Inspector Warner and me our first experience in practical work in the field, as follows:

Sixty-four establishments in one city were visited.

	Sealed.	Condemned for repairs.	Condemned.	Total.
Counter scales	45	4	1	49
Computing scales	10	6	.....	16
Spring scales	9	2	7	18
Dry measures	6	.....	18	24
Liquid measures	131	.....	31	162
Yardsticks, tapes, etc	13	.....	1	14
Yard counter tacks	15	94	.....	109
Automatic pumps	2	2	.....	4
Weights	147	.....	15	162
Total	.....	.....	.....	558

In company with Inspector Boettcher the following inspections were then made:

Eighty-three establishments in three cities:

	Sealed.	Condemned for repairs.		Condemned.	Total.
Counter scales	43	(1 adj.)	10	.....	53
Computing scales	18	2 "	9	.....	27
Spring scales	1	.....	9	2	12
Dry measures	.....	.....	.....	11	11
Liquid measures	131	.....	1	88	220
Yardsticks, tapes, etc	15	.....	1	.....	16
Yard counter tacks	.....	.....	92	.....	92
Automatic pumps	4	.....	11	.....	15
Weights	192	.....	11	12	215
Total	.....	.....	.....	.....	661

Following this I worked alone in ninety-three cities, towns and villages on first inspection, inspecting a total of 1086 establishments:

	Sealed.	Adjusted.	Condemned for repairs.	Condemned.	Total.
Counter scales	713	147	53	11	777
Computing scales	341	85	47	3	390
Spring scales	220	35	66	49	335
Dry measures	46	.....	.....	53	99
Liquid measures	2,433	11	17	871	3,321
Yardsticks, tapes, etc	108	.....	.....	.....	108
Yard counter tacks	349	68	1,282	23	1,654
Automatic pumps	263	131	49	2	314
Weights	2,745	411	136	34	2,915
Total	.....	.....	.....	.....	9,913

On second or reinspection I visited 9 towns, inspecting 101 places:

	Sealed.	Adjusted.	Condemned for repairs.	Condemned.	Total.
Counter scales	23	1	2	1	26
Computing scales	12	2	1	.....	13
Spring scales	10	.....	3	1	14
Liquid measures	76	.....	.....	11	87
Yard counter tacks	182	.....	10	4	196
Yardsticks, etc	5	.....	.....	.....	5
Automatic pumps	21	2	3	.....	24
Weights	105	11	7	....	112
Total	.....	.....	.....	.....	477

I condemned 26 charts in computing scales. Made 27 try-outs, mostly of print butter.

Inspector Warner and I visited 4 cities on berry box inspection, visiting 57 establishments.

Inspector Marty and I visited 1 city, inspecting 24 places.

Inspector Southard and I visited two cities, inspecting 36 places.

I visited 7 cities, inspecting 82 places.

REPORT OF GEORGE WARNER, SEALER OF WEIGHTS AND MEASURES

Following is a report of the work done by me since my designation as creamery, dairy and food inspector, ex officio sealer of weights and measures, November 6, 1911, to and including June 30, 1912:

Appliances inspected.	Sealed.	Adjusted.	Condemned for repairs.	Condemned.	Total.
Scales	950	157	193	132	1,275
Dry measures	23	.....	.....	216	229
Liquid measures	2,727	.....	.....	730	3,457
Linear measures (counter tacks, yardsticks)	425	.....	.....	1,210	1,635
Weights	2,304	....	.....	165	2,469
Automatic pumps	224	... .	... .	114	338
Total	....	.....	.....	..... .	9,413

Cities and villages visited, 98.

Establishments inspected, 1140.

In connection with this work, purchases were made at various times and packages reweighed to detect possible shortage.

About two weeks were spent in the office at Madison studying the construction and operation of the various types of scales in use in the state, also in visiting some of the scale manufacturing plants.

I also spent about three weeks inspecting some of the larger cities of the state with the city sealers to see if dealers were complying with the law in selling berries.

I also worked with Mr. Boettcher on heavy scale inspection for about two weeks, which work is covered in his report.

REPORT OF WALTER J. KRAMER, SEALER OF WEIGHTS AND MEASURES

I hereby submit a report of work done by me as sealer of weights and measures from January 25, 1912, the date of my appointment, to and including June 30, 1912.

FIELD WORK

No. of cities visited	22
No. of grocery stores visited	6
No. of general stores visited	18
No. of butcher shops visited	4
Other places of business visited	47
Total	75

Appliances inspected and tested:

	Tested.	Sealed.	Adjusted.	Condemned for repairs.	Condemned.
Scales	66	47	9	9	1
Measures	300	185	6	40	69
Weights	119	93	2	5	19
Total	485	325	17	54	89

Dealers were given instruction in marking of short berry boxes and other fruit measures and a copy of the weights and measures law and regulations was left at each place of business.

WORK DONE AT OFFICE

Appliances inspected and tested:

Sealers' balances	27
Dry measure gauges	30
Dry measures	163
Yardsticks	16
Steel tapes	10
Sealers' weights	1058
Total	1304

Creamery glassware calibrated:

	Tested.	Sealed.	Condemned for repairs.	Condemned.
Cream test bottles	1.544	1.129	.....	415
Milk test bottles	772	768	.....	14
Pipettes	32	29	.....	3
Acid measures	5	2	.....	3
Cream scales	25	23	2	.....
Moisture scales	2	2	.....	.....
Nine and eighteen gram weights	12	10	.....	2
Total	2.392	1,963	2	437

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D. E. Bingham, Sturgeon Bay.
President State Horticultural Society.

ANNUAL REPORT

OF THE

Wisconsin State Horticultural Society

For the Year 1911

VOL. XLI

PART I.

(Part I, containing Constitution, By-Laws, Business Transactions, etc., distributed to members only.)

F. CRANEFIELD, Editor

MADISON, WIS.

MADISON

DEMOCRAT PRINTING COMPANY, STATE PRINTER

1911

LETTER OF TRANSMITTAL

MADISON, WIS., May 1, 1911.

To His Excellency, FRANCIS E. MCGOVERN,

Governor of Wisconsin.

DEAR SIR:—I have the honor to transmit to you herewith the Forty-first Annual Report of the Wisconsin State Horticultural Society.

Respectfully,

FREDERIC CRANEFIELD,

Secretary.

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OFFICERS AND COMMITTEES, 1911.

OFFICERS.

D. E. Bingham, President.....Sturgeon Bay
C. L. Richardson, Vice-President.....Stanley
L. G. Kellogg, Treasurer.....Ripon
F. Cranefield, Secretary.....Madison

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C. L. Richardson.....*Ex-Officio*
L. G. Kellogg.....*Ex Officio*
F. Cranefield .....*Ex-Officio*
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2nd Dist., G. W. Reigle.....Madison
3rd Dist., Wm. Toole .....Baraboo
4th Dist., F. W. Harland .....Milwaukee
5th Dist., H. C. Melcher.....Oconomowoc
6th Dist., E. Gonzenbach .....Sheboygan
7th Dist., E. A. Richardson.....Sparta
8th Dist., N. A. Rasmussen.....Oshkosh
9th Dist., A. W. Lawrence, Jr.....Sturgeon Bay
10th Dist., Irving Smith.....Ashland
11th Dist., O. Flanders .....Bayfield

BOARD OF MANAGERS.

D. E. Bingham L. G. Kellogg F. Cranefield

COMMITTEE ON TRIAL ORCHARDS.

A. W. Lawrence, term expires.....Jan. 1914
J. S. Palmer, term expires.....Jan. 1913
R. J. Coe, term expires.....Jan. 1912

LOCATION OF TRIAL AND DEMONSTRATION ORCHARDS.

Wausau, Marathon County, 10 acres.....Established 1897
Medford, Taylor County, 3 acres.....Established 1903
Poplar, Douglas County, 7 acres.....Established 1904
Maple, Douglas County, 3 acres.....Established 1906
Barron, Barron County, 5 acres.....Established 1906
Manitowoc, Manitowoc County, 5 acres.....Established 1907
Gays Mills, Crawford County, 6 acres, (1 A. Grapes)..Established 1907
Sturgeon Bay, Door County, 5 acres.....Established 1908
Whitehall, Trempealeau County, 5 acres.....Established 1908
Lake Geneva, Walworth County, 5 acres.....Established 1908
Sparta, Monroe County, 1 acre (Grape Station).....Established 1908

The Improvement of Rural School Grounds. (See p. 143.)

Dist. No. 6. Town of Baraboo, Sauk Co.
Dist. No. 5. Town of South Lancaster, Grant Co.
Dist. No. 10. Town of Manitowoc Rapids, Manitowoc Co.
Dist. No. 3. Town of Sevastopol, Door Co.
Dist. No. 2. Town of Fond du Lac, Fond du Lac Co.
Dist. No. 1. Town of Genesee, Waukesha Co.

LIST OF FRUITS RECOMMENDED FOR CULTURE IN WISCONSIN.

The behavior of varieties of fruits is influenced very largely by environment. The conditions of soil, exposure and latitude over such an extensive area as the state of Wisconsin vary greatly and no list can be given that will prove satisfactory in all localities. The following provisional lists were prepared by the Trial Orchard Committee. Hardiness of plant and fruit bud has been the leading thought in the selection of varieties.

APPLES (General List).

Alexander, Astrachan (Red), Autumn Strawberry, Dudley, Fall Orange, Fameuse (Snow), Golden Russett, Hibernal, Lowland Raspberry, Longfield, Lubsk Queen, McIntosh, Malinda, McMahan, Newell, Northwestern Greening, Oldenburg (Duchess), Patten Greening, Perry Russett, Plumb Cider, Scott, Tetofski, Talman (Sweet), Utter, Wealthy, Westfield (Seek-no-Further), Windsor, Wolf River, Yellow Transparent.

APPLES (Lake Shore List).

In addition to the above many other varieties including the following may be successfully grown in the extreme southern part of the state and in the counties bordering on Lake Michigan. **Baldwin, Eureka, Fallwater, Gano, King, Northern Spy, Pewaukee, Willow Twig, York Imperial, Bellflower.**

APPLES (Commercial Orchard List).

It is generally conceded that a commercial orchard should consist of but few varieties; the following are suggested: **Dudley, Fameuse, Longfield, McMahan, McIntosh, Northwestern Greening, Oldenburg, Scott, Utter, Wealthy. Yellow Transparent.**

APPLES (Five Varieties for Farm Orchard).

Northwestern Greening, Oldenburg (Duchess), Talman (Sweet), Wealthy, Yellow Transparent.

APPLES (For Trial).

These are all promising varieties but have not been extensively grown in any part of the state: **Gem City, Hanko, Lily, Wendorff, Zettle Bellflower.**

CRABS.

Brier Sweet, Hyslop, Lyman, Martha, Sweet Russett, Transcendent, Whitney.

PLUMS.

Of the classes commonly cultivated, viz.: **European, Japanese** and **Native** or **American**, the last named is the most reliable.

NATIVE PLUMS.

De Soto, Forest Garden, Hammer, Hawkeye, Ocheeda, Quaker, Rockford, Surprise, Wyant.

EUROPEAN PLUMS.

(Not recommended except along Lake Shore). **Lombard, Green Gage, Moore's Arctic.**

JAPAN PLUMS.

(Not recommended except along Lake Shore). **Abundance, Burbank.**

CHERRIES.

Early Richmond. Montmorency.

GRAPES.

Brighton, Campbell's Early, Concord, Delaware Diamond, Green Mountain, Moore's Early, Niagara, Worden.

BLACKBERRIES.

Briton (Ancient), Eldorado, Snyder.

STRAWBERRIES.

Varieties starred have imperfect flowers and must not be planted alone.

Bederwood, *Crescent, Clyde, Dunlap, Enhance, Gandy, Glen Mary, *Haverland, Lovett, *Sample, Splendid, *Warfield.

TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

Dunlap, *Warfield.

RASPBERRIES.

Black: **Conrath, Cumberland, Gregg, Older.**
Red: **Cuthbert, Loudon, Marlboro.**
Purple: **Columbian.**

CURRANTS.

Red: **Red Cross, Red Dutch, Long Bunch Holland, Victoria. Perfection.**
White: **White Grape.**
Black: **Lee's Prolific, Naples.**

GOOSEBERRIES.

Downing.

PEARS.

On account of the prevalence of blight and winter killing, pears are not generally recommended for Wisconsin. Good crops are occasionally produced under favorable conditions, especially in the southeastern part of the state. The following list includes both early and late varieties.

Anjou, Bartlett, Clairgeau, Clapp Favorite, Early Bergamot, Flemish Beauty, Idaho, Kieffer, Laurence, Louise, Seckel, Sheldon, Vermont Beauty.

TREES AND SHRUBS RECOMMENDED.

EVERGREENS.

For screens and windbreaks—Norway Spruce, White Spruce, White Pine, Austrian Pine, Scotch Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae, Red Cedar.

For lawns—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Red Cedar, White Spruce, Colorado Blue Spruce Austrian Pine, Scotch Pine.

For small lawns—Arbor Vitae, Savin Juniper, Mugho Pine.

DECIDUOUS TREES.

The more desirable ones are starred, and a further selection of five is indicated by double stars.

**American Elm, Box Elder, Black Cherry, Carolina Poplar, **Green Ash, *Hackberry, Honey Locust, Larch, **Linden, **Norway Maple *Scarlet Maple, **Silver Maple, *Sugar Maple, Scarlet Oak, *White Oak, White Ash.

DECIDUOUS ORNAMENTAL TREES.

This class includes smaller deciduous trees of more value for ornament than for shade or defense.

Crab (native), also Bechtel's double flowering crab, Cut-leaved Weeping Birch, Tartarian Maple, Ginnala Maple, Kentucky Coffee Tree, Mountain Ash, Weeping Willow, Russian Mulberry.

LIST OF SHRUBS RECOMMENDED.*

Scientific Name.	Common Name.
Berberis Thunbergii	Thunberg's Barberry
Berberis vulgaris	Common Barberry
Barberis vulgaris var. atropurpurea	Purple-leaved Barberry
Corylus maxima var. purpurea	Purple Filbert
Diervilla florida	Weigela (rose)
Diervilla candida	Weigela (white)
Diervilla hybrida	Weigela (Eva Rathke)
Diervilla hybrida var. Desboisii	Desbois Weigela
Eleagnus argenta	Silver Berry
Euonymus Europaeus	Strawberry Tree
Hibiscus Syriacus	Althea
Hippophae rhamnoides	Sea Buckthorn
Hydrangea paniculata gr	Garden Hydrangea
Lonicera Ruprechtiana	Ruprecht's Honeysuckle
Lonicera Tartarica	Tartarian Honeysuckle
Morus Alba var	Tea's Weeping Mulberry
Philadelphus coronarius	Mock Orange
Philadelphus coronarius var. aurea	Golden Mock Orange
Philadelphus inodorus	Mock Orange, large fl.
Pontentil'a fruticosa	Shrubby Cinque Foil
Prunus nana	Russian Almond
Rhodotypos kerrioides	Rhodotypos
Rhus Cotinus	Smoke Bush
Ribes aureum	Missouri Flowering Currant
Robinia hispida	Rose Acacia
Rosa rugosa	Japanese Rose
Sambucus nigra var. aurea	Golden Elder
Shepherdia argentea	Buffalo Berry
Spiraea Bumalda	Bumalda Spiraea
Spiraea Bumalda var	Anthony Waterer Spiraea
Spiraea Billardii	Billard's Spiraea
Spiraea Douglassi	Douglas' Spiraea
Spiraea Japonica	Japanese Spiraea
Spiraea salicifolia	Meadow Sweet Spiraea
Spiraea Van Houtte	Van Houten's Spiraea
Syringa Persica	Persian Lilac
Syringa villosa	Chinese Lilac
Syringa vulgaris	Common Lilac
Tamarix Pallassi Desv. (Tamarix Amurense Hort.)	Amur. Tamarix
Viburnum Opulus vr. sterile	Snowball

* From bulletin 108, Wisconsin Experiment Station, by F. Cranefield.

ROSES.

Hardy garden—Harrison Yellow, Persian Yellow, Madame Plantier.

Twelve varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquettes des Blanches, Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

Moss roses—Perpetual White, Salet, Paul Fontine, Henry Martin.

Climbers—Prairie Queen, Russell's Cottage, Seven Sisters, Gem of the Prairies, Crimson Rambler.

Five hybrid perpetual roses for the garden: Gen. Jacqueminot, Magna Charta, Margaret Dixon, Mrs. John Laing, Paul Neyron.

COMPARATIVE HEIGHT AT MATURITY OF DIFFERENT SHRUBS.

The height at maturity of the different species must be considered when planting in groups or borders. This will depend so much upon their environment that it is difficult to give the height in feet that any species may be expected to attain. When different kinds are planted under like conditions it may be assumed that relative heights will be maintained. The following may serve as a partial guide in planting:

Tall—10 to 15 Feet.

Barberry (Common)
Lilac, Common
Lilac, Japanese
Golden Elder
Lilac Jossika's
Honeysuckle, Fly
Mock Orange
Honeysuckle, Slender
Sea Buckthorn
Honeysuckle, Tartarian
Siberian pea tree (tall)
Honeysuckle, Tartarian white

Medium—6 to 10 Feet.

Barberry, purple
Crandall Currant
Silver Berry
Honeysuckle, Blue

Strawberry Tree
Japanese Rose
Spiraea, Billard's
Lilac, Chinese
Lilac, Persian
Spiraea, Douglas
Purple Filbert
Spiraea, Three-lobed
Rose Acacia
Spiraea, Van Houten's
Russian Almond
Weeping Mulberry
Siberian Pea tree (dwarf)
Wiegelas

Dwarf—2 to 6 Feet.

Althea
Spiraea, Anthony Waterer
Barberry, Thunberg's
Spiraea, Ash-leaved (Sorbaria)
Cinque Foil
Spiraea, Bumalda
Honeysuckle, Albert's
Spiraea, Japanese
Hydrangea
Spiraea, Meadow Sweet
Rhodotypos
Spiraea, Plum-leaved

A LIST OF NATIVE SHRUBS DESIRABLE FOR PLANTING ON HOME GROUNDS.

Scientific Name.	Common Name.
Arctostaphylos Uva-ursi	Bearberry
Ceanothus Americanus	New Jersey Tea
Cephalanthus occidentalis	Button Bush
Cimaphila umbellata	Prince's Pine
Comptonia asplenifiora	Round-leaved Dogwood
Cornus stolinifera	Red Osier Dogwood
Dirca palustris	Leatherwood (Wickopy)
Epigaea repens	Trailing Arbutus
Euonymus atropurpureus	Wahoo
Hypericum pyramidatum	St. John's Wort

Ilex verticillata.....Winterberry (Holly)
Juniperus procumbens.....Trailing Juniper
Myrica Gale.....Sweet Gale
Physocarpos' opulifolia.....Ninebark
Rhamnus catharticus.....Buckthorn
Rhus Typhina.....Staghorn Sumac
Rhus Glabra.....Smooth Sumac
Rhus copallina.....Dwarf Sumac
Ribes rubrum.....Wild Rose Currant
Ribes floridum.....Wild Black Currant
Rosa lucida.....Wild Rose (tall)
Rosa blanda.....Wild Rose (dwarf)
Rubus odoratus.....Purple-flowered Raspberry
Rubus Nutkanus.....White-Flowered Raspberry
Sambucus Canadensis.....Common Elder
Sambucus pubens.....Scarlet Elder
Symphoricarpus racemosus.....Snowberry
Symphoricarpus vulgaris.....Coral Berry
Taxus baccata.....Ground Hemlock
Viburnum lentago.....Sheepberry
Viburnum dentatum.....Black Haw
Viburnum acerifolium.....———
Viburnum opulus.....Bush Cranberry
Zantoxylum Americanum.....Prickly Ash

SIX SHRUBS FOR HOME GROUNDS.

The following are all reliably hardy in any part of the State:

Common Lilac, Tartarian Honeysuckle, Rosa Rugosa, Mock Orange or Syringa, Van Houten's Spiraea, Common Barberry.

THREE HARDY PERENNIAL VINES.

Ampelopsis or American Ivy (native in southern Wisconsin). Wild Grape, Trumpet Honeysuckle.

BLACK LIST.

A LIST OF SHRUBS ALL OF WHICH HAVE BEEN TESTED ON THE GROUNDS OF THE EXPERIMENT STATION AT MADISON AND FOUND UNSATISFACTORY.

Scientific Name.	Common Name.
Azalea arborescens	Rhododendron
Azalea viscosa	Rhododendron
Azalea nudiflora	Azalea
Azalea mollis	Azalea
Calycanthus floridus	Sweet-scented shrub
Caryopteris Mastacanthus	Blue Spiraea
Chionanthus Virginica	White Fringe
Clethra alnifolia	Sweet Pepperbush
Colutea arborescens	Bladder Senna
Cornus florida	Flowering Dogwood
Cydonia Japonica	Japanese Quince
Daphne Cneorum	Daphne
Daphne Mezereum	Daphne
Deutzia gracilis	Slender Deutzia
Eleagnus longipes	Goumi
Exochorda grandiflora	Pearl Bush
Forsythia suspensa	Golden Bell
Halesia tetraptera	Snowdrop tree
Itea Virginica	Virginia Willow
Kerria Japonica	Kerria
Ligustrum vulgare	Common privet
Paulownia imperialis	Paulownia
Prunus cerasifera var. (Prunus pissardi Hort.)	Purple leaved Plum
Prunus Japonica	Flowering Almond
Prunus triloba	Flowering plum (double)
Spiraea Arguta	Arguta Spiraea
Spiraea Thunbergii	Thunberg's Spiraea

The plants of certain of the above named varieties made a good growth each year but have not blossomed unless given thorough

winter protection. In this class are Bladder Senna, Flowering Almond, Flowering Plum and Golden Bell.

The Japanese Quince is hardy of bush but has not borne flowers except when given winter protection. The Goumi will only bear fruit when protected in winter. The double-flowered Almond will blossom freely if given thorough winter protection, otherwise it will kill back severely. The double-flowered Plum grows well and after a mild winter will bear flowers in advance of the leaves; unreliable, however, four years out of five if unprotected.

The others of this list have either died outright or else barely survived.

POISONS USED TO DESTROY INSECTS IN ORCHARDS AND GARDENS.

PARIS GREEN.

A well known poison used to destroy biting insects, as the apple worm, tent caterpillar, potato beetle, etc.

Formula.

Paris Green..... 1 to 2 lbs.
Fresh (unslaked) lime..... 1 lb.
Water ..... 200 gals.

One-half pound of pure Paris Green to 50 gallons of water is sufficient to destroy codling moth and other insects in the orchard and fruit plantation if properly applied.

Add ½ lb. Paris Green to every barrel of Bordeaux mixture and make a complete spray.

ARSENATE OF LEAD.

(A Poison for Biting Insects.)

This poison is better than Paris Green for the following reasons:

(1) It remains longer in suspension.

(2) It adheres better to the foliage; one thorough application being sufficient for the entire season.

(3) It may be used in any reasonable quantity without danger of injury to the foliage.

Use at the rate of 2 to 3 lbs. to 50 gals. of water or Bordeaux.

Add 2½ lbs. of Arsenate of Lead to every barrel of Bordeaux mixture and make a complete spray.

WHITE HELLEBORE.

(For Biting Insects.)

Used to destroy currant and cabbage worms and on fruits and vegetables where more poisonous substances cannot be used with safety.

Formula.

Powdered white hellebore..... 1 oz.
Water ..... 2 to 3 gals.

It may also be used in the powder form mixed with flour, gypsum, soot, etc.

BORDEAUX MIXTURE.

The Universal Fungicide. Not a cure but a preventive of fungous diseases.

Formula.

Copper Sulfate	4 lbs.
Fresh (unslaked) lime	5 lbs.
Water	50 gals.

Dissolve the copper sulfate in 25 gals. of water in one barrel or cask.

Slake the lime so as to make a paste which dilute to 25 gals. in another barrel.

The lime water should be strained to remove coarse particles which clog the nozzles in spraying.

Pour these two solutions together into a third barrel and the resultant mixture is Bordeaux.

Add 2 to 3 lbs. of Arsenate of Lead to every barrel and make a complete spray.

Caution: Use only wood, copper, earthware or glass vessels in making Bordeaux.

Stock Solution for Bordeaux.

The above formula and directions may be followed when only small quantities are used. When ten barrels or more are used at one application always employ stock solutions.

For example: Dissolve 100 lbs. sulfate in 50 gals. water.

Slake 100 lbs. of lime and dilute to 50 gals.

Then use the following formula:

Water	(approximately) 45 gals.
Sulfate Solution	2 gals.
Lime Solution	2½ gals.

LIME SULPHUR COMPOUND.

Home Made.

(From Bulletin 16, W. S. H. S.)

Formula.

Fresh (unslaked) lime	15 lbs.
Flowers of Sulphur	15 lbs.
Water	50 gallons.

Directions for preparation. In a kettle of at least forty gallons capacity heat twelve gallons of water. In a separate vessel mix fifteen pounds of sulphur with water enough to make a thin paste. Pour the paste into the heated water and when the mixture is near the boiling point add fifteen pounds of lime. After the lime has com-

pletely slaked, boil for one hour, stirring to prevent caking on the sides of the kettle. Then strain into the spray tank (or barrel) and add sufficient water to make fifty gallons of the mixture.

Lime-sulphur wash diluted as above is used only on dormant plants. Where large quantities are used a steam cooking plant is almost a necessity.

SELF-BOILED LIME AND SULPHUR.

(Bulletin 213, N. J. Agr. Exp. Sta., Sept., 1908).

"In this combination only the heat of the slaking lime is relied upon to unite it with the sulphur, and the formula is:

Lime, best quality	40 pounds.
Sulphur—flowers	20 pounds.
Water	50 gallons.

Place the lime in a barrel and dust in the sulphur with it, so that the two may be well mingled. Add boiling water enough to start a brisk slaking, and cover with a heavy blanket to confine the heat. Add hot water as needed to keep up the slaking and stir occasionally to aid the combination. Keep this up until the lime is fully reduced and mixed with the sulphur. Then let the combination stand covered for an hour to maintain its heat; afterward dilute with warm water to the desired strength and spray at once.

It should be remembered, in making all these mixtures, that enough heat is needed to melt the sulphur and bring it into combination with the slaking lime. It matters little whether the heat comes from a fire or from slaking lime or from caustic soda. For the mixtures made without fire, the water used in slaking should be boiling hot. If cold water is used the heat of the slaking lime is used up in heating the water, and not enough remains to combine the sulphur. It is only the sulphur in combination with the lime that acts as a scale-killer. The uncombined sulphur helps nothing and the surplus lime is a positive drawback, since it makes the wash too thick to penetrate well." (See also p. 129.)

COMMERCIAL LIME SULPHUR.

Concentrated Lime Sulphur compound is offered by several different firms.

The commercial product is a clear reddish liquid and is used by diluting with cold water.

SPRAY:

WHAT?	WHY?	HOW?	WHEN?			REMARKS
			1ST SPRAYING	2D SPRAYING	3D SPRAYING	
Apple	Scab	Bordeaux Mixture	Just before Blossoms Open	Just after Blossoms Drop	10 days after 2d Spraying.	
	Codling Moth	Arsenate of Lead combined with Bordeaux	Just after Blossoms Drop	10 days later	Last week of July or 1st week of August for 2d brood	1st and 2d Spraying same as 2d and 3d for scab; merely add arsenate of lead to Bordeaux
	Oyster Shell Scale	Lime-Sulphur	March or early April but before growth starts			Do not use Lime-sulphur on growing plants
Cherry and Plum	Mildew and Shot-hole fungus	Bordeaux Mixture 3—4—50	When leaves are about ½ grown	10 to 12 days later	10 to 12 days later	
Currant and Gooseberry.	Mildew, blight and Currant worm	Bordeaux and Arsenate of Lead	When leaves are fully developed	2 to 3 weeks later		
Grapes	Mildew and Anthracnose	Bordeaux	Before leaf buds open	2 to 3 weeks later	3rd, 4th and 5th applications at intervals of 2 weeks if required	
Strawberry	Leaf-spot or blight and leaf eating insects	Bordeaux and Arsenate of Lead	When first leaves appear	After blossoms fall		
Raspberry and Blackberry	Anthracnose and fungous diseases	Bordeaux	As above	2 weeks later		Spray new growth after fruit harvest

AN OUTLINE OF THE WORK OF THE WISCONSIN STATE HORTICULTURAL SOCIETY.

The Wisconsin State Horticultural Society conducts field work at sixteen different points as indicated on the map.

The work was begun in 1897 at Wausau for the purpose of testing the hardiness and adaptability of the different varieties of tree fruits in the northern or "cut-over" regions of the state.

These orchards comprise 55 acres and 5445 trees in addition to two acres of grapes.

The orchards at Wausau, Medford, Barron, Poplar and Maple are "Trial" Orchards, being for the purpose above indicated; the Sparta vineyard is also in this class.

The remaining orchards are located in sections where tree fruits are known to thrive and are designed as "Model" or demonstration orchards to show the best methods of culture, best varieties for market, etc.

An account is opened with each of the "Model" orchards with the confident expectation that a decided margin of profit will be shown at the end of 10 or 12 years. The orchards should then yield profitable crops for 20 years longer with but moderate expense for maintenance.

In these two ways the Society hopes to demonstrate the possibilities of fruit growing in Wisconsin.

The Society has recently undertaken the task of improving the grounds of the 7,000 rural schools of the state. (See 1911 Arbor Day Annual.) A comprehensive plan has been adopted and the first steps taken.

ADDITIONAL AIMS AND PURPOSES OF THE WISCONSIN STATE HORTICULTURAL SOCIETY.

Organized in 1865, being the legitimate successor of the Western Fruit Growers' Association, which was organized in 1853.

Chartered by the State of Wisconsin in 1871.

Purely an educational institution.

Its purpose the advancement of every branch of horticulture throughout the state.

Aims to accomplish this through publications, individual help and Conventions (two yearly).

Issues an annual report (250 pages) containing articles by experts on orchard culture, small fruit and vegetable gardening and the decoration of home grounds. Sent free to members.

Issues a monthly magazine Wisconsin Horticulture which is sent free to members.

WE ANSWER QUESTIONS.

Individual help is furnished through the Secretary, who obtains from reliable sources information on any horticultural topic. No charges for such services.

Receives an annual appropriation from the state for the support of the field work and other activities.

Extends an urgent invitation, a promise of help and the hand of fellowship to all who want to learn about the growing of fruit, flowers or vegetables; to all who love the beautiful in nature a hearty welcome is assured.

Cordially invites every person in Wisconsin who knows something about fruit, flowers or vegetables to become a member, as such persons are needed to help along the splendid work in which the Society is engaged.

D. E. BINGHAM,
President W. S. H. S.,
Sturgeon Bay.

FREDERIC CRANEFIELD,
Secretary W. S. H. S.,
Madison.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

ANNUAL SUMMER MEETING

OCONOMOWOC, August 17, 1910.

The meeting was called to order at 10 o'clock a. m., in the City Hall, by President William Toole.

The Invocation was offered by Rev. Mr. Hanks, of Oconomowoc.

ADDRESS OF WELCOME,

By MR. D. C. EDGERTON, Mayor.

Mr. President, Ladies and Gentlemen of the State Horticultural Society. In the two or three years that I have been the chief executive of this little city it has been my very great pleasure oftentimes to welcome gatherings to the city, and I do not know of any duty which falls upon the mayor which is more pleasant. I do not know of anything that is nicer for any of us to have in our own home than to have people come to see us, and the more they come and the better we get acquainted, the more we like it. A friend said to me some years ago when I was down at a bankers' convention that he thought he would stop going to conventions because he was getting the convention habit. I think I am getting the convention habit and I am getting it now because I have the pleasure

so often to welcome conventions to Oconomowoc. But it is a mighty good habit and I am not going to break it up. I never attended a convention yet of any kind that I did not learn something whether it was a convention of those that were interested in the same business in which I made my living or some other business but I always learned something. There seems to be something which pervades the atmosphere when men draw together with a common impulse to develop some idea which is in all their minds that is absorbed by everybody, that establishes a common sympathy, and for that reason I say that I do not want to get over the convention habit, and I hope that in your deliberations in our town you will find the surroundings and the country atmosphere in which you are going to live for two or three days so prolific of good ideas that you will be able, still better than in the past, to make two blades of grass grow where one grew, or more apples to grow on a stem than ever grew on a stem before.

I cannot think of anything this year which we could welcome so much as a convention that would show us that the earth does still produce things to eat. When we figure on the prices of things to eat and find that a bunch of beets costs quite a little more than it used to, we cannot help but be cheered up with such an exhibition as we have here today. We are constantly reminded while we are in this room that there is corn in Egypt. We are going to need it, and for that reason, among very many others which I shall not take the time to enumerate, we are glad to have you here. Our Business League, which is our "boom club" you might call it, takes charge of the entertainment and the needs of such conventions as this, and I believe that they have outlined a program for you which they will through their own representatives carry out, and once more I hope, while you are with us, you will feel so well satisfied with Oconomowoc that you will not only knit those friendships which should be knitted by constantly coming together year after year among yourselves, but that it will instill into your hearts a lasting friendship for our little city. Again I thank you.

RESPONSE

By President WILLIAM TOOLE.

Members of the Horticultural Society and friends of Oconomwoc,—It was with great pleasure that the executive committee of this society first received the invitation from our brother Melcher to hold our meeting here in Oconomowoc. You are all aware that each year we receive several invitations, it is for the committee to consider where we had better go so that the most good will be derived from that meeting, and I will say that we are moved to some extent by the pleasure we expect to derive from it as well. Some of us have knowledge of Oconomowoc, we have heard of its pleasant suroundings, and all of us were impressed with the idea that Oconomowoc was a good place to come to, Oconomowoc people good people to get acquainted with, and those impressions have been strengthened greatly during this short part of our stay here, and I am quite sure with all that there is in store for us, that we will go away feeling that we will be glad to come again.

In the meantime I wish that I could impress you with the idea that our society is bringing something to you. Perhaps we may not in to-day's papers bring out a great deal of wisdom, and it will depend upon the audience whether there will be brought out in the discussion much of value, but we hope that we may impress you with the idea that it will be of value to you to become members and look up our past volumes and come to know the history of our society. While we who reprecent our society here are quite young in years, yet we have a society that is old in its work, which has done a great deal for the state of Wisconsin. We are quite satisfied, with a membership scattered over all the state, with horticultural ideas that have been broadened as we have been able to observe, that our Horticultural Society has done a great deal to help boom Wisconsin, to help enhance the value of real estate in different parts of the state. Looking into details, I am quite sure that we could prove with figures that are correct, and we want more of this good work. We want not only to benefit

you, but we want you to benefit people in other parts of the state, so that I hope it will be here as with other places, that when we go away we will have strengthened you through a membership in our society, and that you will strengthen our society through your membership.

THE CONSERVATION OF THE CITY DWELLER AND THE GARDEN

C. B. WHITNALL, Milwaukee.

The value of the garden is too seldom appreciated excepting as it may be measured by money. Such a measure indicates its importance to mankind but partially.

The money value of flowers is based on the strength of our natural yearning for them. When so situated that we cannot help ourselves to them. Where some one has been delegated by Mammon to stand between us and our instinctive desire to exact compensation and tribute for such natural influences. This is too true of all large cities, there is not enough there to go around, and many of us go short.

The reason we like flowers is that they are the ecstacy of the regeneration of vegetable life on which we are dependent. It is the same love we have for our mother—one brings us to life, the other sustains us. Our creator and our sustainer appears to be one and the same power.

When we examine into the lower stages of life, it is found difficult at times to tell whether the structure is animal or vegetable. Following upwards there is a separation and it becomes quite easy to tell which is which, but we find that both continue to be as interdependent as when all functions were contained in the one structure. And when animal is deprived of functioning with vegetation disease is the natural consequence.

Vegetative influences, not only of diet, but for environmental effects, are as necessary as the blood in our veins—in fact our blood could not be cleansed but for vegetation—influence on the atmosphere.

Although many of us do not stop to reason nature's clever arrangements to the desired understanding of them, it takes a small amount of serious reflection to convince us that vegetable life is virtually a part of our life.

Man, having grown together with flowers and fruits, (which are simply further developed flowers), for so many generations, we have come to see and feel their influence instinctively—nature's incessant care of us, made reasoning unnecessary. We have crowded into cities, denying ourselves or ignoring these vegetative influences, for the most part unconscious until we wake up to realize that we have been sacrificing health for dollars.

It is the unsatisfied love that has brought into service the Wisconsin Horticultural Society. It is the business of this society to gratify mankind's love—love for flowers and fruit which is not essentially different from our love for each other—when you come to dissect love. You may be excused for not being able to distinguish love or draw a definite line between love and selfishness. This may sound queer to some of you. You may dispute it, but you will have a job on your hands to prove the assertion entirely wrong.

You will all agree to this,—we do love flowers and fruit, and you must admit that we cannot live a natural life without them.

Our Indian didn't have a Horticultural Society. He didn't need one. He obeyed the dictates of nature, and nature makes horticulture a business.

The so-called progress of civilization appears to have been actuated by the desire to get something for nothing. This has forced a division of labor with its consequent development—an occasional sacrifice of first one attribute to our well being, then another, until now we have one-third of our population crowded into large cities, where deterioration is universal, where the third generation of city born are more or less degenerate, where the race would become extinct were it not for new blood injected from fruit laden and floral decorated environments. This is a fact borne out by statistics. A thorough study of the matter requires its consideration from three aspects—the physical, the sociological and the economic. It will be in order today to consider the physical only. The more beautiful the land-

scape, as measured by our initiative sense of beauty—with flowers and fruits in more or less perfection,—the better will the atmosphere be for animal life—we cannot have pure water or utilize sun-light without them.

Atmosphere, water and light are the three God given forces which, if withheld, or diverted from universal use, cause pestilence.

It is the crippling of vegetative functions of which the tree is the dominant factor—that is leaving our city dwellers in distress. Although we have much to say about good or poor land, let us not overlook the fact that our vegetation absorbs about 90 per cent of its material from atmosphere, chiefly noxious gases, which if left in the atmosphere, as is common within the confines of our large cities, we slowly starve, just as we do by insufficient or adulterated food for our stomach. On the other hand, if vegetation does not have this impure atmosphere to cleanse for us, it also takes on a sorry look. We do most of our talking about the elements that are visible, when we take elements from soil without returning it. We see the results and say the land is exhausted and call it poor. These chemicals have been measured and given a commercial rating. I am told that in Germany it has been agreed that the elementary land value in sewage is $2 a year per adult. According to this Milwaukee is dumping $500,000 in its pond of drinking water annually. Yet some of our business men declare that if the Socialists undertake to stop this waste, we will bankrupt the city. Surely there are no members of this Horticultural Society that does not know that Wisconsin's rate of productivity is being lessened.

But do they all realize that a corresponding depletion of humanity is taking place? The waste of one causes the waste of the other—like the positive and negative poles of electric forces, there is an endless circuit or vibration of the elements between the animal and vegetable forces which, if interrupted, causes deterioration, we call disease.

We are civilized in Milwaukee as well as other large cities. That means we have assented to rules of the game regardless of results in physique and morality. In spite of this we have agreed that cleanliness is necessary for safety.

But what is cleanliness? Many of us do not know. But we

have learned what it looks like, and we have undertaken to deceive the laws of nature by keeping up appearances. We put our filth out of sight—run sewers underground—into rivers—kept receptacles in back yards and alleys. Yet we arrest a man for carrying a concealed weapon, and allow him to live in a room without sunlight. We cannot break natural laws and escape. To keep clean means to feed to or return to vegetation promptly all animal waste. There is no other way. The land, the garden, if you please, is our only safeguard.

I have spoken of the tree being the dominant factor in vegetation. While it may be permissible to call it dominant, how helpless it is alone. Strange as it may seem, the average farmer appears to be as heedless of the fact as the city dweller. Notice how quickly nature covers up with shrubbery and flowers a gap in the wood, to keep out the drying winds. Notice how spraying becomes necessary when the natural floor covering and wind breaks are not maintained around our fruits. If our hills are not kept covered with trees, shrubbery and perennials, the level or lower fields will suffer for moisture. The attempt of the modern Horticulturist to ignore the natural companionship or co-operation of various plants is one reason why we are fighting insect pests. There is a vegetable sociology as well as human. There is an interdependence between the classes of vegetation as well as between vegetable and animal.

I feel that humidity is the most important factor in horticulture or agriculture that may be considered as being within our control—and our control comes within the functions of applied forestry. Now in view of these statements or assertions, let us consider the city dweller and the garden. The city dweller has become a machine attachment diversed from the garden. The division of specalized labor has increased our producing capacity. But a man who keeps doing the same work from Monday a. m. to Saturday p. m., stops thinking, activity of mind is impossible—like the non-use of a muscle—his thinker loses power. Therefore while factories have grown larger the average mind for a while deteriorated.

This fact, together with the devitalizing environment, in which his home and labor is situated, puts him in a sorry plight. He has been going to pieces. This is why Great Britain has lowered their army standard of humanity for the third

time—and why Germany has been replatting her cities, and is now devoting so much time and attention to land utility for physical security.

It is why Milwaukee is now establishing its first Agricultural School of which we want three right away. It is why the city dweller's ranks are constantly replenished by fresh blood from the agricultural districts. It is why 80 per cent of the controlling energy of our cities was born on the farm. In short, it is why the land worker is destined soon to become the power and brains of our country. Our modern captains of industries and finances are proving their narrow minds and near-sightedness to have been entirely wasteful of our natural resources and humanity alike.

Of course, much of what is required for the restoration of normal conditions cannot be accomplished by individual effort. The individual finds himself handicapped by conditions over which he, as an individual, has no control.

The city and state must accept the responsibility for conditions which the city creates. *But,* the city is made of the individuals who in themselves must direct, and it is therefore incumbent on ourselves to acquire the personal experience necessary for intelligent control.

The fundamental basis for a higher and better living, therefore, is the individual garden experience. It is really astonishing what influence over a whole family can be acquired by getting the children interested in gardening a piece of ground twenty-five feet square.

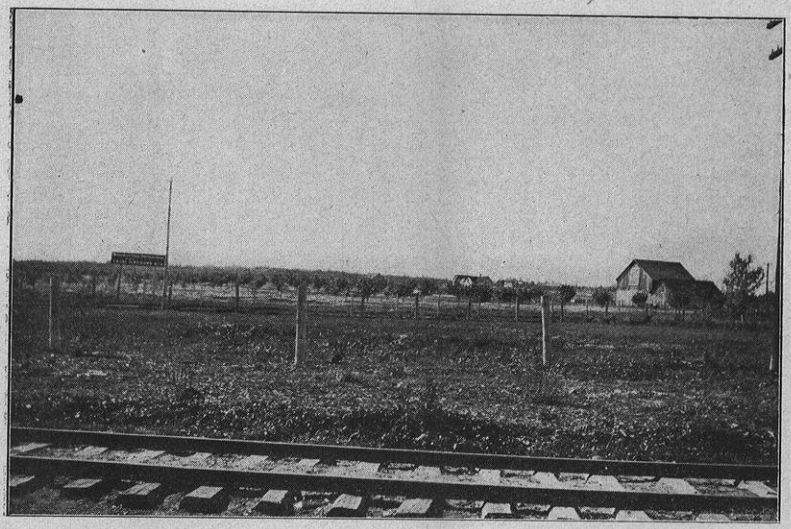
There is the economic value of such a garden—it is very attractive to house keepers.

Then the pleasurable exercises of all the faculties—there is no occupation that utilizes all your knowledge, be it much or little, like garden work. It is nature's laboratory that is sure to exercise your intelligence.

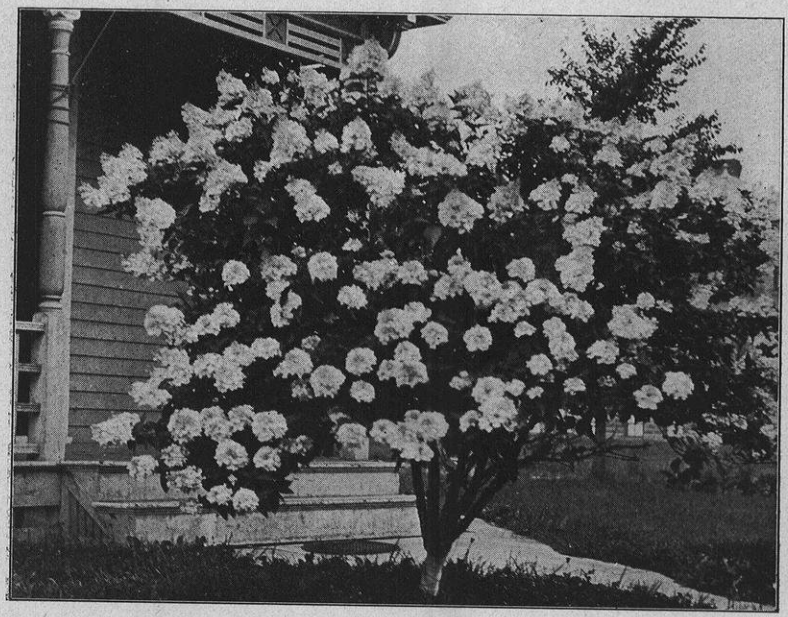
The success of the garden necessitates the combined physical and mental exercise under atmospheric conditions that builds healthy bodies.

The school garden is by far more important today than commercial trickery.

Children take it as natural as a duck to water. To punish a truant is like poisoning an invalid.



Our Poplar Orchard, October 4, 1910.



Hydrangea; Barron, Wisconsin, August, 1910.

Gardening is the never-failing cure for truancy, because it fills a gap in our city life for which every soul yearns.

The garden is the only leverage that can lift the city dweller into normal activity.

The intelligence to manipulate the leverage will be forthcoming from the cultivators of vegetation, whether they be called horticulturists, agriculturists or foresters—it matters little. They are simply divisions of the one great garden of our inheritence of which we must be the care-takers—individually as well as collectively—in order that we may breathe well, eat well and work to advantage.

DISCUSSION.

Mr. Irving Smith: There is one thought which occurred to me while the paper was being read about the city garden that it seems to me we, as a horticultural society, ought to take up in full, and that is, to give the people some idea of what can be done with, as was suggested, 25 feet square of land, or perhaps a smaller amount. If quite a number of us would take a little plot of ground and cultivate it intensively as a kitchen garden, keep an exact record of what is produced on that, to give to the city man or woman some idea of what their back yard is really worth, in pleasure as well as kitchen products, I think it would help considerably towards encouraging the work in kitchen gardens in towns. I heard for instance only a few days ago an Ashland man who has a little piece of ground in his back yard say that the amount of stuff grown on that ground supplies himself and all his neighbors around. There is a sample of what one man did on one of the principal residence streets of Ashland, and many of us can do that, and if we would give some detailed information as to what can be done and how to do it, I think it would be of advantage.

The President: I think it would be well if our society were in touch with those who have had experience and have made a success along these lines, and we would be glad if any one who has had such experience would pass it on.

Mr. Gouzenbach: If you gentlemen come to Sheboygan we will give you a practical illustration of the small garden and the possibilities of it. If the Horticultural Society wants to

get data, there will be at the end of this season a lot available. I happen to be at the head of the street railway system, and we have thirty acres of land lying idle. This year we plotted that into quarter-acre tracts and gave it to our employes free of charge. Every employe must keep his garden in good condition and we give prizes. At the end of the season prizes will be given to the men that can produce the largest variety; another for the most in money value. There are about forty or fifty gardens, all of them averaging one-fifth of an acre.

Mrs. Richardson: I happen to have some figures in regard to a garden I had two years ago which I think are really valuable, I will be glad to give them. I was given about a half-acre of ground and was told to do what I could with it. I was very fond of such things and kept a strict account of everything that was grown on the place. Perhaps there might have been a little more than a half an acre in the garden plot, and the expense of having the garden plowed and spaded and the cost of seed and the extra tools that I had to buy—very few indeed, as I took a place that had a garden on it, old fruit trees and currant bushes—was only $15.65. I charged up all the vegetables used for my tables and canned for the winter, potatoes that I put in for the winter, and what I could not use I sold to the neighbors, and, figuring everything on the basis of what it would bring in the market, I made $104.15 clear.

The President: That is something practical. We are glad to hear of such experiences.

Mr. Edwards: I believe one reason why we are so slow to speak on the question is that we had such a dry season that our returns from our gardens are small. I had a neighbor right across the street that has irrigated his garden, a very small patch of ground and has had wonderful returns. I do not believe that we can overestimate, but we are apt to underestimate the value of gardens to the people of our country. Of course it is in our hands how much we accomplish with our garden.

I was much pleased with one part of the paper in bringing the attention of the people to agricultural success. The time is past, I believe, when the boys should leave the land. The subject is "Back to the Land." That is the foundation of all our operations, and if we can teach the children to love the

soil, the tillage of the soil, it is a great item. The best crop that we raise in the country is our boys and girls, and the first task that we have on hand is to direct their efforts, and this is an important question, of how to lead them to see that there is a profit from the soil, in the garden and elsewhere, and teach them the idea that it is the most noble occupation that there is.

Dr. Loope: One thing that appealed to me was the reference to forestry and its effect upon the whole land, and it is no use for us to raise the boys and girls if we go on and destroy all the prospect that they have and leave the land a semi-arid country. The question of forestry is the burning question and I believe that that is the coming question that determines really the progress and welfare of the country. Our generation has destroyed most of the forests; we have therefore taken off the face of the earth the possibilities that were really inherent in the soil. Our children are going to suffer just that much and we are now, this year, tasting, not the delights but the sorrows of a semi-arid country. It is a burning question in my mind, and far beyond the mere gardening where you can irrigate. There is not any question but what, if we can re-forest the country that you can get plenty of rain for your gardens and get the best kind of gardens, but this year it has been impossible to do anything.

THE CITY MAN ON A SMALL FRUIT FARM.

By Mr. G. W. REIGLE.

This theme in all of its varied aspects is decidely common and vitally important. It is so common that when a speaker arises to address an audience on the general subject of farmlands in specific outline he realizes that much is expected of him and that the multitude remain to listen through cultivated politeness only. Something novel is wanted. Some new discovery is looked for by which honest labor with one's hand and brain may be reduced to an infinitesimal quantity. It might be said in passing that the trick of deceiving dame na-

ture whereby she is forced to bestow generous returns without labor and compensating values is yet to be discovered.

I fear therefore that before I finish this tedious history that some of you will have urgent business outside this hall while those who remain will liken the speaker to two musical instruments mentioned in holy writ, viz: "Though I have the tongues of men and of angels and have not *ideas* I am but sounding brass and a clanging cymbal."

For many generations there has been a movement from the land into the cities and a counter current of humanity from the cities to the farms. During the past few years, however, the rush for farmlands has been greatly augmented by the very high prices of farm products and by the oft-times selfish activity of none too honest real-estate agencies; reporting exceptional yields which might not recur in a life time or publishing statements and data which an expert only can attain has already given rise to discontent whereby comfortable homes have been sacrificed, snug little bank accounts have been swallowed up in the vortex of rubber plantations, banana groves Florida and Saskatchewan cheap lands and the glitter of the golden mountain sides and green valleys of the Pacific border.

Inoculating any man or woman with the poison of such discontent is being guilty of the blackest crime. There are hundreds of cases throughout our fair land where this accusation needs no qualification whatever. There is however a *bona fide* opportunity awaiting every man whose wages range between $40 and $70 per month. He must be able to think for himself and be able to plan and bring to a successful termination minor undertakings; but he who cannot work unless he is stationed at the tail end of a thrashing machine where he must work or be buried would better stick to his mule driving at his Ten a week.

The city man from clerkships and other occupations where clean hands and clothing are requirements will not take kindly to soiled hands, dirty shoes, and spotted linen. The odors of the cow, the horse and the barnyard will offend his delicate olfactory organs.

The wife on the farm cannot command an army of delivery men to lay at her feet in the kitchen all the necessities of living.

But the children—God bless their little hearts—are just where the Supreme Intelligence intended they should be born

and reared. The farm surroundings are their native element. The pure air and sunshine the blue sky, the babbling brook, the birds, the growing vegetation and the every day home duties contribute wonderfully towards developing that mental, moral and physical fiber so much desired in budding manhoood and womanhood.

No longer may Mr. Newfarms arise at 7 a. m. No longer eight hours a day. Now eighteen hours will be the limit while the scalding sun is hazing him. The hail may pelt him and the bugs will surely bite him and his neighbors will wish to borrow his tooth brush and his safety razor.

Remember that this is Mr. Newfarms first year. Nothing comes his way except an enormous harvest of disappointments. In fact he is simply reaping the harvest of ignorance and inexperience which every freshman must endure or quit the game. It is nothing but hard work six days every week and continuous labor on the seventh.

His club life for the present must be suspended. The church will be remote, the public school will be small and inferior judged by present day standards.

Mr. Newfarms gives the orders now and his help must obey. This situation is agreeable but strange to him. He will now learn independence of thought and action. His mistakes, by thoughtful consideration, may be transformed into partial successes; daily contact with plant life will reveal many secrets of nature whose vital forces he will learn to control, resulting in health, wealth and happiness to himself and his family.

There is one commendable virtue Mr. Newfarms possesses which makes him shine like a morning glory in comparison to old Buff Whiskers who lives just over the wire fence on a 640 acre farm. Mr. Newfarms can tell you to a farthing whether his half-acre of strawberries were more or less profitable this year than last year. He can tell you whether the currants were marketed at a profit or loss and how much. Now if you ply old Buff Whiskers with a series of like questions for exact information relative to the farm crops he is growing, his stereotyped reply is apt to be that "I reckon I am a little somethin' ahead every year for I have lived right here nigh unto forty year and I have about forty dollars in the savin' bank."

A thirty acre farm having ten acres of woodland situated

near his home city on a main highway would make a large fruit farm and an ideal home for our fruit grower from the city. To learn intensive fruit growing on this farm; to stand out in the open without dodging or trying to hide behind his own monumental ignorance when the grape and canister of nitrates and phosphates and Bordeaux and lime-sulphurs are shot at him by the professors of the experiment stations will require all the nerve our city man can assemble.

And should he escape death at the hands of the blood-thirsty professors and get away by sailing out to sea Mr. Newfarms will there be doomed to shipwreck and a watery grave should he allow his life boat to be caught in the doldrums of a dubious dalliance.

Seriously, is a failure under the blue dome of heaven more humiliating than a failure in the midst of your unsympathetic rivals who have long been conspiring against you?

Mr. New farms should begin on a moderate scale and increase his plantings as he discovers on what fruit his home market is short.

Fifty trees each of apple, plum and cherry will make a respectable beginning in trees. These may be supplemented by planting 300 hardy grape vines, 100 bushes of currants, 100 each of red raspberries and black raspberies, and 50 Downing gooseberries. Plant one-half acre of strawberries and one-eighth of an acre each of rhubarb and asparagus.

For advice in regard to the planting and the culture of this garden I will refer you respectively to the distinguished gentlemen who have a prominent part in this programme, to the bulletins of the U. S. Dept. of Agriculture, to the bulletins published by our own experiment station and the experiment stations of other states. I must not omit the annual report of the Wisconsin State Horticultural Society and free bulletins issued by the same society. In addition to all these aids the secretary of our society, F. Cranefield, Madison, Wis., conducts a free correspondence course in relation to all questions horticultural.

A new periodical will soon be launched by the Wis. S. H. S. in which the very latest discoveries in the great fields of horticulture will be disseminated.

Where circumstances will permit it is advisable to plant in

long rows so that a horse may be used in cultivation. Mr. Newfarms should provide for family use two good cows, a pig and a flock of hens so that all waste about the farm may be utilized.

An aggressive colony of black bees might be added. These will at odd spells help Mr. Newfarms to forget some of his other troubles.

There are only two fundamental truths or prinicples underlying this business:

1. Production at the lowest possible cost.

2. Distribution to the consumer at the highest market price.

Quality and appearance of fruit and package will bring the highest market price. My own experience is that it is easier to produce A1 fruit than it is to collect from grocer or consumer the maximum price. When a man's dignity prevents his selling a private customer a dozen of the freshest eggs for twenty-four cents while his grocer will allow him only eighteen cents in trade you see we have an exact measure of that man's dignity. It is worth just 33 1-3 cents on every dollar.

The idea then to strive for is the largest crop possible without allowing the quality to fall below the best. Having the best in the market you will command maximum prices.

In summing the situation I will offer the following advice:

1. In middle life, without capital, do not leave a good city business for an uncertainty on any farm.

2. If you feel you are lacking in initiative do not leave a salaried position for the farm. Initiative means the ability to do the right thing at the right time without being told.

Cor. 1a. Let the sissy sizzle in silence in the sickly city.

3. My city neighbor, if you have brains, the fruitfarm offers you the gradest opportunity of your life to exercise them bringing to you commensurate returns.

4. There is easy money raising good fruit affording a delightful occupation, a table with most wholesome food and brings you in personal contact with the best families.

5. Many a laborer in factories, stores and mills has prolonged his life ten or fifteen years by moving onto the land where the virtues of out-door exercise have wrought their miracle of healing.

6. We need more horticulturists in the field and fewer make-believe horticulturists in real-estate offices.

7. Horticulture is the most healthful, the most useful, and the most noble employment of man."

THE CANADA THISTLE.

Mr. Babcock: I feel moved to make a remark which has occurred to me from my observation around the state of Wisconsin that there seems to be no real effort made to control the Canada thistle. I would like to get information in regard to the law in Wisconsin in regard to cutting and preventing the spread of Canada thistles. In my travels I see so many fields left neglected, enough to seed not only Wisconsin, but a good many other states.

The President: Perhaps Mr. Reigle can tell us about the law.

Mr. Reigle: I will not take the time to speak in detail with reference to the law on that point, but there is a very complete and just law regarding the control of the Canada thistle, and there is provision made in the law for a Canada Thistle board, a law that, so far as I know, is not being enforced through the state at all. There is abundant law.

Mr. Palmer: The way it is enforced in our section of the country is this. There is a little clause in the law that gives the town a chance to vote on the question of whether they shall have a weed commissioner appointed, or the road overseer shall act as weed commissioner, and they naturally say the road overseers shall act, and the road overseers simply forget to act and it does not cost the town anything.

Prof. Moore: Any communications in regard to the weed laws should be forwarded to the attorney general, or Prof. A. L. Stone of the Experiment Station.

WHAT THE CITY MAN OR WOMAN CAN ACCOMPLISH RAISING VEGETABLES.

By Mr. WARD DAVIS, Oshkosh.

(Read by Mr. Christensen.)

The question as to whether a city-bred man can succeed at market gardening is one that has many sides to consider. A man that has a natural longing for contact with Mother Earth and does not have too many obstacles in his way to work against him, ought certainly to succeed, while a man whose one desire from his boyhood has been to work about and study the plants, seeds and trees that God has given to beautify the world, need not question for a moment whether success shall crown his efforts or not.

The first thing needful then is perfect harmony between the work and the worker. There are many men who desire a change from city life to the farm but a large number of these are probably better off where they are. Any strong, energetic man need not hesitate on a change to out-door life, all other things being equal.

There are so many things to consider as being advisable or not that it is difficult to know which will reach the needs of the most people. Each person has his own peculiar hindrance that no one else seems to have, so experience must teach each one a great many things that cannot be learned from books or even from the experience of others.

A man that had saved about $2,500 could make few better investments than buying a ten acre farm near a city of 30,000 inhabitants or more, and make his future work that of market gardening. Ten acres near a city of this size can usually be bought for about $3,500 (buildings included). By paying $1,500 down the balance of a $2,000 mortgage with interest at 5 per cent can very easily be handled. $1,000 will be needed for repair, outfit, etc.

A complete outfit should consist of one heavy wagon for hauling manure, hay, etc., one large market wagon and one

small one, 1 plow, 1 seven tooth and 1 fourteen tooth cultivator, Planet, Jr., seeder and hand cultivator, 1 harrow, 2 horses and one cow. A windmill and tank are also necessities to the successful market gardner. A good well—one that cannot be pumped dry—is one of the first things to consider.

The expense outside of living, after everything is bought, until the mortgage is paid off would thus be about $150 per year, including taxes, insurance and other incidentals.

This condition of affairs with a fair crop and fair prices would in a short time pay off all debt. It is hard to advise just what vegetables to plant for a crop. So much depends on the nationality or class of people residing in the city. For the average city, however, a liberal supply of all the common vegetables and a few of the more uncommon ones as an experiment. The more particular crops raised around Oshkosh are cucumbers, tomatoes, peas, beans, corn, carrots, beets, celery, potatoes and cabbage, while a limited supply of lettuce, radishes, cauliflower, peppers and egg plant are grown. If the soil is suitable I should say by all means to add small fruits, the strawberry and the red raspberry being the most important.

There is a good market for black raspberries, blackberries, curants and gooseberries at present.

The soil for the ideal market garden should be composed of at least two kinds, a black rather sandy loam and two or three acres of medium heavy clay. The berries, tomatoes, peas and beans may be raised on the clay while the balance do better on the lighter soil.

In choosing a farm, it is not best to buy a place on a hill if one can be had on lower land with perfect drainage. Lower land will always average a better crop if properly drained.

While at first thought a change from city or factory life to country life sounds good and seems to have a pleasant outlook, yet there are always many things that a man never on a farm fails to consider. First he should realize that he will have to work hard. There is no occupation that demands as many hours of labor for success, as market gardening. There is always a danger of crop failure and one must make up his mind not to be discouraged.

Another important thing if the man has never done anything in horticulture is that he must realize that he knows little or

nothing about the work upon which he is about to engage and must be willing to learn and be told things by those who have had experience. Again he must not try to do more than he is able for a year or two. It will pay in dollars and cents to take things rather slowly for a while and branch out gradually. A person will be all the better for it and nothing will be lost.

The question as to whether a city-bred man will be able to make a living comes up. A man with a small capital and a family that is a help ought to have no trouble. A man that can have a little help from his family at weeding and berry picking time will have things much easier and has a bright outlook before him. Not only should he make a living but it need not be long before he will have a bank account from the proceeds of the garden.

Two plans as to raising a crop of produce appeal to me as wise and profitable. I have tried the first but think the second one as good if not very much better. The first is growing a little of everything and the other is specializing.

Each plan has its own advantages and disadvantages. In favor of the raising of everything I would say that if one makes the trip to town every day, he can have a good load each time during the whole season and also if one crop does not turn out as expected some other one will.

Against the first plan—There are so many things that come at the same time that one can not do justice to anything at the time it ought to be done. I will give a list of fruit, vegetables and the proportions grown on a ten acre farm near the average city.

One acre each of strawberries, cucumbers, tomatoes, early and late, cabbage and celery; one-half acre each of peas, sweet corn and potatoes; three-fourths acre each of onions, red raspberries and beets and carrots for bunching. This leaves one and one-fourth acre for gooseberries, currants, beans, winter onions, asparagus, lettuce, cauliflower and turnips.

A second crop may be grown after many of those just named, corn and celery can be planted after the strawberry bed is plowed in July. Cucumbers or corn can be planted after the peas, by putting in the seed about two weeks before the vines are ready to pull.

Sow a cover crop of rye on every bed not in use as soon as

the crop is off. Turnips, radishes, spinach or lettuce can be sown after any crop up to August 1st.

For the crops of the second plan I would suggest that a bed of pieplant, one-half acre in size be started and kept in good condition. The earliest vegetable in the spring is the winter onion; one-half acre of these is enough. Before these are gone the asparagus will be ready. One can handle about one acre of that. Strawberries, two acres; red raspberries, two acres; cucumbers, one acre; tomatoes, melons and celery, each one acre. This gives a succession of fruit or vegetables the whole season.

In favor of this plan I would say that one can take care of a large piece of any one thing easier proportionately than he can a small one. The quality will be much improved by being able to look after the one thing when it needs looking after. The merchants also get the habit of looking and waiting for the man who has a lot of one thing when it is of good quality. It is sometimes as easy to sell a whole load of strawberries as it is to sell a dozen cases.

There is, on the whole, less to be said against this plan than the first one.

Growing crops in this way, especially if the soil is second cropped, a lot of goodness in the soil is taken away and a large amount of fertilizer is needed to give back to the land the strength that has been lost.

Commercial fertilizer or stable manure must be used. Whenever it is possible to get the manure it is usually advisable to use that in preference to commercial goods. It keeps the soil in better condition and is a constant benefit.

Hotbeds is another part of gardening which the city man will need to experiment with before he is able to manage successfully. When once learned it is very profitable as the bulk of the work comes at a time of year when the gardener is not quite as busy as he is later on.

A man may be discouraged from trying the market garden business by others who say that it is overdone now. This, however, is not true. The more gardeners there are the more produce there will be sold, but the main point in a true up-to-date successful gardener is quality. A man who seeks to make every vegetable or every box of berries perfection is the man

who is going to keep at the top and ahead of his competitors. Sharp competition is the best thing for garden and fruit farming as in everything else. Someone will come out ahead and it will be the man who brings the best goods to market. He not only will be able to sell them more readily, but will receive as a rule higher price to more than repay him for his extra painstaking.

I would advise any man to try gardening if he intends putting his whole soul into the work and has a genuine love for that particular kind of work. If he has not, there is little use to try.

DISCUSSION.

Mr. Gonzenbach: Is that paper based on actual experience?

Mr. Christensen: Yes, I am quite sure it is from actual experience. The man is on a ten-acre farm. He wrote that paper on the place which he describes.

Mr. Reigle: I would like to inquire how many men it takes to do the work on that plat?

Mr. Christensen: There are two men the year round, one or two extra men during the busy season.

Mr. Kellogg: I cannot see why the busy season does not last about nine months. I should think you would want a man to the acre, certainly, to take care of the things and do it up right. I can employ one man on a city lot right through the season, and I do not know that I would make any profit out of it, might have some satisfaction. I would like to see the facts and figures brought out; what was planted, what it cost and what the profits were. We want the practical side of this question, the dollars and cents applied to the acre. If a man has not any love for the business he had better keep out of it. There is one mention made here of an easy time; I do not know anything about where the easy time comes in if you go into horticulture.

Dr. Loope: Mr. Rasmussen is from the same locality where this paper came from, and he knows all about the business, because he is in it. He knows how much help it takes, and all the details. I would like to hear from him.

Mr. Rasmussen: I raise a great deal of sweet corn. If I only

had ten acres I would always want two acres of alfalfa to better the land with, and I think on that acreage my hired help would amount to about between $1,500 and $2,000. We have as high as five men, besides boys. I could have given you the exact figures if I had expected to be called upon, but I have not got them with me. Last winter I think I did state about what it cost to market an acre of tomatoes. This year I have taken two crops, and have kept an account of labor, both men and horses and cost of packages, but it is not far enough along yet to give figures. But on a ten-acre tract that is all garden, it would take $2,000 to hire help, including board.

OPPORTUNITIES FOR CITY-BRED PEOPLE IN DOOR COUNTY.

By A. L. HATCH, Sturgeon Bay.

The continued success of cherry culture at Sturgeon Bay is now attracting wide-spread attention. With a good crop harvested this season and with apples and plums "standing up and doing business," it is evident there is something in Door County quite different from that found in most of the country where fruit growing has fallen down so completely this year. During the last eight years our cherry orchards have produced cherries by the car load, giving good crops every year. When it is known further, that behind this we have a record of forty years more without loss of our orchard fruits by spring frosts the situation contrasts so emphatically with what so often occurs in the rest of the country that many intelligent men who are well informed in fruit growing are not only "sitting up and taking notice," but are investing in lands and planting orchards in Door County.

What are the conditions that make this region contrast so sharply with the rest of the country? Are they reliable and permanent, and do they constitute "Opportunities for city bred men?" What opportunities does he want? In discussing

these questions I shall assume that he wishes a place to establish a home for himself and family and where he can get a living. Home building and getting a living are surely the most important of all employments, and I deem it very appropriate to limit my essay to fruit growing in Door county as a basis of home making and getting a living. This basis must be one to furnish the revenue, the money, necessary for the objects. Granted that Door County can produce the fruit better than other regions, can it be done profitably, will it pay?

To answer these queries in the order stated let us first consider the condition of climate and soil that makes the Door County peninsula possess such marked advantages for fruit culture. The modifying influence of the waters and ice of Lake Michigan and Green Bay gives the peninsula a cold, backward spring. It is generally considered that this retards bloom until frosts are over. The fact is, rather, that it prevents a rapid, tender growth that would not be sufficiently hardy to endure subsequent frosts. Further south there is too little steady cold, fruit trees burst quickly into bloom with the advent of warm days, and the tender growth succumbs to subsequent frosts. In Door County the buds come on very slowly; often it is several weeks from the time they first swell until full bloom. During that time they strengthen and become hardy. Further south what we consider hardy vegetables like the cabbage, the onion, or beet are sometimes destroyed by frost on account of their rapid, tender growth. In the fall of the year we have another effect of the waters which so modify the temperature that there is a long time when frosts are not severe enough to destroy the leaves, but allow them to continue their work to the fullest extent, ripening the twigs, storing surplus food for spring use, hardening and perfecting the buds. Thus our climate helps at both ends of the season. Fruits of this region are fine keepers and good shippers on account of the climate, and this is a valuable factor in commercial fruit culture.

The soils of Door County suitable for fruit culture are of such a nature as to produce the "bearing habit" in a very striking degree. When I first visited the county in 1892, in company with that splendid Christian gentleman, the late Prof. E. S. Goff, we noted this effect of the soil and climate upon the bearing habit of fruit trees. They were noticeable for the crops

they had borne, and their disposition to keep at it. On an apple tree I found a fruit spur that had borne seven times. To-day you can go in our cherry orchards and find branches with five and six feet of fruit buds, thickly and continuously set along their length. Our fruit trees bear quite young. Cherry trees four years planted often yield sixty or eighty crates per acre. Just as soon as we can grow bearing wood with properly formed fruit spurs we get fruit. On the rich prairie soils of the Mississippi valley states fruit trees do not form the bearing habit until much older, nor is it then so pronounced, reliable or continuous. Not only is this bearing habit shown in tree fruits but also in shrub fruits. Three hundred small two year old gooseberries planted last year on raw ground produced this year nearly twelve crates of fruit that sold for $1.50 per crate. Since currant and gooseberries grown in considerable quantities have demonstrated their ability to produce $500 per acre, they are by no means to be despised. Our climate seems to suit them completely, and nowhere else have I seen such immense bushes or such fine foliage that is held to the end of the growing season. The base of operations in fruit culture must necessarily be land. The average home seeker desires the least amount that will serve the purpose. In fruit growing we expect the largest revenue from the land so the amount needed to support a family is much less than that of other forms of soil culture. Little fruit farms of five to fifteen acres are common in Door County and promise to be sufficient for the purpose.

The next advantage our homeseeker needs will be some demonstrations of what is best to plant, what is commercially profitable. This has now been as fully demonstrated as need be and mostly at my expense. In cherries, for instance, it is now agreed that if a man plants one-half his orchard to Early Richmond and the other to large Montmorency he has sure money makers.

Another matter that should interest our prospective home builder is the development of fruit growing already established. Not only is the most of Door County a well developed farming community but fruit growing is rapidly expanding. We have wide awake young men engaged in the business, using up-to-date methods and appliances to secure the best results. To associate with those who are engaged in this work and making it pay, is of itself an inspiration and help. As an example of our

Oshkosh Musk Melons.

up-to-date practices I would mention the use of commercial lime sulphur wash as a summer spray. On my own cherry orchard I have the brightest foliage I ever had and have not found it necessary to spray after harvest as I did when using Bordeaux mixture. On my plums, especially the Japanese and American, there was a distinct stimulative effect, that came with the first warm day after spraying. On my currants I have no thrips as I had before. For two or three years I have made good progress in control of plum curculio by spraying with arsenate of lead just before and just after bloom. This year I used it again with lime sulphur with the astonishing result of completely eradicating the curculio from my orchard. Before this I had trapped the beetles, getting from two to four thousand a year. Since each beetle is capable of spoiling about a bushel of plums it is not hard to realize the importance of this in plum culture. In thinning my Burbank plums and removing thousands of plums in that way I have failed to find a single one that was stung by the curculio. This I think is unprecedented in the annals of horticulture. These facts open up a large range of possibilities that are very encouraging, indeed.

Next let us consider the question of profit. During the last eight years we've been growing cherries by the car load at Sturgeon Bay. During that time my own orchard has produced over 15,000 crates of sixteen quarts each, and bearing a good crop every year. An orchard of about five acres planted in 1898 has produced in the last three years 7,370 crates, that sold above cost of crates and picking, for $8,246. With money at 6 per cent one-half this sum would capitalize the land at over $4,000 per acre. As remarkable as this is I am sure it will be excelled in the near future by some younger orchards now coming on.

I have now enumerated several facts concerning fruit culture in Door County that should appeal to the city bred man who is seeking new environments. I have noted our fifty years' record without material loss by spring frosts to our orchard fruits; our conditions that produce the bearing habit and maintain it, as well as to cause early bearing; our demonstrations of what is best and profitable in varieties, as well as what is helpful and hopeful in methods, practices, and associations; and I have also shown that it is profitable, that it pays.

These are the opportunities Door County has for the city bred man. If he knows how to harness a team, milk a cow, grease a wagon, to plant a garden, to plow or cultivate a field, he may avail himself of these opportunities with the full assurance that they are as reliable, as satisfactory, and profitable as can be found anywhere.

The establishment of a fruit farm does not mean a loss of revenue from the land in waiting for the trees to bear. Paying and profitable crops should occupy the ground from the first until the room is required for the fruit trees. Strawberries have usually proven very profitable and come into full bearing in one year from planting. Shrub fruits should give paying crops the second year after planting and in case of the currant and gooseberry increase in bearing for several years. Of paying and profitable crops to grow in the young orchard, peas, beans and potatoes thrive finely in Door County, and their cultivation fits nicely the needs of the orchard.

Besides the man who must make his living as he goes there is another class to which our opportunities should appeal, the retired business man and the wealthy. Door County has a good reputation as a summer resort. Its large and wonderfully varied flora, its groves, woods and natural parks, its surrounding water, its excellent roads and fine summer climate, all make a splendid combination of highly enjoyable features. With a fruit farm as his summer home the well-to-do would find that horticulture is the refinement of rural life and adds a charm and zest to life that approaches the ideal.

Ideal homes are country homes with city conveniences. These are being rapidly developed in Door County. Telephones reaching every neighborhood give instant communication; fine highways being macadamized, of which our town now has more than twenty-five miles, makes rapid transit possible; automobile stages and liveries are now running everywhere, and our farmers and fruit growers are using many of these machines; electric service is reaching out from the city of Sturgeon Bay for domestic motors as well as lighting; everywhere there is an awakening to the splendid resources within our borders.

Among those now engaged in actual or prospective fruit culture at Sturgeon Bay we have sailors, doctors, printers, clerks, tailors, university students and graduates, farmers, teamsters,

engineers, barbers and carpenters, as well as fishermen and farmers. With such a wide representation among the various trades and profession the city man should find encouragement to believe that he too might join the ranks of the prosperous. Under conditions that make life well worth living.

DISCUSSION.

The President: As mentioned in our opening remarks, our State Horticultural Society has done much to develop the horticultural resources of the state and also to advertise them. Our Mr. Hatch is one of the leading members of our horticultural society, and I think if he had not early developed his love for horticulture, and others with him, Door County would not be what it is today. But I would say that at other times our society will call your attention to other parts of the state. We are calling attention to the advantages of Crawford county, still we lose nothing by directing your attention to Door county at this time. Our society will show you that horticultural profit exists all over the state.

Mr. Christensen: I would like to ask the cure for the curculio that is so effective; I did not get that.

Mr. Hatch: In common with the other growers we have been using arsenate of lead as an insecticide in spraying for the last three or four years, and during that time we found it far more efficient than any other insecticide. We found that spraying just before bloom was also a very effective time to hit the curculio for the reason that the beetle, while eating very little, will eat something and if we have the poison there when he does eat it kills him. In my spraying this season I was very much astonished at the results obtained. While I had found very few of curculios last year, this year I had absolutely none. You may examine these plums, that I have shown here. In thinning my Burbank, taking off thousands in that way, I did not find a single one stung by the curculio. I think it is unprecedented in the history of horticulture.

Mr. Christensen: When do you use the lime-sulphur wash?

Mr. Hatch: Just before bloom and just after bloom. Just after bloom we had some warm weather, and I think that made

the spray more efficient and give it a stimulative effect. Before this it was quite cool.

Mr. Christensen: How strong do you use it?

Mr. Hatch: I used a three per cent dilution. But as far as that is concerned, I think the cherries and plums might stand a four per cent solution and that apples a five per cent solution. This however only when used with arsenate of lead to modify its caustic effect.

Mr. Reigle: What solution would the grape stand?

Mr. Hatch: I sprayed the grape with the same and I did not have any injury with the lime-sulphur solution. The use of lime-sulphur is in the experimental stage yet, but it opens up so many possibilities, I am sorry I am getting old, because one of the great things we may do in the future, to save good foliage and this one very great thing in fruit culture now seems possible. Here is the foliage itself, on these branches I brought from home and it is eloquent of the effect.

Mr. Reigle: Do you combine the arsenate of lead with the lime-sulphur in spraying?

Mr. Hatch: Yes, I did. I am of the opinion that we might get better results by using it separately, for it precipitates the arsenate and necessitates more stirring to make it all right. The arsenate modifies the lime-sulphur wash very much, and it is likely much less should be used if applied separately.

Dr. Loope: In spraying the full leaf, do you find any injury with the lime-sulphur spray?

Mr. Hatch: When we let the stuff settle we thought we had injury. I am not certain on this point.

Dr. Loope: Did you use this to the exclusion of the Bordeaux?

Mr. Hatch: Yes, I did not use any bordeaux mixture. I used some on my apples, but not on my plums and cherries.

Dr. Loope: Would you think that the lime-sulphur would act as well upon apples without the bordeaux as the bordeaux would?

Mr. Hatch: Well, the experiment stations are still working on that, and the first report on it I think was from Oregon. It is being used a great deal this year and we will known more about it another year. Yes, I think it will substitute bordeaux mixture completely, but it is still in the experimental state, and I hope when we get the experiment station bulletins of this year,

that we will know a little better what to do. But it opens up a whole new field. We hope we can accomplish things in horticulture that we never dreamed of. Instead of the deleterious, injurious effects of bordeaux mixture we may get the stimulating, upbuilding effects of the sulphur wash on our foliage, and that means better fruit spurs and it means better fruit.

Mr. Reigle: Do you use the commercial product, or make your own?

Mr. Hatch: It is not practical to make lime-sulphur wash in Wisconsin for the reason, that we have no strictly pure calcium. The brand that we use was made by the Grasselli Company of Cleveland Ohio and also Milwaukee, and it is perfectly efficient. I tried to make some myself but it will not do, our lime is not right.

The Secretary: In stating the opportunities for city bred people in your county you painted them in glowing colors as to the city man, then you modified it by saying, a man that could hitch up a horse, grease a wagon or milk a cow. Suppose we have the other kind of man that does not know which end of the plow goes first, a man of middle age, brought up without any knowledge of these things, what would you do with him in Door county?

Mr. Hatch: I would advise that man, if he has a leaning that way, to go and find employment during a summer on a farm, until he can arrive at an estimate of his own ability. It is a personal question. One-tenth is the place, nine-tenths is the man. The glory of life is in accomplishing things and the pity and misery of city-bred people is that their children are growing up without ability to accomplish anything as far as getting a living is concerned. If you come to Sturgeon Bay you will find hundreds of boys and girls employed as little wage earners during the fruit harvest. It is a splendid thing for they learn how to work. When pay day comes around there is a lot of bright eyes and happy faces and money in their pockets and you never can pauperize that kind of people. I paid out a thousand dollars last year and this went into the hands of women and children; it makes them wage earners, makes them independent. The pitiful thing is that the city has thousands of children and families that are utterly helpless about earning a living, all the zest of life is gone, they are ready to become anarchists. I have

tried to tell you of the opportunities we have in fruit farming in Door County because I am most familiar with them. There are, however, other opportunities; in other places; the field is broad and this horticultural society should do some missionary work in exploiting them.

Mr. Babcock: Is the soil of the peninsula practically all the same, or are there limited regions that are adapted to fruit?

Mr. Hatch: The soil is glacial drift, but the rock is magnesian limestone, and this glacial drift went diagonally across the peninsula. On the west side of the peninsula there were groups of pine; perhaps one-sixth of the county was pine, that is splendid fruit farm land. Then over further is hardwood land, over further yet is the lake shore sand dunes and swamps. There are all grades, some good and some not, but the general average of the pine land is excellent for fruit and most of the hard wood land. It has nearly the same climate all through.

Mr. Smith: I want to ask how the curculio prospered in the orchards that were not sprayed as yours were. You said you had no curculio where you sprayed, what did the people have who did not spray as you did, in the way of curculio?

Mr. Hatch: Most all of the growers who have plums around Sturgeon Bay spray. They had some curculio, but they made progress. Mr. Coe was at our place, and I took him out into the orchard where I cut this branch off. (Referring to branch at the meeting. He will tell you whether I have told the truth or not.

Mr. Coe: I think you have so far as you have gone, but you have not told all the truth. I do not know of any language that will express it all. That particular branch that you cut off was a short branch. I took one home with a load of cherries on in my suitcase, showed it to some of the neighbors. We picked afterwards two quarts off of one branch about the length of the one Mr. Hatch has shown you.

Mr. Smith: The particular reason why I wish to bring out this particular point in regard to the curculio is that I have known in my experience of cases where, take the striped flea beetle for instance which eats up little plants as they come up, cabbage and turnips, I have known them to suddenly disappear, without any apparent reason. We used to have to fight flea beetles, little jumping fleas, almost sit up nights to fight them

and suddenly they would disappear, we did not see one for ten to fifteen years and I wanted to bring out the point as to whether that was possibly the case with the curculio. There has been so much said that it was impossible to poison it. I am not disputing anything Mr. Hatch says.

Mr. Hatch: Mr. Bingham perhaps can add something to what I have said.

Mr. Bingham: There is plenty of curculio in Door county. While Mr. Hatch uses perhaps cleaner cultivation in the orchard where he had these plums, adjoining the barnyard, the cultivation was quite thorough and the chickens come into that orchard more than some other orchards more isolated. Some curculio have been found in Door county, but they may not have sprayed at the critical time to kill the bug.

Mr. Hatch: I did not have any chickens in the orchard at that time.

Mr. Bingham: While I agree with Mr. Hatch in this much, that he certainly sprays his orchard very thoroughly, perhaps there is no man in the county that does it more thoroughly or goes at it as so nearly the right time, I could not say myself whether it was due to the spraying or not, because I had curculio where we sprayed thoroughly.

Mr. Smith: Did you have chickens?

Mr. Binkham: Yes, we had chickens, but I had to resort to jarring for the curculio to get the balance of the bugs.

The President: I want to say a word in regard to this discussion. Your attention has been called a number of times to the healthfulness of Door County, and the climate, but I think not enough has been said in regard to the man behind the bugs. It may be profitable to contrast the appearance of these branches with some cherry trees a little outside of the city where the slug has nearly defoliated them and yet the trees are fair in size. I think if you will give as close attention to your trees as they do in Door county you might have a lot of cherries. They take good care of their trees in Door county and you people out here might do likewise and you would not need to go up to Door county.

WEDNESDAY AFTERNOON SESSION.

The meeting was called to order at 2:00 p. m.

The President: I promised you the pleasure of becoming acquainted with our two new professors, and I will first ask Doctor Jones, head of the recently organized Department of Plant Pathology, to come forward and to tell us why he is here.

Professor Jones: "I first wish to thank your Secretary for the courteous invitation to attend this meeting and become acquainted with the work of your Society. I have already been doubly repaid, first, by that which is of general interest in your program and exhibit, and, second, by that which is of special interest to me as helping toward the outlining of my own work, as plant pathologist, in Wisconsin.

You ask, Mr. Chairman, why I am here. One reason lies in the fact that Wisconsin is my home state. I was born and brought up on a farm some forty miles north of here. When partly as a result of your request, I am told, it was decided to organize a department of plant pathology in the University and Dean Russell invited me to come and take charge of the work, the associations of those first two decades of my life had a large influence in deciding me to come; partly because it was a homecoming, and partly because it seemed that such early acquaintance with the the State must prepare one the more readily to understand the problems to be met. But although those early years were passed in a farm home it was in contact with the problems of general agriculture rather than with those of the more specialized horticulture which your Society has helped to develop in Wisconsin during recent years.

You, as horticulturists, realize fuly how different the problems are, especially those relating to plant diseases, when one passes from the seabord to the Mississippi. Hence, you will sympathize with any hesitancy I feel in attempting at the outset to make practical suggestions, which would be so largely influenced by my New England experience. The understanding with your Secretary is that I am here today rather to learn than to lecture.

I may, however, be pardoned for advancing in quite general terms two ideas, pertinent to the discussion of this morning, as to spraying. The first concerns the lime-sulphur spray as a possible substitute for Bordeaux mixture. I wish to emphasize the points well made by Mr. Hatch, first, that this new compound promises much, and, second, that it is still on trial. Give careful heed to the evidence in its favor based on personal experience by Mr. Hatch or your Secretary or Professor Moore, who is testing it at the Experiment Station, or Mr. Milward in his trial sprayings in the orchards of the State. But remember also that injury has resulted from its improper use, and that it is on only a few crops, indeed, only on the orchard fruits, that it has as yet fairly established its claims as a substitute for Bordeaux mixture. On potatoes, for example, under the New England conditions it proved of much less value. Do not understand me as belittling the probable importance of this new spray. There is certainly great need for just such a combined insecticide and fungicide as this lime-sulphur is proving to be. All who have opportunity should either test it for themselves or follow closely the tests of others, and just so soon and so far as its superiority is clearly established its use should be practiced. The suggestion I make is simply that where we now know Bordeau mixture alone or with arsenites to be efficient we should not hastily substitute lime-sulphur for it until the new spray has been adequately tested on that particular crop.

The other suggestion I would make is still more general. It concerns the whole question of spraying. It may not be good business for the doctor to belittle the importance of pills. Emphatically, I wish to go on record as urging more general spraying and especially, more thorough spraying. But spraying is sometimes looked upon, like pink pills for pale people, as a cure-all to be administered indiscriminately for all ailments. We are learing more clearly each year that with our own bodies the thing of first importance is to keep up physical vigor by wholesome food and right living, and along with this to keep the disease germs out of the body. In other words, the chief aim is to prevent disease rather than to cure it. So with the plant. The thing of first importance is to grow the plant to the fullest perfection of type and vigor; the choice of variety, the selection and care of seed, soil, ferilization, culture, these are the things

of primary importance. Then when the perfect plant is secured spraying comes in as the cultivator's insurance policy. It is not to cure the sickly plant that we spray to best profit, but rather to keep the healthy plant from getting sickly. Spraying is a preventive, not a cure, and we should aim to spray before the disease appears.

But I am coming dangerously near to the point of lecturing you upon practical matters. What I wish, instead, is to ask your assistance first in learning Wisconsin's peculiar problems and needs. It is for this especially that I came to the meeting. Thus Mr. Hatch, during a recent visit I made to his interesting grounds, outlined some of the problems in plant pathology of the orchard, and Mr. Kellogg has just pointed out in conversation some of the cucumber growers' troubles. Similar advice and questions from others will be most welcome at any time. We shall also be glad to receive letters, especially if accompanied by specimens of diseased plants. The simpler way to send such specimens as a rule is by mail rather than express, and if rightly wrapped the trouble and postage are both small matters. Frequently the mistake is made of placing delicate plant specimens, such as leaves or flowers, in boxes packed carefully in moist wrappings such as cotton. Almost always these discolor, mould or even rot in transit. The better way, and much easier for the sender, is to place the specimens between the folds of a newspaper, preferably with the plant leaves well separated so that the sheets of paper will tend to dry them out partially. Always lay the individual leaves as flat as may be and avoid matting several together. The paper with specimens enclosed can then be simply folded or rolled in an ordinary wrapper with open ends. Be sure when addressing it to place the name and address of the sender on the outside of the package and accompany it in the same mail with letter or card, giving data or request. In case of problems or specimens of peculiar interest we may send franked shipping tags for more specimens, which will carry such post free. It will be our policy also to visit the more important horticultural centers from time to time, and in this way to learn or advise as occasion may offer. Special requests for such personal visits will always be given careful consideration where there are urgent local needs.

Again I thank you for this opportunity of meeting you, and I

shall hope to be of further assistance both to the individual members and to your Society as an organization in years to come.

The President: We will now call on Prof. Sanders. We are wondering why a bright young man like him was allowed to come to us.

Prof. Sanders: Mr. President, Ladies and Gentlemen,—I might extend Prof. Jones' remarks to some extent, but he has so thoroughly covered the ground in several phases that I will not touch upon those at all. Of course I am glad indeed to meet the Wisconsin people. There are a few faces here that are familiar to me already, but many who are entire strangers, but I hope not for long.

Just why I am here, why I am here personally might not be policy for me to state; Dr. Russell might tell more properly, but why an economic entomologist should be in Wisconsin is apparent to every one who has had experience in growing fruits, in raising crops of any sort in Wisconsin. Wisconsin as a state is twenty-five or thirty years behind the adjoining states in economic entomology. Adjoining states have had entomologists seriously at work since-1860-1880-1885, but until February of this year no economic entomologist has even been appointed in Wisconsin. Entomology has been taught at the university, I must say, entomology of a certain kind, but not economic entomology. Entomologists would scarcely call it more than invertebrate zoology, since little other than the anatomy of insects was considered. The practical fruit grower does not care about the internal anatomy of a harmful insect, he wants to know what application can be made to control that insect which is damaging his crops; ruining his fruit. He wants to know when to spray, what material to use and why that should be applied at such and such times. He should understand thoroughly the reasons for applying the insecticide and a certain character of insecticide at a certain time. That is the all-important point in the control of insects.

I might go on at length and tell you some of my experiences that I have met in going over the state in my travels. Few of you know that I have charge of the state nursery inspection now, and I am taking the opportunity this year to travel over the state as widely as possible and do all the work myself in

order to get acquainted with the conditions and with the people and with the different characters of land in the various locations. In certain sections where I have been this year I am safe in saying 95 per ecnt, in some cases 98 per cent of the apple crop is injured by the codling moth and curculio where no spraying operations have been carried out. A great many people whom I met in certain sections said that, "Well, the frost had killed everything" and they would not spray this year, consequently they have more apples on the ground now that they have on their trees, and in a few weeks thereafter all will be on the ground and in this year of all years when if they had a good crop of perfect apples, they would certainly get a good price. Prof. J. G. Moore in one of his bulletins has said that three-fourth of the apple crop of Wisconsin is ruined yearly by codling moth and plum curculio. I can say that, considering all the trees in the state, outside of the commercial orchards and including commercial orchards, that 90 per cent of the apple crop of the state is ruined, as far as perfect fruit is concerned. I was looking over the exhibits here today pretty carefully and there is a comparatively small percentage of perfect apples in that exhibit. Of course we understand the character of the year, with the extreme draught in many sections. It is extremely unfortunate when a man sets out an orchard, cares for it, and the land is lying comparatively idle for that length of time, and he grows first class trees, but when he comes to harvest his fruit, the very thing that will return him his money is lost, simply through the ravage of insects or perhaps fungous diseases. At a total cost of perhaps ten to twenty cents a year a comparatively large tree can be sprayed and 90 per cent of the fruit can be saved. It seems unreasonable that people should allow their fruit to be so thoroughly and completely lost.

One other thing I want to say. I want to help every one of you as far as possible in determining the insects which you may send to me and in giving you remedial advice. Insects have to be treated a little differently than the plant diseases which Prof. Jones mentions. You cannot roll them up between pieces of newspaper. They should be put in a tight box, preferably a tin box. It is not necessary to make any holes in the box for air to get to the insect, because they require very little air. Some people send in insects, making large holes in the box,

and frequently the insects or their parasites hatch out and escape entirely, so we do not know what has infested the plant or fruit when it arrives at the office. Put the insects in a comparatively tight box and be sure to put your name on the package, accompanied by a letter, of course, describing the injury as far as possible in every detail.

I might mention a number of insects that have been especially important this year, but I will not take time here. Of course we know the injury caused by the codling moth and plum curculio, the two great pests with which horticulturists have to deal. The cherry slug has been exceptionally numerous this year, especially in the lake region. There is absolutely no reason in allowing the cherry trees to get into such fearful condition as I have seen thousands of them up and down the lake shore this summer, when a little arsenate of lead applied at the right time will control the slug absolutely. It is one of the easiest insects to combat and is perfectly amenable to control.

I thank you kindly for your attention. I want to meet as many people as possible, and if you have any particular insect problems that are uppermost at the present time, I wish you would communicate them to me.

Mr. Smith: I would like to refer to these gentlemen now an insect which has done a good many thousand dollars worth of damage in Wisconsin, that is the onion maggot. In the Green Bay districts, where there were a good many train loads of onions grown years ago, the industry is practically wiped off the map. If you suggest some way that insect can be controlled and prevented, you will earn your money, I don't care how much salary you get.

Prof. Sanders: The onion maggot belongs to a group of pests which is the most different to control of any that we have in the entomological line; it is one of a number of larvae of flies which are extremely difficult to control. Perhaps the best method of control for the onion maggot, first of all, is to destroy, burn the infested onions as they are found. Wood ashes scattered around the base of radishes and onions have a very deterrent effect on them. Some advocate the use of paper disks to prevent the laying of eggs of the flies, but that is not feasible in a large tract. The onion maggot and allied species are very serious pests and make large inroads on our crops. Probably the best remedy for

control of root maggots is the application of carbolic acid and lime solution with a sprinkling can or spray nozzle around the bases of the plants as soon as they appear above the ground. Slake fresh lime to a thin cream; add three pints to a gallon of water in which should be stirred a tablespoonful of crude carbolic acid. Coat the soil around the plants with this solution which hardens forming a crust too hard for the newly hatched larva to penetrate. To control the codling moth is comparatively easy as compared with the onion maggot to which the gentleman refers.

I might mention another insect that has done great damage this year, and that is the white grub. I have received 150 or more letters this past spring and summer in regard to the white grub. We make the mistake of plowing the land in the spring and immediately planting the corn. The white grub lives upon the grass roots, and sometimes cuts off the grass roots so completely that the sod may be rolled up without trouble. Fall plowing is the great remedy for the control of the white grub, and the plowing should be done as late as possible in the year.

Mr. Reigle: I have one question that relates to a little bug that I would like to know what he is there for. It is a small beetle of a general ochre color with black spots on its back. I think when I was a boy we used to call them lady bugs, but I find on the under surface of many of the grape leaves as many as 50 to 100 of these little beetles, seeming to be very contented and having a happy sort of life. I have been thinking as to whether I was not in danger of having a pest there, but may be they have been beneficial, I do not know.

Prof. Sanders: May I ask about how many spots there are?

Mr. Reigle: Yes, I think there are three rows, and I believe there are three, not very distinct, next to the head.

Prof. Sanders: That is one of our lady beetles I should judge. The lady beetles are all beneficial, and as they feed principally upon plant lice or aphis, they should not be destroyed under any circumstances.

THE OPPORTUNITIES OF A CITY-BRED MAN IN THE COUNTRY.

By ERNEST GONZENBACH.

This paper is part of a series to which is devoted the present meeting of the State Horticultural Society, and the mere fact that this entire meeting has been devoted to the "back-to-the-land" movement, and that all of the speakers and all of the papers have, in one form or another, discussed the returning tide from the City to the country, is an indication of the importance of the movement. Just how general the movement is, remains to be seen, but it is fair to assume that at present it is nowhere near as general as would be indicated by the amount of talk on the subject.

While the topic is a favorite one with all classes of people and in all classes of journalism, the actual amount of movement back-to-the-land has not been great enough to upset the general balance and frankly, I do not believe it ever will be. It is very pleasant to sit in a comfortable office chair and dictate to a stenographer about the movement back to the land. It is still more pleasant to take a ride in an automobile or trolley car and watch Nature as we glide past. It is agreeable to watch the sleek cattle, the waving grain fields, and note the general air of prosperity about farms and farm houses. It is enough to excite a desire in any man to go back to the farm. Little is ever said about the desire aroused in the farmer and when he sees these individuals ride past in their automobiles; when he sees their beautiful clothes, their well-fed appearances, and the general air of leisure and good nature about them. The contemplation of either one of these pictures may arouse desire. If it arouses a strong desire in the city man, it is simply because the farmer is less used to gratifying desires and anyway, it is because he recognizes the utter futility of such a desire. All of this reminds one of the distinction which a soldier of the line once made, when his opinion was asked about marriage. He stated that marriage is just like a besieged fortress—"those who are in would like to get out, and those who are out would like to get

in." That is virtually the situation in the "back-to-the-land" movement.

But, this back-to-the-land movement is not a new one. It has existed from time immemorial. Yet, in the face of this great natural desire for the country, the population of the cities has continually increased and that of the country decreased. Young men have continued to flock to the trades and industry and have forsaken the farms. The country will only attract a small percentage of city people in spite of the fact that almost every man may be found to have concealed, somewhere about him, a lurking desire to own a farm—and to retire to it at the end of his active business life. This luring desire unattended to in time, has no doubt been responsible for more failures of city farmers than any other cause. A man is in business for ten, twenty or thirty years. He is actively engaged at his desk or at his workbench every work day of the year. He nourishes that secret desire to some time or other retire to the farm. His leisure time is spent in the usual time which the city has to offer. He and his wife have a few cronies; they play cards; go to the theatre; they picnic at some picnic resort on a Sunday; they read and they like to dream and talk about that future day on the farm; but, as for actual preparations, not one man in a thousand makes any preparations whatever for actually fitting himself so that he will be enjoying the life in the country which he looks forward to so longingly and lovingly. By Nature, all men are farmers. Desire to dig the dirt is just as natural in us as is the desire among birds to brood. The smell of the moist earth in the Spring arouses the latent soil instinct in the most crusty individual. Quite often the desire finds expression and gratification in the garden, which is started at great pains only to be abandoned during the heat of the summer season when enthusiasm and energy lag. These people are like those fowls which have been bred to forget their natural functions of sitting on eggs and rearing their young. Some strains of hens and ducks have been so bred by a process of selection that they have no inclination for their natural process of re-production. Such fowls occasionally will brood, but it does not take very much to discourage them and make them forget one of the chief functions of their lives. They are just like the people who start a garden early in the Spring. The natural instinct, the "homing

A row of McMahan. Orchard of D. E. Bingham, Sturgeon Bay, Sept. 4, 1910.

Fameuse Apple Tree near Manitowoc. Planted in 1854.

intelligence'' of the average man have been bred out of him so it takes only the slightest discouragement to get him over his garden broodiness of the Spring, and to return him to the natural, or unnatural, everyday routine of his life. He becomes a denatured man.

But there are people who will return to the natural life, who possess the stick-to-itiveness which enables them to win in their struggle with Nature, who possess the qualities needed to make a success of country life and too often it is they, at whom fingers are pointed when individuals with gray whiskers and milk on their boots meet for a neighborly chat and laugh over the ''city farmer.'' The latter is a menace to himself and to his neighbors and ought to have a guardian appointed to keep him from ever going to the country. Usually his type does not stay there very long in the country for no matter how mountainous his pride may be, it is never large enough to overcome his natural aversion to the duties of country life and sooner or later he finds a convenient excuse and returns to the level from which he started.

There is the other kind of a city farmer who does not secretly cherish his hope. He goes forth to give battle and is vanquished by the land boomer and real estate agent. The papers are full of attractive advertisements offering all kinds of land from which an easy living may be made from one acre up. To the would-be-farmer, who has a few dollars ahead, these ads look mighty promising and after his eyes have been feasting on a few half and full-page advertisements the glories of that ''way-out-west or the ''way-down-south'' Arcadia, where he can make a living without working, by simply investing his money for a few years while his trees, berries, grass or whatever is offered is growing, he cannot be blamed for nibbling at the bait and possibly invests his little all in a rosy prospect, consisting of a sandy waste, a mud puddle or dreary desert which his imagination and a few dollars a week are supposed to convert into a pleasing lanscape and a happy home. It is very rare, indeed, that this type of man is not disappointed. A few of these propositions have been put through with a profit for all concerned, but nine times out of ten it has been my observation that the man who invests in a proposition of this sort, is bitten, and bitten badly, especially when he buys without having

seen. He never lives to enjoy that ripe old age and that comfortable home without work, which he has been waiting for and paying for so long.

But I am to discuss advantages, not generalities, and will hasten to get through the husk and at the meat in the cocoanut.

Horticulture and Agriculture to-day are sciences. The old-fashioned farmers may have made money and are still making money, some times in spite of themselves. Many an old farmer's secret of success is the personal attention which he gives his business and it is that fact, and that alone, which enables him to survive and profit. The City farmer, or would-be-farmer, might just as well throw his money into a gutter as to attempt to go into farming without giving his investment his personal attention and his most thoughtful care. Agriculture and Horticulture are a condition of the mind more than they are a combination of money and brawn. Both are necessary, but above all, the man at it must have it on his mind, think about it, read about it, ponder, weigh, experiment, discard and select. These are all functions of the mind. Money and brawn are easy to get, the mind is not.

The city man who would really make a success of the country must begin at the beginning. One must creep before one walks. Dreaming of the day when one can buy a well-equipped farm and enjoy a hale and ripe old age is useless, for if one has money, and the age, he can acquire the farm but not the comfort which is supposed to go with it. Buying a distant home, to be paid for gradually, and to be seen once or twice during the few years, is slavery. One does not get any enjoyment out of it excepting the empty one of anticipation to be followed by disappointment. Therefore, I say that the city man who would farm should creep first, and the way for him to learn is to begin right now and right here. There is no use of going anywhere else excepting where you live. There is no city in this country so large, nor any town so small, that one cannot find a place which may suit one's idea somewhere within a short distance from the city. The mechanic can find his one, two or three acres, the salaried or high class man can find his small place, and the man of capital can establish his recreation farm or "play farm" all within convenient touch of his business. The place may be run down and ramshackle when it is bought. It

is a pleasure to fix it up and it is a double pleasure if one is limited in means and must count the pennies and do it slowly and carefully. The poor man can get ten times as much enjoyment and pleasure out of his place as the rich man and the chances are he will get ten times as much profit out of it as well. The home garden or the suburban garden is a good beginning, but it is only a beginning. While it gives one good experience, there is the one experience still lacking, viz., that of selling one's produce. Probably more failures have been the result of inability to sell, rather than inability to produce. There seems to be something particularly objectionable to the city man in the idea of selling the fruits of his garden and farmyard. We are slaves to social tradition and, in our minds, the selling of vegetables, eggs, milk, butter and other produce is associated with a type of man very much inferior to ourselves. "Ourselves" may be a hod-carrier or a corporation president, but at any rate, the work is inferior to ourselves. Unless a man is willing to overcome that pride and prejudice, he may as well give up the idea of going into farming. To my mind, it is not one whit less genteel to be selling vegetables or eggs than it is to be selling calico, street car rides, furniture or automobiles. Just how this foolish pride has originated is a mystery which is beyond fathoming. It is this pride which is at the bottomof most of the downfalls and is the ruination of more suburban homes and their financial wreck than any other one cause alone. Until this is overcome and until the man who wants to start a farm and live in the country or in the suburbs, believes that it is not degrading to sell the produce of his garden or farm, and still remain a gentleman, he ought to abandon all hope or idea of starting his career as an agriculturist or horticulturist. Therefore I say, starting a suburban home garden, while it may give experience in the ability to produce, will not give that most vital thing—ability to sell. The farmer of experience in the suburban or home garden is somewhat restricted in the method of production. The work is necessarily hand-labor on a small scale, quite generally water for irrigation is available and if anything interfers with the success of the garden, the financial loss is not very great. Experience can only come when operations are on a large enough scale so that in case loss through neglect or failure to sell occurs, it is actually *felt*. Experience also should be gotten

on a scale large enough to make the element of labor a factor to be reckoned with. Labor is one of the difficult problems which the city farmer or the man from the city will meet with the very first thing. There is a universal cry for experienced labor from one end of this country to the other. Even in those blessed regions of the South, where there is supposed to be an abundance of negro labor, the dearth of labor exists. In the neighboring industrial centers the noise over the dearth of farm hands can be heard over the noise and hum of whistles of industry. The labor problem will have to be met sooner or later by the city-bred farmer, and the way to meet it is to meet it. The subject is somewhat foreign to this paper but it may be mentioned in passing that the labor problem on the farm is one which is principally due to the farmers themselves. While wages have been advancing at enormous strides, the farmer has not handled his labor problem as other labor employers have handled theirs. The farm labor problem is acknowledged to be more difficult than that of any other trade or industry, but it is capable of solution and the solution of it will necessarily bring with it higher wages and a higher standard of living and a higher social status for the farm laborer, but that is another story, quite by itself.

To return to our subject, the suburban garden, aside from failing to give experience in the matter of selling, also is rarely sufficiently large to enable one to cope with the problem of labor. After selling, the labor problem is the next important one.

So the man who cherishes the ambition to become a farmer and hopes to get away from the daily routine of city life; who want to bring up his children on the farm with all that that implies in the way of pure air, pure food, health, good morals any sound minds, must not fall into any of the traps set for him. He must not plan and cherish—he must act—to-day—right here. The thing for him to do is not to go out to the suburbs and buy a little dinky bungalow or a shoddy house with a few scrub trees and some sickly spears of grass. That sort of home is too often considered a country home. To be sure, it has all modern conveniences—electric light, gas, telephone, etc., but that is not a country home. It is an apology for one. Too much is sacrificed to appearances and the man who really and conscientiously desires to live close to Nature will not sacrifice very much to

appearances. To a certain extent people all pay tribute to that tyrant, Appearances, as, indeed, it is only just that we should do so, but the suburban home as ordinarily found seems to be particularly designed to go to extremes. Generally, it is a hybrid, neither fish, flesh nor fowl. It is an incongruity, a sham designed to deceive ourselves and our neighbors. Take the ordinary middle class suburban house; it is usually planned by a city architect with no more idea of what a country home should be than a goose has of building a nest on top of a tree. There is the reception hall, parlor and dining room, whose location is determined by the exterior shape of the house. The main entrance must be invariably in front towards the street, so must the sitting room and parlor. The kitchen is usually at the back of the house, no matter what direction the house faces. No architect would consider one of these houses complete without that abomination—the butler's pantry. The real country home is not built for exterior appearances. The average suburban home is planned with the idea that the woman of the house has enormous leisure and is spending most of her leisure time in the sitting room and parlor. This is the plan which has been approved by generations of city-bred architects. It is the idea which is featured by our lives of sham aristocracy. The real country home assumes that the kitchen is that portion of the house in which the woman spends most of her time and it is therefore made as convenient, as central, and as cheerful as possible. The real country home disregards the street.. . It faces in the direction which is most desirable and that, in our climate, is usually the south. If we arrange to have our back door towards the street or highway, it is immaterial and of no consequence. The house is built for the convenience of the occupants or owners. Those who dare not have the back door of the house facing the highway are not imbued with the right country spirit. The true country home gets away from all tradition; it is planned for comfort and convenience. It saves the greatest number of steps and has the largest number of comforts and it puts appearances last in the list of items when the plans are made. As to modern conveniences, it is utterly absurd to think of a country home today being one of cold, cheerless comforts, where the water must be carried in buckets and the lighting is by means of kerosene lamps or tallow candles. A country home anywhere within ap-

proachable distance of any of our towns can have just as many conveniences as any city home and at decidedly less cost. The country home of to-day can be supplied with a sewage system at a less cost than in the city; it can be supplied with a water system at a ridiculously low figure, and if it is convenient to electric lines, it can have electric light and motor power for pumping water, or, if it is not convenient, it can at least have acetelyne light and gasoline engines. When we buy a lot in the city we pay a fabulous price, from ten to one hundred times as much as the land is intrinsically worth and why do we do it? First is location. The location usually determines the valuation of the lot and the location-valuation is usually determined by the nearness to desirable neighbors and other considerations. When we buy a lot in the city, we pay for the neighbors we are going to have. Furthermore, we pay for the ability to get water from the city mains. We pay for the privilege of connecting the city sewer with our property and that is why the land is sold us at instead of $100 per acre, at a price of $1,000 to $10,000 per acre. After we have paid this sum for all these privileges, we may put up a building, and tradition and custom restrict us more or less in the plan of this building. The price of the city lot, expended in sewage and waterworks, for a country home would provide all the comforts and conveniences for about one half of the city lot price, and waterworks and sewage may also be provided. We need not be paying for the neighbors at all, for if we are half-way equal to our opportunity, we can make the neighbors come to us. Modern transportation enables us to do that, for we will naturally locate near a steam railroad or trolley line; if not, automobiles to-day can be bought at half the price of a city lot and about the price we would have to pay for our neighbors when we buy a city lot. Therefore, for the price of a city lot, we can buy the neighbors, waterworks, sewage and lighting plant, and at the same time we can have these things next to Nature where we may have the daily enjoyment of a country home and have that home a real home, one which will support us in a time of need.

The city man, when he starts out to buy a farm, makes a number of mistakes, but after he has learned by his mistakes, he is surely a better thinker and a better organizer than he was before, and in the end he is competent to make more money out of

his farm than his neighbor who makes fun of his efforts. But you cannot convince any average farmer that any city man ever makes anything out of his farm. Now consider some points of advantage, which are in favor of the city-bred farmer. In the first place, his city training makes him a close observer and student. He readily realizes his mistakes and after these mistakes have been overcome and he is on a properly established basis, he is a better *executive* than his neighbor. Nine times out often he can plan his work better, handle his men more satisfactorily, attend to his affairs more promptly and, above all things, it has been my observation that the average city man is more inclined to keep his machinery and stock in better condition and repair than his neighbor. All these things count. There are probably a good many city farmers who are making a fairly decent return on their investment who are not given credit for it by their less skilled but experienced neighbors. If, in addition to this, he can overcome his prejudices, he has one enormous advantage in the fact that most all vocations in the city require some sort of selling-ability. If he once makes up his mind that it is not degrading if he must sell his produce and that he will sell it to the best possible advantage, he will get from 50 to 100 per cent more for his produce than his neighbor. There are a thousand and one little tricks which the city farmer will observe and take advantage of. One of my friends is breeding ducks and guinea hens as a side-line on his farm, not because of any foolish notion of profit but he finds that by turning them loose in his potato patch, he can control the potato bugs, instead of spending time and money for poison. He reports the experiment successful as the ducks will not harm the potato plants. As soon as the potato bugs are out of the way, he fattens up his ducks and sells them at a profit. Chickens would scratch up the ground too much, and he takes mighty good care that no chicken ever gets into his potato patch. Another trick is a little vineyard which he keeps in condition of fine mulch by the scattering the grain for his chickens among the vines and allowing them to scratch for it. He scatters the food among the vines and with a little help of the hoe his vineyard is weed-free and in fine tilth.

There are pitfalls into which every would-be city farmer is bound to step sooner or later, and one of the most common is

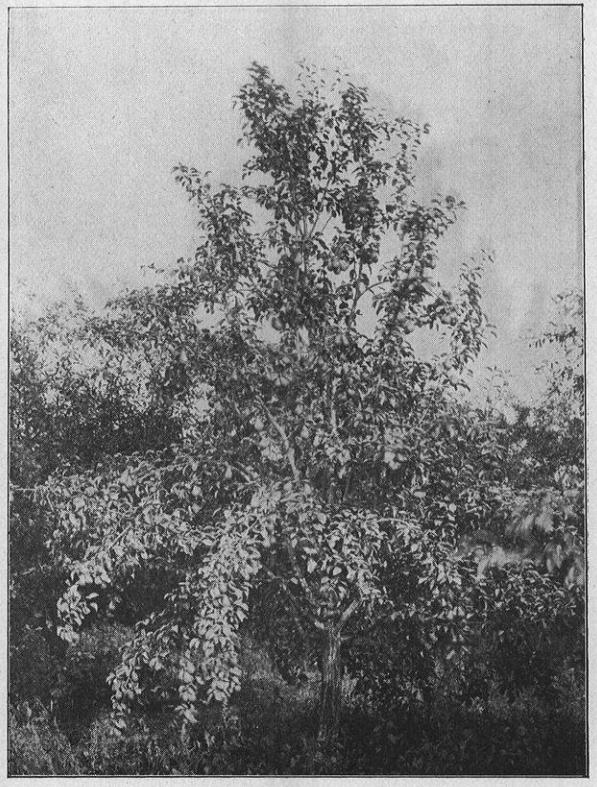
that of foolish literature and books on agriculture. The every-day farmer has every right to look with suspicion upon the average agricultural book. There are so few of them that are at all practical as to warrant the condemnation of this whole bunch of literature. Recently, a man who had been the editor of an agricultural paper informed me, when observing my field of alfalfa, that it was the first alfalfa he had ever seen, although for years he had been advocating the growing of alfalfa in the columns of his paper.

I could mention a number of books which are utterly absurd, but it would be unjust and unfair to give them even the little free advertising they would receive by mentioning them here. The most glaring one that I know of is a book written by a woman in which she describes how she made a home self-supporting by doing on a small scale a number of impossible things. She raised flowers for sale, vegetables for sale, fruit for sale, bred chickens and ducks, made her own butter and did all kinds of things herself. This book is too utterly absurd for anything, but, in-as-much as it appeared as a series of articles in a popular woman's magazine, it has victimized a number of people, who can ill-afford to be misguided by articles such as these, which should be designated as a plain, every-day swindle, and should be prosecuted as such.

Among the traits which should distinguish the city farmer should be one of minimizing hand-labor. If there is anything which causes a waste of time and effort, it is hand-labor, and the city farmer should not have failed to observe that hand-labor is the one all-absorbing and greedy waste of good money. The practical man, when he goes on the farm, will take particular pains to see that hand-labor is cut down to a minimum. If he makes butter, he will use a separator and combined churn and worker. If he goes in for gardening, he will use horse tools rather than hand tools. He will use the proper tools for most anything he has to do, and part of his skill consists in knowing how and when to apply machine labor as against hand-labor.

We must not close without referring to that bugaboo of country life which is generally referred to as "loneliness." This is the hob-goblin which scares the ladies mostly, rarely men. As a matter of fact, the women members of the family have more

Celery field, E. W. Sullivan, Alma Center.



Pear Tree in Orchard of A. W. Lawrence, Sturgeon Bay, Sept. 4, 1910.

reason to fear being lonesome than the men, assuming that the man is usually occupied during the day and has an opportunity to see and converse with his equals. If the man follows the precepts of this paper he will move to the country while continuing his business in the city, and this, in itself, will relieve him from the possibility of being entirely lonesome and without companionship, but the woman must be on the farm all day long. As a rule it is the people with children who will take to this sort of life and the woman with children, without a doubt and with hardly an exception, will never become lonesome. It is rare, indeed, that a woman, unless she is a mother, will be willing to bide all by herself all day long on the suburban place such as we have in mind here without succumbing and gratifying that desire for companionship and contact with her equals. If she has children they, in themselves, will be desirable companions, and the greatest pleasure and the most valuable feature of the suburban place consists in watching the delight which children enjoy the freedoms of country life and the healthy and strong appearance of them. But even the children will not entirely make up for that companionship which is a necessity in every woman's life. Of course, if the woman is devoted to cards, false hair and wagging tongues, she has no business to go to the country to live in the first place, and it is useless to expect people of that stamp to take any interest in Nature, or to know that there is any World outside of the limits of a deck of cards. If the woman is interested in other things, such as literature, art and has the ordinary human interest in life, she will not lack companionship. She will be surprised at the intelligence and good breeding which prevails in many of the farms and homes in the country. I can positively state from personal observation that there is more good breeding, more actual knowledge of the things which it is useful to know in the average country home than there is in the fashionable streets of the average village or city. Loneliness need not be a bug-bear to the right sort of a woman.

In conclusion, I want to refer to one reason why more people are not living in the country. We are but slaves to tradition and we are wearing the marks of servitude on our person to-day. The buttons on the back of our coats are relics of one hundred years ago when the lower corners of the coats were buttoned back so as to give freedom of movement to the legs in walking and

horseback riding. The buttons on our sleves are relics of the days when we used to button back our cuffs. None of them are necessary, yet for generations and generations, tailors have sewed on these buttons. Stiff hats are relics of barbarism and are unnatural and unnecessary, but we go on wearing them because our ancestors found it advisable to wear stiff hats in order to protect themselves against sword blows. We are miserable slaves to tradition and we do not know it. It is time that we break away from the thralldom of ancient times, break away from our unnatural lives, try to be our natural selves and get back to Nature, not with a halloo and a swoop, but gradually and gently. The very fact that we now look upon the tiller of the soil as a real man is an indication of renewed times and a healthy condition of society.

Agriculture was man's first occupation—this most natural occupation. In the most highly civilized countries of the world, agriculture is a gentleman's occupation. The great nobles of Europe derive their principal revenue from the proceeds of agriculture. Many of them farm their own lands and are nothing more nor less than a high class farmer on a large scale. It is not degrading to the Duke or Marquis to know that he receives his revenue on the money which he has invested in farms or derived from the sale of grapes, sugar beets, milk or any other agricultural product, and I cannot see why it should be degrading to our independent American to admit that he toils in the same way and gets his living and income in the same way.

A wrong condition of affairs is indicated by the way in which we refer to the success of a man when we say that he has "risen" from the farm to some eminence in political or social life. That is all wrong—he has not risen—he has fallen. When we get to the point when we can refer to the man as having risen from merchant or corporation president to be a farmer, then we shall have reached the true state of organization or society and when that time has been reached, there will no longer be any question of the opportunities of the city man in the country.

DISCUSSION.

Mr. E. E. Dunning: The subject that our brother has spoken on is one that is quite dear to my heart, because I have had considerable experience in that regard and I hope I may say

something that will be of help. I was brought up on a farm, I was a farmer boy until I was twenty years of age and then circumstances took me to the city and I have been obliged to be in the city ever since. I have endured the city ever since. No one can say that I have enjoyed it, but some years ago I bought a little piece of land, twelve acres near the city of Milwaukee, within twenty minutes' ride of my office. At the present time I employe about one hundred and fifty men in my city business. It seems to me that the speaker touched along the lines of people who have plenty of money, and I have been thinking that there is also another class of people that we might possibly be interested in, as I have come in touch with those people often, and that is the mechanic. We employ in our institution, for instance, tinners, machinists and moulders and they earn all the way from perhaps $2 to $3.50 a day. Now a mechanic of that kind, we will say that he is earning $60 a month in the city. That may seem considerable to anybody that has not had experience, but as a matter of fact that $60 a month, after the mechanic has paid for his rent, is eaten up, literally eaten up, he might possibly save a few dollars, he may save $10 a month, he might have save $20. He would work perhaps 20 to 25 years in the city, and he would do very well if he saved himself a little home somewhere. In our city we have, of course, real estate men who have lots to sell, and the gentleman here just spoke on that subject. These lots vary from $1,000 to $5,000 an acre, one of these parties will buy a lot which costs $500 or $600, put up a house that costs him $1,500 or so, and he will work 25 years to save that property and he may possibly, if he is fortunate, he may have that paid for. Then he has a home in the city, that is all he has got. That home will not bring him in one dollar a year as far as living is concerned, excepting a little garden patch he might have. Now, it seems to me for such a man as that there is an opening in the country that would bring much better results at the present time, especially in cities like Milwaukee and other large cities. We have our interurban line which reaches out into the country; my own place is about seven miles from my office and yet I live there, I get on a car and in twenty minutes I am in my office. Now, it seems to me if these mechanics could purchase, instead of a small lot, a few acres, say three to five acres and build a

more modest house on that, save it in some way, by the time they got so old that they would not be able to work in the city they would not only have a home in which to live, but they would have something to produce a living as long as they lived. That strikes me as the opportunity of the city man in the country, and I do not know whether it is the office of this society to encourage anything along those lines or not, but in thinking of the matter it seems to me that there is an opportunity. After a person would get such a piece of land they would naturally want to work it, and they could gradually work out of the city job and into this. If they had some farm training earlier it would be an advantage. A great deal of money, as many of us know, can be made off a very small piece of land. We ourselves have taken off at the rate of $500 or $600 from a single acre of land in fruit, and the average city man that goes into the country could start in that way. There is always danger of going too heavily into some things. I find from several years' experience that there is a great deal in selecting varieties, especially fruit. Personally I made a great mistake by putting money into 3,000 currant bushes of a certain variety that I wish was not there, not because they do not bear, but because that land could be put to some other use That is true of almost every line, some varieties bear two or three or four times more than other varieties. There is another thing that we should bear in mind if we go into fruit raising, that it is better to be near a large city where there is plenty of room for a good market and also be prepared to fertilize heavily.

As far as being proud is concerned, it made me think of a lawyer in our city, von Hausen—he is a "von," at least Germans know what that means. He was district attorney in the city at one time, and in order to recover from overwork he settled on a farm. He said, "I am a farmer, and I am proud of it."

I suppose the reason I went back to the land was not because I was starved to it, but there was something in my nature that was pulling me to the country and it did not seem as though I ever could get over it. We have the conveniences in the country just as much as we do in the city; we have electric lights, or at least incandescent lights and we have a water system and heating and there is practically nothing but what we

can not have. I could talk here all afternoon on some of the experiences we have had. This year I must say that we have not made very much money, I do not know that anybody has made a great deal.

WHAT DOES THE HORTICULTURAL DEPARTMENT OF THE AGRICULTURAL COLLEGE OFFER TO THE CITY-BRED FARMER?

Prof. J. G. MOORE.

I want to correct, at the beginning, an idea which might perhaps become prevalent in stating this question, which is, "What does the Horticultural Department of the University offer the City-bred Farmer?" Using that term "Horticultural Department," I want to say that we are confining the work of the department a little more at the University now than formerly. We do not attempt to teach our regular student who is interested in horticulture everything pertaining horticulture in the Horticultural Department. In order to be a good horticulturist there are other things besides pure horticulture which are necessary in order that we may make a success, and I believe it is true that the horticulturist has to know more things than a man in any other line of farming. There are so many questions which come up, questions which relate to plant diseases, questions which relate to insects, questions which relate to soils, and chemical questions in connection with the application of spray materials, that pure horticulture is not sufficient for success in fruit and vegetable growing, and so what I shall have to say today will cover a little more than just what we offer in the Horticultural Department alone.

There are two things which the city-bred man, the city farmer might do in order to secure the greatest advantage from what we have to offer in the Horticultural Department. We have what is known as the long course in agriculture, which not only takes up horticulture, but these other related branches

as well as other phases of agriculture. We have a four-year course and a two-year course. For a man who wishes to put in a comparatively short time, a man who has been interested in some other pursuit in the city, and who is unable to spend four years, or who does not desire to spend four years in a college course, the two-year course would be the one which would be most adapted to his needs, because in that course he would get practicaly all the practical work which he could get in the four-year course. The other opportunity which is open to him is the short course, a fourteen-weeks course, for two years, understand that is fourteen weeks each winter. The farmers' course is a ten-day course, which we call a cramming method, because in that we just touch the high places. In the horticultural department we can give and do give work along three distinct lines. There is first, and probably most important, the work along fruit lines. If you were to go to the University and take our course in horticulture, the first thing to be required of you would be to take our general horticultural course, in which we outline and give directions in the selection of sites for orchards, methods of cultivation, soil manipulation, pruning, spraying and questions of that sort, a course of lectures, from the theoretical side. You would next take up the class in fruit or orchard practice. We believe that the best method of teaching is to first give an idea of the general principles underlying the thing which we wish to teach and then turn the student loose, under direction, to put into practice these principles which we have instructed him in at the beginning. In following out this method of teaching as I have just said, we turn the student loose in the laboratory, in the orchard, in the gardens, and if you will come out next spring and look over the Agricultural College, you will find our students in the orchards planting trees, or you will find them in the orchard pruning or spraying, under direction, doing the very things that they will have to do when they take fruit growing for themselves. These are the two practical courses given in fruit growing.

We have a third course which is designed more particularly for those who are interested in fruit culture to a little further extent than just the orchard practice, and this is the course which is known under the name—we call it Pomology—that is

a high-sounding name and the course is not half as hard as the name. In Pomology, besides trying to instruct in something of the relationship of fruits and their botanical classification, we take up indentification and fruit judging and scoring. We aim to have the student become familiar with the various common varieties which are grown in this state, not only that, but we aim to have him become familier with the differences in the characters of varieties grown in the different locations and under different conditions. If you had visited our laboratory in pomology last year you would have seen the class working upon Ben Davis apples which had been secured from five or six different states in the Union, studying the different characters of the fruit when produced under the different conditions which existed in these various places. Not only were the students learning the difference in character but also testing for quality to see whether Wisconsin could not produce just as good fruit as the Bitter Root Valley, and I might say that, without telling the students where the fruit came from, we had very satisfactory results so far as Wisconsin fruit was concerned in judging for quality. In this course we also take up the methods of packing, the importance of putting the fruit on the market in good condition, and other things of a practical nature.

The second line of work which the department takes up is the vegetable work. I regret to say that in practically every college of agriculture in the United States the vegetable side of horticulture is not given the importance which it should have. We are more inclined to go to the fruit side and pass over the vegetable side. Just why that is I do not know that I am able to say, but we are open to the criticism at the University of Wisconsin just the same as in the other institutions that we are not at the present time and have not in the past given the vegetable side the importance which it should have, not so much perhaps along the line of teaching vegetable gardening, as along the line of experimental work in growing vegetable crops.

We have two courses in vegetable growing in the university which would be of value to the city-bred man. The first is the vegetable gardening course which takes up a discussion of the principle involved in producing vegetable crops. The

practical side is not neglected for we have work in the manipulation and construction of hot beds, the different methods of planting, and the process of vegetable gardening, such as cultivation and the control of pests which are likely to attack vegetables. The other line is that of vegetable forcing, which for the city farmer probably offers as inviting a field as any along the line of horticulture. Vegetable forcing is an industry of comparatively recent importance, that is, it has been carried on for a comparatively short time when we consider it in connection with commercial or truck gardening. I might here cite just a few little things which we do in our classes in vegetable forcing. Besides giving the students instruction in the methods employed in forcing houses, we have them make plans for forcing houses, give them instruction in methods and best systems of heating and other practical questions of forcing houses construction. In addition to this we turn them into the forcing houses, and give them charge of the various crops, so that they get the actual experience of growing the crop. The reason I am placing the importance that I do upon the actual work, the actual practice, the laboratory work as we call it in the University, in the Department of Horticulture, is that it is there that they get just what the speaker before me said was the reason why the city-bred farmer made a mistake, it was "because he did not have the knowledge concerning things that he was about to do." So you will find probably the most important part of our teaching, is in bringing the student into contact with the actual work. In our vegetable forcing course for one whole semester the student has no lectures, simply has crops in the green houses to deal with. He has the problems here of pollination, control of insects and diseases, harvesting and marketing and all that sort of thing.

I can tell you a little story of what it is possible to do in the way of forcing vegetables which will immediately show you why it is an opening for the city man. Last winter under the benches in what we would consider waste spaces in the forcing houses, a little patch about 4 by 5 feet, one crop of rhubarb returned to us $7.50. We could have grown three crops of rhubarb in one season. Now you can figure out how many thousands of dollars you can make on a 100-foot house at that rate. The same is true with other forcing crops. The forcing

of vegetables offers a very great opportunity for the city man, not only when he is in the city, but also in the country, and we try to teach these things in our department.

There comes the third line of horticultural work in which we are to teach our city-bred farmer, not so much from the commercial side as the esthetic side, and that is the problem of home decoration, landscape gardening. We are giving in the university a course in landscape gardening which includes the study of plants suitable to the various methods of laying out grounds, the principles involved, the methods of culture of plants, and also the planting of home grounds. This is not only a thing which the city man may avail himself of, but it is a thing which every farmer should be interested in. There is no excuse for the unsightly appearance of so many farm homes, and there is no one investment of a like amount which will add to the value of any place which has been given no previous attention in this respect as much as the proper planting of shrubs and the care of the grounds surrounding the farm house. The same applies to the city. For the city-bred farmer, the city-bred lady farmer, we give a course in home floriculture, in which we take up not only the discussion of decoration of the dooryard and the lawn, but of the methods of house decoration in the way of growing plants.

There is one course which I neglected to mention and which is a very important one, particularly from the standpoint of the fruit grower, and that is the matter of plant propagation. We give a course in plant propagation in which we take up a discussion of the various methods of propagating our various economic plants, and also in which we do work in the laboratory in the actual propagation of such plants. There we give actual practice in root grafting, in top grafting, in budding and all the other details of various methods of plant propagation.

In addition to this work which we give in the horticultural department we have the two lines of work which were spoken of by Prof. Jones and Prof. Sanders, these lines of work are so closely asociated with horticulture that we must consider them in connection with horticulture, and so while we are trying in the horticultural department to give the actual application in spray materials for the control of plant diseases and insect

pests in the departments of plant pathology and economic entomology, there is given some insight into the insect pests and plant diseases which would be most likely to be encountered in the growing of the various crops. In the Soils Department, which is not represented here today, we take up the study of soils, fertility and the matters pertaining to the best conservation of the fertility of the soil, and also moisture, and in that way we have in these four subjects a rounding out of what might be called a good horticultural education. Perhaps to some of you it is not clear how the city man can avail himself of this, but if you come down to our ten days' course and make your wants known, I will assure you that we will find some way of giving you at least something along the line in which you are most interested. Not only that, but the Horticultural Department stands ready to give advice just the same as does the Horticultural Society at any time, when there are any questions which perplex you. We would be glad to have you ask for information; if we cannot supply it we will get Cranefield to do it.

DISCUSSION.

Mr. Whitnall: I, for one, feel very proud of our Wisconsin University, I think we all have reason to feel that way, but I will not hesitate before an audience of this kind to offer just one criticism, I offer it in friendship. The University still wears buttons on the back of its coat, as Mr. Gonzenbach spoke of, and the buttons are of this nature; when any of our boys or girls feel a desire to attend the university, they are required to pass an examination. There are a certain amount of credits required that are handed down from some other school, usually the high school, and it not infrequently happens that the applicant is one, two or three points short and that the shortage comes from a lack of knowledge in Greek, Latin or French, and it seems to me strange that a boy or girl shall be barred from taking a course in agriculture for being deficient in obsolete languages.

Prof. Moore: I suppose it is up to me to speak in reply to the criticism. I might say that I think every person in the

University is not only willing, but glad to have criticism fired at us, so that we may know where our weak points are. However, I think Mr. Whitnall is just a little misinformed, and I am speaking now for the College of Agriculture and not for the University as a whole, we have nothing to do with the College of Letters and Science, with the college of Engineering or the Law School. The requirements for entrance to the four-years course in Agriculture require a certain number of units from high school, that is, a student must be a graduate of a high school which is on the approved list of the University. In that entrance requirement is a certain amount of German, I think about two years of high-school German is the requirement for the entrance to the four-year course, which is the only language requirement outside of English, which is required in the four-year course in Agriculture. That student, if he lacks his credentials in German may enter the course in Agriculture with his German back, having to make up those credits before he receives his diploma. That is the 4-year course. Now let us consider the 2-year course. The 2-year course is designed primarily for those students who do not wish to go into research or science work, but who wish to go back to the farm. In the 2-year course in agriculture there are no language requirements, not a language requirement outside of English. A student can enter the 2-year course in agriculture without having looked inside of a German, French, Latin or Greek book. He can complete that 2-year course in agriculture and receive his diploma, "Graduate in Agriculture," without having taken any foreign language. After he completes the two-year course in agriculture, he can go on and take the 4-year course in college and receive his degree of Bachelor of Science in Agriculture by making up the four year requirements. It is true, he has to come up to the standards of the long course with the exception of the language requirements.

Now let us go one step further and take the short course, in which we give two years of fourteen weeks each. In the short course no examination of any kind is required of any student over, I think it is sixteen years. Any boy or any girl can enter the short course in agriculture without any examination and at the completion of the course, without having studied any

language, English included, can receive his diploma of a graduate of the short course in agriculture. That is the exact status of the entrance requirements of the courses of agricultural study in the University.

Mr. Whitnall: I am very glad to know that those buttons have been clipped off, because it is only two years back that I took a personal interest in a young man that was barred from the University on account of not having the necessary credits in language.

Mr. Gonzenbach: I think Mr. Whitnall is wrong, I think language is very important in agriculture. There are occasions on a farm when it is very valuable to have a command of language, for instance, when a cow refuses to give down her milk.

Mr. Reigle: Our friend there is making good and proper progress in the way of becoming a good and substantial farmer.

The President: We have a number of pleasant surprises. Mr. George Kellogg can tell us this year how successful Wisconsin is in the raising of peaches, when Michigan is making an evident failure of it.

Mr. Kellogg: I spent two days with Ben Bones at Racine. He is just outside of the city limits, a little south. It has been seven years since he planted the pits, grew the seedlings, budded 400 trees and they commenced bearing at two and three years old. Two years ago he raised 370 bushels of peaches like these, and sold them at Racine. I do not know what he received for those. He is selling now 200 bushels at $2.50 a bushel, just loading down the wagon every morning and going to the city. He is right on the sandy soil, he is within a mile of the lake shore, and this peach is a Canada peach, I do not know the name of it, it is a clingstone, but it is very sweet. Now, perhaps some of you might want a pit, a peach pit to try it and start a seedling. I was overjoyed with the crop myself, almost made myself sick eating peaches for two days, I did not suppose they would ever make anybody sick. I want to call your attention to his success. He cleared $700 this year on less than an acre of strawberries and he is harvesting what will make him $500 in tomatoes, selling them now at $3 a bushel, and he sells his strawberries, he has a peculiar strain of the Jessie, that 15

fill a quart right along; he has the finest strain of Jessie, and he has kept it up from the original Jessie.

The President: Eating peaches for two days, for as old a man as he claims to be, I think it is wonderful that he has carried through it so well, but it shows what horticulture can do for people. You who have looked over the vegetable exhibit, the flowers, etc., have been particularly attracted by the vegetables from Lake Geneva, especially because they are not entered for competition, they are a good-will offering for us, and we ought to be very much pleased that our Lake Geneva brothers are willing to spend so much time bringing them here for our instruction and entertainment, and any one who has not looked them all over will have missed it, and that is without any reflection on the others. These on this side (indicating) I understand are altogether from the Lake Geneva Gardeners and Foremen's Association.

Mr. Smith: Several times in the past our Lake Geneva friends have done something of this kind in the way of bringing flowers or something of their products here, and I think it is only proper that we should tender them, as a society, a vote of thanks for this production of theirs. It is certainly very fine and helpful to us, to show what can be done even in a dry season. I move you, therefore, that a vote of thanks be given this association for their exhibit.

The motion was seconded and carried.

FLOWERS FROM FROST TO FROST.

FRANK R. KUEHNE, Lake Geneva.

This is a subject of such proportions that it is impossible to do it justice in the time alloted for such a paper as this.

To do this subject justice one would need to consider the whole category of Perennials, Annuals and flowering shrubs, and so, to make this paper valuable as far as it goes, is well for us to confine ourselves to such varieties of perennials annuals, etc., as would prove of value to the amateur as well as the professional gardener.

When the storms of winter grow less fierce and the sun begins to climb higher in the heavens, how glad we are when we look in some favored spot and find that our dearly loved friend the snowdrop has arrived to welcome the long looked for spring.

Following the snowdrop comes the Crocus, which makes a splendid showing when massed in separate colors in the shrubbery, on the lawn, or in some conspicuous place in the woods.

The pretty little blue Scilla Siberica is always welcome and leads a procession of such old favorities as the Hyacinths, Tulips, Narcissus and Jonquils, which will, when given very little care, give a succession of bloom from early spring till late in May. These bulbs are cheap and when planted in the early fall and given a slight mulch of coarse litter throught the winter, will amply repay anyone for the trouble and expense. There are a great many varieties of these bulbs on the market, but as the list is so long I will only say here that nearly all of them will give satisfactory results if planted eary in the fall and given time to root well before severe freezing weather sets in.

Following these bulbous plants comes a procession of perennials and annuals that is truly entrancing to the lover of these beautiful flowers. The list is so great that it almost hopeless to do them justice in a paper of this description, so we can only hope to mention some of the most valuable ones for the perennial border or for cut flowers for home decoration.

Among the first to come into bloom is the Digitalis or Foxglove valued not alone for its beautiful spikes of bloom, but for its medicinal properties also. The best method to obtain large spikes of bloom is to sow the seed in May, transplant the seedlings when large enough to a well prepared piece of ground, keep them shaded till they are well established and in the early fall when they are strong plants, they can be planted out where they are intended to bloom. Dig in plenty of well rotted manure in your beds or border as the Foxglove is a great feeder. These plants will do well for two or three years, but it is best to grow new plants every year, if first rate results are expected.

The Aquilegia or Columbine is another old fashioned flower that does well under the same treatment as the Foxglove. Some of the newer varieties of long spurred hybrids are beautiful additions to this interesting family.

The Campanula is also an old favorite and does well under

the same treatment as the Foxglove and Columbine. There are a great many varieties of Campanula or Cantebury Bells but the most valuable varieties are Campanula Medis, Campanula Pernicifolia, Blue and White, and Campanula Pernicifolia Grandiflora Moerhimi. These are all beautiful and valuable either for the border or for cut flowers.

The Hollyhock is also worthy of a place in the garden and when well grown makes a splendid showing. Unfortunately the Hollyhock is subject to blight and to be successful with them they ought to be sprayed several times during the season with Bordeaux mixture. Chater's strain of double Hollyhocks are fine and give some splendid colors. Treat them the same way as advised for the Foxglove, etc., and when they commence to grow in the spring, spray with Bordeaux and your hollyhocks will be a thing of beauty and a joy, as long as they last. There is a new strain of annual Hollyhock that can be sown early in the spring and flowered the same season but they are inferior in quality to the older kinds.

In growing perennials from seeds the methods advised for the growing of those already mentioned will be satisfactory in all cases of hardy perennials. Sometimes it is advised to sow perennials as late as August, but as a rule that is too late and the best results will be obtained if they are sown early in the season and treated as advised. In the case of our old friend and favorite the pansy, August is early enough to sow and the plants will be large enough to go through the winter with a little protection, or if wintered in cold frames will give fine flowers for cutting early in the spring. The English daisy will do well treated the same way as the Pansy but needs a little more protection in winter.

The Dianthus family give good results, one member of this family Sweet William (Dianthus Barbatus) is an old favorite and is hardy and prolific in any spot of the garden.

Scotch Pinks (Plumarius Poeticus). Her Majesty, the best of the hardy pinks, a free bloomer, pure white and easy to grow. Most of these can be grown from cuttings, or seed, but in the case of Sweet William from seed is the best way.

The annual varieties are a very pretty and useful class of plants. They can be grown from seed sown inside early in the spring and when the plants are large enough planted outdoors,

or the seed can be sown outdoors where the plants are intended to bloom. They will give an abundance of bloom till the frost snuffs them out.

The Delphinium or hardy Larkspur is one of the most magnificent and satisfactory flowers we have in the list of hardy plants. When well grown the splendid spikes of beautiful blue flowers are certainly an ornament to any border. The Chinese Delphinium is quite a different type, being of a dwarfer habit growing and flowering in bush form, colors blue and white.

We also have the annual Larkspur which gives beautiful cut flowers. When the seed is sown outdoors in the spring where the plants are intended to bloom they will give a supply of bloom long after the older and hardy varieties are gone.

Where white flowers are in demand there is nothing to equal the old Achillea, The Pearl. The plant is very hardy and is a profuse bloomer and the pretty bunches of little double white flowers are fine for cutting and last well either when cut or on the plant.

The Iris family is well worthy of consideration and some of the different kinds ought to be in every garden. They flower in the following order, Spanish, German, English and Japanese. There are other varieties but these are the best. The Spanish and English are bulbous and the bulbs should be planted in the fall, when planting Tulips or Narcissus. There are some good varieties of German Iris which are all easily grown and are very useful. For magnificence of bloom however the Japanese Iris is easily first in the list and when given a good rich soil and plenty of water in the growing and blooming period they certainly give splendid results. They should be divided and replanted every third year as their natural tendency is to grow from the outside of the plant leaving the center to decay.

The Peonies may be classed as successful rivals of any hardy plant that adorns our gardens. They rival the finest roses in color and fragrance and produce a gorgeous effect when in bloom and are very satisfactory as a cut flower. They are perfectly hardy requiring very little protection during the winter. They are not subject to disease or insect pests and the foliage after the flowering season is over keeps clean and always looks good in whatever situation the Peony is planted. The following kinds are usually considered among the best: (Festiva Maxima)

large white, the inner petals tipped with bright crimson. (Edulis Superba) mauve with lighter shadings. (Festiva Alba) white. (Marie Lemonie) ivory white. (Louis Van Houtte) crimson maroon. (Alba Plena), pure white. (Dorchester, flesh color. (Duchess De Nemours), pure white.

There are many others worthy of mention but time and space does not admit. As the Peony improves with age, before planting, double dig your ground working in plenty of good well decayed cow manure. Plant not less than three and a half feet apart each way and with good care and generous cultivation your Peonies will keep on improving for many years.

Your garden will certainly be incomplete unless you have a good bed of hardy roses. Everybody the world over loves a rose. The rose, violet and lily of the valley are famous in song and story and are greatly loved by everyone and are usually linked together in our memories of bygone associations. The hardy or Hybrid Perpetual rose rather likes a stiff soil and good rich soil of this description will give splendid results. The ground should be thoroughly prepared and enriched before planting the roses. The plants should be set so that the union or graft will be about three to six inches below the surface of the ground. The plants should then be cut back to about three buds to each stem, cutting out all the weak shoots altogether. The plants should not be allowed to flower much the first year but should be encouraged to make a good growth and when the plants are well ripened in the fall they should be tied down and when the ground has become frozen so that the mice will not bother the plants, they should be covered over with a good mulch of coarse litter or leaves. This will give them good protection and in the spring when the weather has become mild enough, the litter should be taken off and when the plants begin to show signs of growth they should be prunned back to three or four buds and the weak shoots cut out altogether. Treated in this way your roses ought to give you results that will delight your heart. The following varieties are perfectly well suited for the above method of cultivation and are considered among the best varieties.: Paul Neyron, dark pink: Baroness Rothschild, satin pink: John Hopper, bright rose; Marchioness of Londonderry, ivory white; Margaret Dickson, white with pale flesh center; General Jacqueminot, scarlet crimson; Frau Karl

Druschki, pure snow white. There are many other varieties worthy of a place in every good garden.

The climbing roses should also have a place in the garden and when given a proper place such varieties as Dorthy Perkins, The Farquhar, Crimson Rambler and others add greatly to the beauty of the garden.

Among hardy plants the hardy Phlox takes high rank. They start blooming early in July and continue till late in the fall. They give the most effective display when planted in masses of one color. There are a great many varieties of this class of plant but if six or ten of the best kinds are selected this will give a selection that will give good satisfaction. The following six varieties are very good: Bridesmaid, pure white; Pantheon, rose color; Coquilicot, scarlet; Stellas choice late, white; Selma, pale rose; Lord Raleigh, purplish red. There are many other varieties that are very good. The suffruticosa varieties are worth mentioning. This type does not contain the rich colors of the standard varieties but are invaluable for their early blooming which commences in May and continues through the season. Of this type the following are good: Indian Chief, Miss Lingard, Ringleader, Dr. Hornsby. The Phlox responds well to good cultivation and will well repay anyone for good care and cultivation. Phlox Subulata or moss phlox which flowers in the spring with its moss-like foliage is fine for rockeries, borders or beds. It is best propagated from cuttings taken in the spring and will flower the following spring.

In a mixed border of plants the Shasta Daisy is very effective and is useful as a cut flower as well as effective in the border.

The Asters both perennial and annual should not be overlooked. They are all splendid for cutting and look well in the garden. Many bulbs are planted in the fall but others can be planted in the spring and give good results. The gold banded Lilium Auratum, Lilium Speciousum Album and Rubrum, the Tiger Lily and many of the native lilies are all suitable for garden culture.

Among the bulbous plants the Gladioli and Montbretia are of easy culture and are splendid for border planting or growing for cut flowers.

There are so many fine varieties of flowering plants that one feels at a loss how to do them justice in a paper of this kind when

many of them are fit subjects for a paper all by themselves. Take the lilies for instance what a valuable paper could be written on them alone and yet we can only glance at them as we pass along.

The Canna is another valuable flowering plant and is almost indispensible in a well ordered garden. What splendid effects can be produced with massed beds of Cannas and what a splendid assortment of varieties are being produced by lovers of this magnificent class of plants. The culture of the Canna is simple and anyone who will give it a little care will be well repaid.

The Dahlia is another old favorite that is becoming more popular every year. They flower at a season of the year when other flowers are on the wane and their gorgeous blooms are doubly valuable at a season when Jack Frost is beginning to get in his first work. The Dahlia like the Canna likes a moist, rich, soil and is of easy culture. The tubers can be planted outdoors in May and if only one shoot is allowed to grow splendid plants can be grown in this way.. The method mostly used with gardeners is to start the old tubers in the greenhouse and when the young shoots are about four inches long they are taken off and rooted in a propagating bench.

There are many valuable flowering plants that can only be mentioned in a casual way but are valuable in the garden in the fall of the year. The Rudbeckias, Golden Glow and Purpurea, are well worthy of a place in any garden. Pyrethrum Miginorum is one of the finest things for cutting in the late fall. Boconnia Japonica is a tall stately plant with panicles of white flowers that is useful as a background in large beds or borders. Boltonia Asteroides is one of our finest native perennials and Boltonia Latinquama is also valuable in the late fall. For producing a gorgeous effect in the fall there are few plants that equal the Salvia. They are easily raised from seed sown in the spring and are usually one of the last flowers to be seen in the garden in the fall.

Before closing I want to say a word for the hardy chrysanthemum. These are perhaps the last flowers to be seen outdoors in the fall and if planted in a sheltered place can be had in flower well on into October. I feel that I have done this subject but slight justice but this paper is probably long enough and you may get more benefit from the discussion of the subject than you get from the paper itself.

Mr. Periam: I think this paper ought to commend itself to every lady in this room, but there is one thing I would like to advise them, do not undertake too many varieties.

Mr. Whitnall: There is one feature in which most catalogs are deficient, a matter that would be helpful to their customers, amateurs generally, and that is how to use these perennials in naturalizing them in their gardens. When we go through the woods and find wild flowers, if we start early in the spring we find the hepaticas, later the anemones, etc., each have their turn and are the most conspicuous, but as the turn of one comes the other disappears. Unless you are accustomed to looking for them you forget about that, but I notice in most of our gardens around the city they are planting, say, a clump of peonies. It is very beautiful for a little while, but when it fades there is nothing beside it to come up and cover it and let the peony go to sleep. There should be something awake and something sleeping all the time, and it is these combinations for making a garden perpetually beautiful and are easy of culture, that become naturalized and take care of themselves, that is the feature that our modern catalogs do not care of.

Mr. Reigle: I have one definite question I would like to ask, on the supposition that I have a large clump of peonies that have "gone to sleep," I want a definite answer as to what I can put in there to liven up that portion of the ground where the foliage has died.

Mr. Whitnall: A clump of larkspur near a peony will hold back until the peony has had its day and then screen it very nicely, and they get along very beautifully together.

Mr. Reigle: That answers my question very satisfactorily. What I wanted was something in the way of color to take the place of the high color that had been there before, only different. The foliage, we know, usually remains pretty well during the proper season.

BEST VARIETIES OF VEGETABLES FOR THE AMATEUR.

By Mr. KRUPA of Lake Geneva.

To make this list of Vegetables as complete as possible, I will mention all the species of vegetables in alphabetical order, and those which are mostly cultivated.

Those marked with a "X" are not of much use, to an average grower.

X 1. *Artichoke:* A vegetable which is not much known to many growers, as same necessitates a long period for growing and there is small demand for it, except in large private gardens. Seeds sown in January produces plants fit for use in following fall; those sown later must be protected over Winter to obtain a crop for next year. *Large Green Globe.*

2. *Asparagus:* This delicious vegetable should find a place in every garden or farm. The culture of same when once established, is simple. The best method to establish it is: to buy roots, which are carried by most commercial nurseries, and plant them in a well-drained, well manured and well prepared bed. The rows should be 3 feet and the plants in the rows 2 feet apart. The roots should be covered with 6 to 10 inches of loam. When the bed is planted in above mentioned manner, all there is to do the first two years is to mulch the beds every year with good, rotten manure and dig it in in the Spring and keep the beds loose and clean from weeds by cultivating them often during the Spring and Summer.

The third year after the planting has been done the cutting can begin. The first year very sparingly and should not be continued any longer than about the 15th of June; then leave the growth until the Autumn, when same should be cut down to about 4 inches from the ground.

Mulch your beds for Winter, and if the beds are attended properly, they will yield good crops, as long as 15 to 20 years, even longer. Salt is a good stimulant and should be applied, when the beds show signs of exhaustion.

Varieties: *Colossal, Giant Argenteuil, Columbia Mammoth White* are the most cultivated.

3. *Beans, bush:* The chief object is to select the best varieties to be grown. Boddington's Bountiful, Burpee's Stringless, Refugee, Currie's Rust-proof Black wax, Wardwell's Dwarf Kidney Wax are considered as good as anybody can wish. For Winter use in dry form: *Michigan Wonder, Boston pea bean, White Marrowfat.*

4. *Beans, pole: Kentucky Wonder, Scarlet Runner, Horticultural-Cranberry.*

5. *Beans, Lima bush: Burpee's Improved, Fordhook's, Dreer's.*

6. *Beans, Lima pole: Dreer's Improved, Ford's Mammoth.*

7. *Beets:* Sow in drills 18 inches apart and thin out from 8 to 12 inches in the rows. Seeds can be sown as soon as the ground opens, and continue by four week intervals until end of July. *Boddington's Early, Model-Red-Globe, Egyptian, Electric.*

8. *Borecole:* In some quarters very useful vegctable. The young leaves are used and prepared like spinach. *Curled Scotch.*

9. *Brussels Sprouts:* Delicate vegetable for Fall and Winter use. Culture like that of cabbage. *Dreer's Select Matchless, The Wroxton.*

10. *Cabbage:* Sow seeds for early varieties in March, if possible, under protection, and plant out as soon as plants and ground are ready, in rows 2 feet apart, 18 inches in the rows. Varieties: *Earliest of Earlies, Early Winningstadt* (for sandy soil) are as good as any.

For second early: *Improved early Summer, Succession.*

For late: *Danish-Ball-Head, Large-Late-Drumhead, Dreer's Selected-flat Dutch,* and *Dutch Winter.*

11. *Cabbage, Red: Early-red-Dutch-Erfurt, Othello.*

12. *Cabbage Savoy:* For early: *Early-dwarf-Ulm;*

For late: *American-Drumhead-Savoy.*

13. *Cauliflower:* For early: *Early-Dwarf-Erfurt, Early-Snowball;* For late: *Dry Weather.*

As all cabbage varieties are subject to all kinds of injurious insects, as: maggots, green-worm, black-fly, grass-hoppers, etc.,

much care has to be exercised from beginning to the end to protect the cabbage-plants from the ravages of the insects.

In early stages of the plant's life, the black fly is the most dangerous enemy. To protect the young plants, use the hose or sprinkling-cans freely and dust with wood-ashes mixed with tobacco-dust.

Next comes the cut-worm which is very hard to combat and guard against. A little fine, pulverized nitrate of soda, or unslacked lime, placed aound the roots, is effective.

Then the green-worm comes in. This pest is easier to combat, but it never should be left to gain headway. As soon as is puts in appearance, the weapon in the form of slug-shot, hellebore or pyrethrum powder, in a piece of cheese cloth would be used against them immediately. These above mentioned powders are very effective, and entirely harmless to mankind, as they lose their poisonous properties after being exposed to the air for three or four days; the dust should be perfectly dry to enable it to fall through the fine meshes of the cheesecloth, when it is shaken over the plant to be treated. All cabbage varieties like a deep, rich and moist soil.

14. *Carrot:* Sow in drills 15 inches apart and as soon as the ground is open, and then as often in succession as desirable, until July. Rich, deep ground.

For early: *Early Parisian.*

For intermediate and late: *Chantenay-half-long, Danvers-half-long.*

15. *Celery:* Sow in March in flats or pans, as seed requires a long period to germinate; plant in drills 3 to 4 feet apart, two rows to a drill; rows 8 inches apart and plants 8 to 10 inches apart in the rows. Later in the season, the celery has to be blanched by means of boards, or by drawing the loam toward the plants. Only through this process it attains its crispness and delicacy. For early: *Improved White Plume.* For late: *Giant Pascal.* Deep, rich ground.

16. *Celeriac:* Culture the same as by above, only it don't need to be blanched. Of this variety, only the roots are used for salads in Winter. *Large-smooth-Prague,* one of the best.

17. *Chard Swiss:* Should be more known and cultivated, its tender leaf-stalks replace, in Summer, the asparagus of Spring.

Culture not unlike that of bets or mangolds. *Silver-Lyon-Swiss,* one of the best.

X 18. *Chicory:* Culture like that of carrots. Tender leaves when blanched used as salad. The roots are used commercially as an adulterant of coffee. *Large-rooted.*

19. *Corn Sweet:* No need to explain how and where to grow corn; the main object is to select the seed and variety. Sow as late as July, always selecting late in season the earliest varieties.

For extra early: *Burpee's first of all, Golden Bantam, Early Cory.*

For second: *Early Stowell's Evergreen, Dreer's Aristocrat, Early Champion.*

For late: *Black Mexican, Country Gentleman.*

20. *Corn Pop: White-Pearl.*

21. *Cucumber:* Sow in hills or drills, beginning in May until end of July. Red spider, Fungi and black fly are the chief amongst the enemies of the cucumber. Use as remedies: hose if available for the first, sulphur powder for the second, and tobacco dust for the third.

Rawson's-white-spine, The Davis-perfection are two good varieties for every purpose.

X 22. *Dandelion:* Sow in drills and thin out to 6 or 8 inches, when grown up, cover with boards. Thus treated, it becomes tender and the leaves furnish a wholesome and delicate salad. *Thick-leaved French.*

23. *Egg-plant:* This vegetable should be more grown than it is now. Start the seeds very early in flats or pans, if hot-bed available, the better. Prick off in small pots and plant out, when danger of frost is over, in rows two feet apart and two feet in the row. Black-fly often destroys the young plant in few days. For this reason, the grower should be watchful to intercept it by its first apearance. Syringing with clear water or dusting with tobacco dust or hellebore powder are effective. *New York-Spineless* is as good as any.

X 24. *Garlic:* Propagated by division of the old Bulb. Culture like that of onion.

25. *Kohlrabi:* A very delicious vegetable, but not very often seen and not much grown. Culture almost same as that of cabbage, to which family it belongs, although entirely different in form. Seed can be sown from March to August; 6 to 7 weeks

is the average growing period. *White Vienna* and *Purple Vienna* are standard varieties.

26. *Leek:* Sow seeds as early as possible. When plants are big enough, transplant in drills 12 to 18 inches apart, 6 to 10 inches in the rows. As the plants grow up, draw the soil around them to make growth crisp and tender. *Prizetaker* one of the best.

27. *Lettuce:* What would a garden be without this ever refreshing vegetable? Its wholesome qualities and easy culture enables it to be found in almost every corner of the globe, and its many-fold varieties are adapted to as many climates and soils. If warm frame is available, try *Grand Rapids.*

For out-doors in early Spring and Summer: *May-King, Big-Boston.*

For hot and dry summer months: *California, Cream-Butter, Salamander, Hanson Improved, Self-folding-Cos-Romaine.*

28. *Melon Musk:* Although the melon ought to be classed in the fruit, more than in vegetable class, the mention of it is made, because it is mostly found growing in the company of vegetables. For its refreshing and delicious taste no garden or farm should be without it. The culture is not difficult, but its enemies in the form of insects and fungi are many. The most destructive is the so-called Pumpkin or Squash bug, which sometimes preys upon the plant from beginning to the end of the plant's life. Dusting or sprinkling with Paris Green mixed with 40 to 50 parts of gypsum or unslacked lime, or diluted with 50 parts of water are in most cases effective to get rid of the troublesome bug. For the Fungus, use Bordeaux mixture, diluted with 40 to 50 parts of water and dust with sulphur. The most popular varieties are: *Emerald-gem, Milwaukee-Market, Early Hackensak, Rocky-Ford.*

29. *Melon—Water:* For this species, the climate of Wisconsin is not very favorable, especially so the Northern parts of the State. The growing period is long and it seldom gets ripe. Several smaller varieties may be successfully grown, as *Cole's Early Dixie.*

The culture is not unlike that of musk melon, but it is not subject to as many diseases and injurious insects as the former. The growth is strong and vigorous, for which reason, ample room should be allowed to each hill.

30. *Mushroom:* If anybody has a suitable place in the form of a cellar and some time to spare. Mushrooms would I know be welcomed and appreciated on every household table. The culture is not so difficult as many imagine. The success depends more in the exactness and thoroughness of the work. Any spawn is good if it is attended right. Spring and Fall are the best time for its culture.

X 31. *Okra:* A vegetable mostly used by the Orientals. The pod which is used for flavoring soups and stews is not unlike that of cayenne pepper pod, green in young state and cream yellow in progressed state. Used only in young state. Culture about the same as that of pepper.

32. *Onions*: Grown from seed or from sets. Sow the seed in March-April in drills, or if frame available, in frame and transplanted as soon as plants are ready, in rows 12-15 inches apart and 6-10 inches in the rows. Sowing in the drills for table use can be continued until July. To obtain sets, sow seeds in drills in June quite thickly; lift when the top is dry and save in cool dry place till spring and plant out as soon as the ground is open.

Ailsa-Craig, Yellow Globe, Prizetaker are good varieties. *White-Bartletts* excellent for pickling.

Sets can be obtained from any variety.

33. *Parsnip*: Sow seeds as soon as the ground is open in drills 15 inches apart and thin out to 4-5 inches in the rows. Deep rich ground is favorable.

Improved-Hollow-Crown will answer every purpose.

34. *Parsley*: Sow in drills as soon as the ground will permit; thin out 8–10 inches in the rows. Triple Moss curled is a good one. *Hamburg rooted,*—the roots of this variety are used for flavoring soups.

35. *Pepper*: Sow seeds in flats or pans and transplant out-doors, when danger of frost is over. Sweet-pepper furnishes a very delicious salad but it is not much known; same can be preserved for winter use and is used in many other ways. When once established, it needs little attention; insects seldom attack it.

Hercules, Upright-Sweet, Bull-nose, Ruby-King, Mammoth for sweets, Chili, Long-Cayenne for pickling.

36. *Peas*: No need of instruction. Sow as early as possible

as it stands a good deal of frost, and sow in succession during almost all of the growing season, except the hottest months. Use beds well manured the previous year, as in fresh manured field the crops will not be as abundant. For early: *Boddington's Early-Bird, Nott's Excelsior, Gradus,* For Intermediate: *Senator, Telephone.* For late: *Mammoth Marrowfat, Alderman.*

37. *Potatoes*: Rich sandy soil suits best. For early and intermediate: *Early Rose, Acme, Early Ohio, Beauty of Hebron.* For late: *Carmen No.* 3, *Rural New Yorker No.* 2. Be in time with Paris green and mixture or the potato-bug and rust will have the better of you.

38. *Pumpkin*: Don't fail to provide for the proverbial pumpkin pie. *Large Cheese* and *Sugar* are good enough.

39. *Radish*: This relish should find a little corner in every garden or farm, the more as it grows so freely and the culture is so easy, especially in the Spring. Sow in drills or broadcast, and then thin out to 2-3 inches. Use wood-ashes if black-fly sets in appearance and sprinkle freely. Good loose ground the most suitable. *Non-Plus-Ultra, Cooper's Sparkler, Long-white-Vienna, Icicle, Olive-shaped-scarlet* are amongst the best.

X 40. *Radish-Winter*: Sow in July. Culture and treatment like that of the turnip. Save the roots for Winter use. *Winter-Black-Spanish.*

41. *Rhubarb*: A couple of hills should be found in the smallest garden. No need to explain that this plant furnishes one of the earliest, the most wholesome and most delicious material for our table. Extremely rich and deep ground is the most suitable. Heavy Mulching preserves and stimulates the plant. *Linnaeus, Victoria.*

X 42. *Seakle:* Plants preserved for winter, having tender leaves, which are used and prepared similar to asparagus.

X 43. *Sorrel:* Sow in May in drills, used for sauce. *Large-leaved-French.*

44. *Salsify*: Culture same as parsnip; used for soups and in same manner as asparagus. *Mammoth-Sandwich-Island.*

45. *Spinach*: Sow as early as possible and in succession as far as September. *Round Viroflay, Victoria* for Spring and Fall. *New Zealand* for hot Summer months.

46. *Squash*: Few hills scattered through the cornfield, or well-cultivated in the garden always brings a dish of this whole-

some vegetable. Culture identical with that of melon or squash. *Early-White-Bush, Golden Custard, Vegetable Marrow.* For Winter: *Hubbard, Boston-Marrow, Winter-Crook-neck.* Be on lookout for the squash bug.

47. *Tomato*: For its wholesome qualities and manifold uses no one can grow too much of it. To attain earlier crops, sow the seeds in flats or pans and plant out when danger of frost is over. Any good soil will suit it. Black fly is its chief enemy and should be guarded against constantly. *Livingston's Coreless, Sutton's best-of-all, Dwarf Stone, Tall-Stone, Ponderosa* are amongst the best. For Pickling the: *Yellow-Cherry, Red-Cherry, Yellow-plum, Yellow-pear.*

48. *Turnip*: For early use sow seeds in April in drills 15 inches apart and thin to 6 inches in the rows. Sow at intervals of 4-5 weeks and there will be always some young turnips for the kitchen. For Winter, sow seeds in above manner in July and preserve the roots for Winter. For early and Summer; *Extra-early-purple-top-Milan.* For Winter *Golden-Ball.*

49. *Herbs*: These should find also a little corner in every garden, as for the sweetness and aroma they find various uses in the kitchen and household. Among them may be mentioned: *Sweet-Basil, Dill, Hyssop* (medicinal properties) *Chives, Lavender* (sweet perfumes) *Marjoram, Mint, Peppermint Rue, Sage, Savory, Taragon, Thyme, Wormwood* (med. prop.).

As a final word, will say: Buy your seed from a reliable firm, procure a couple of sash, they will repay themselves many-fold. Keep the hoe and cultivator busy all the time, and do not allow them to rust or the weeds will triumph. Be liberal with manure and fertilizer; wage war on insects incessantly and with all available means and success in vegetable garden will be assured.

MAKING COUNTRY HOMES ATTRACTIVE.

By Mr. E. H. NILES, of Oconomowoc.

In discussing the question of how to make country homes attractive, it might be well first to consider why it should be made so. The American farmer is practical, and he will ask why before he undertakes a proposition, so we will give the following reasons. First, a man should be and is largely judged by his works, and what work more clearly shows the character of a man than the way he keeps up his home. The historian can tell the stage of civilization any people have attained by their manner of home building. What is true of classes is true of the individual. If you drive on a country road you are consciously or unconsciously forming an opinion of the head of the family as you pass each home. Of course you cannot always tell who the head of the family is, but whoever it is, the head is usually responsible for the appearance. The first may be neat, all the implements placed in the shed, every bit of rubbish picked up from the shady lawn, house and barn freshly painted, and you will put that man down as being careful of details and usually successful in business; the appearance alone will help his credit financially. The next may be slovenly, with old broken down fences, broken implements scattered out over the lawn, lawn either bare or mass of weeds, hot sun beating down on the house all day, you will put that man down as being careless, thoughtless of his family and unsafe in business. The next may not be especially neat with its wealth of roses and vines growing rampant over the fence and the cottage nestled back among honeysuckles and lilacs, but you will judge that person to be artistic, with a soul large enough to appreciate the simpler forms of nature. Then you will pass on to one, where, with its old flower garden of holly hocks and verbenas, pinks and daisies may be the most inviting of all, because it indicates the good mother's care. It will bring to you memories of other delicate hands that used to dig among those same old flowers of your childhood. This will appeal to you most of all, possibly more than the grand estate of wealth, because it shows the love

and labor it has taken to produce, not the wealth. But some one will say that this is merely for show, so we will take another view.

Our greatest duty in life is to make the world happier and better. This refers to ourselves, our family, our neighbors and humanity in general. One way to accomplish this is to make the world, or some part of it, more beautiful. If your home is made attractive it not only makes every member of your family happier and better, but every one who passes that way. The idea will spread to the neighbors and then to other communities and finally to every hamlet in the land, as this movement for landscape improvement is doing today.

One of the greatest economic questions of the day is how to keep the boy on the farm to raise food for the increasing millions. One of the most practical ways of solving it is to make the home in the country more attractive. Landscape improvement not only makes the farm more attractive, but more valuable. Some other forms of improvement depreciate in value, but trees add to their value each day. Therefore, considering that it is advisable to make the country home attractive, how will we go about it?

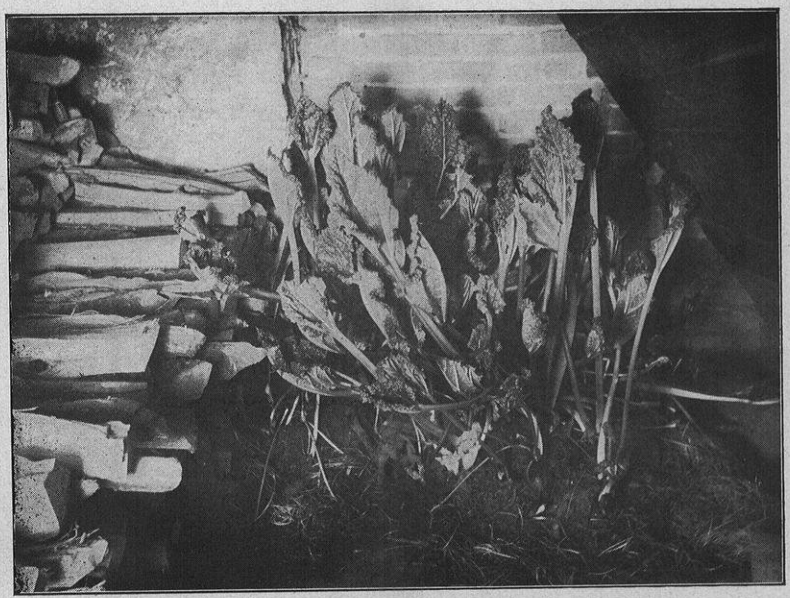
First make a good lawn, grade it so that it is well drained, especially about the house. It is not necessary, especially on a large place to grade it to a uniform slope, because natural elevations and depressions often produce the prettiest effects. After the proper grade is established apply a good coat of fertilizer and pulverize the ground thoroughly. After this is done it may be necessary, if the ground is especially poor, to put on a layer of black soil, but in ordinary soil good fertilizer is sufficient. Then put on good seed and put it on thick, roll this thoroughly and it should come up in a short time, especially if the weather is favorable. Of course the weather has a great deal to do with this. This should usually be done in the spring. A good coat of top dressing every few years in the fall will help to keep the lawn in good condition.

Now the place is ready for planting, but before putting in a single plant, make a careful plan of the entire ground. This is just as essential as having a plan for a house, because if you do not you will soon be putting in shrubs here and there, wherever you have an opening, and you will never have symmetry

of form or harmony of color. In this you can also avoid the defect which has been mentioned this afternoon, of having one big spot full of bloom at one time, and the rest of the season bare, but plant so as to have a rotation of flowers. In regard to the time after the flowers are gone, if bloom is wished in that position, the idea that has been mentioned today of putting delphinium there is very good. Another good flower is phlox, which can be used in among peonies to bring bloom later on. The Oriental poppy is another flower that is very gorgeous while it is in bloom but its gets rather shabby later in the season. This should also be covered up with some flower that blooms later. In planning the lawn several forms or styles of landscape architecture can be used; there is no time to discuss these various styles, but the one most appropriate for the country home, and in fact nine-tenths of American homes is the natural or English style. This calls for an open lawn bordered with masses of shrubbery. Everything should be grouped naturally and grown naturally. Trimmed trees are out of place, that is, trimmed to geometrical forms. So in planting evergreens in this style, do not trim them up, let them branch to the ground. In planting trees use the native varieties largely; they will give the best satisfaction, although there have been some good ones imported, especially from Japan. You will usually find that the plants from Japan will give better satisfaction in Wisconsin than those imported from Europe, because Japan, like Wisconsin, is east of the continental divide, while France, England and Germany are west of the divide, as Oregon and Washington in our country. These trees should be arranged naturally and slightly in groups, so as to give the contrast of light and shade over the lawn. The shrubbery should be in masses. The most common mistake is to scatter the shrubbery all over the lawn, in this way they are harder to take care of, do not grow as well and do not look as well as where they are placed in beds. They can be used to screen unsightly views, to break the sharp angles of buildings and to place in angles or sudden turns in walks and in general as a framework for the lawn. They can be so arranged that you can have bloom all the year, from the golden bell of the spring to the hydrangeas in the fall. Many of these are fragrant, as lilacs, upright honeysuckles and philadelphus. Others brighten the quiet days of autumn with gorgeous colorings of

foliage and berries. Among these I might mention the high bush cranberry, the dogwood, the sumachs, the elders, the coral berry and the barberries. Among the flowers the perennials are very satisfactory and will brighten up the lawn as nothing else will do. Usually the person who has not much time to spend will get the most satisfaction from the perennials and from those that are perfectly hardy. In this class the old standbys are the peonies, the bleeding heart, iris, delphinium, phlox, golden glow, some forms of lilies, and others. Another class is very desirable but not as permanent as coreopsis gaillardi, Oriental poppy, hollyhocks, and Shasta daisies. Use these as borders for the shrubbery beds or in beds by themselves. The soil for them should be prepared 15 to 18 inches deep and should be kept well cultivated. This is even more important than watering although watering is necessary in dry weather to get the best results. Then, with a few vines over the porches our picture is complete.

And now with the finished picture we can look back over the undulating lawn with its patches of shadow and sunlight to the background of shrubs and flowers, to the framework of other shrubs on the sides, and then to the house under the swaying branches with its base and angles screened by shrubs and vines hanging from the porches. The picture is brightened by patches of bloom here and there from the iris at our feet to the cherry and apple blossoms in the back, while with the rustling of the leaves comes the fragrance of the wild crab, the lilacs and mock orange and you must be convinced as I am that the American farm is the finest place to live in all the world.



Rhubarb forcing in ordinary cellar. A single root on cement floor and packed in excelsior yielded 23 lbs. of salable stems in addition to many small ones.

Transactions of the Winter Meeting

Madison, Jan. 10, 11, 12, 1911.

TUESDAY MORNING, JANUARY 10.

The meeting was called to order by President Toole at 10 a. m. in the Madison Free Library, Madison, Wisconsin. The President introduced Hon. J. C. Schubert, Mayor of Madison.

ADDRESS OF WELCOME BY MAYOR SCHUBERT

Mr. President, Ladies and Gentlemen.—As mayor of Madison it gives me great pleasure to welcome you in behalf of the city and the citizens of Madison. We always look forward to the meeting of the State Horticultural Society with some anticipation. We feel that the State Horticultural Society has come to this city, to stay so far as their conventions are concerned, which we appreciate. There is one particular branch of work in Madison that perhaps you would be more interested in than you would to know what kind of a fire department we have, or perhaps what kind of police department we have, or some other branch of the local government. The organization of the Madison Park and Pleasure Drive Association is somewhat unique. Its members started out with the idea that we ought to be able to show to strangers what there is in Madison and what there is around Madison so far as its lakes are concerned, and the lay of the country generally and the natural growth. That was done, by organizing and building a few miles of drive on the west end of the city, and then a few more drives on the north

end of the city, then extended toward the south, until they had completed quite a system of drives. After they had got along with this work a short way they soon found that the field they are working in was large and that they had to extend their work. They occasionally hired a landscape architect to come here for a day or two and make a plan and give them advice and they gradualy connected those drives with the city, and today they are building as much city as drives and in fact they have so connected the work that the president of the association is at present mayor of the city. After they had secured the advice of landscape architects, it dawned upon members of the Association that we would have to hire a permanent man for that work, we would have to have some one on the ground practically all the time, and so, after the city had agreed to pay a small amount toward the maintenance of the work, they secured the assistance of a man who was trained by one of the leading architects in the country, Olmsted Bros., of Boston, and we had him with us for a period of two years. During that time he developed the work inside of the city. He was a practical horticulturist. He knew more about plants and trees and shrubs and vines of all kinds than he did about city building, so he developed that feature about as far as a city of the size of Madison could reasonably be expected to develop horticulturally. Then he secured a place in the West, and we have secured a man who is not so much of a horticulturist as he is a city builder, and today a large part of the city building of Madison is done through this organization, The park and drive association. It has always been the object to develop a clean, beautiful city and surroundings. One of the things which the president of the association in former years advocated is shown in a report by John M. Olin, on behalf of the board of directors in April, 1895. "It is also intended to plant this year, along parts of the drive, a number of the more hardy flowering shrubs. Many people think these will be destroyed, some of them may, but in time there will be created a public sentiment that will not tolerate any such vandalism." That was in 1895; that shows what the feeling of the president of the association was at that time, for the protection of shrubs, vines and trees, and we have gradually developed that feeling. The next year it shows in the same report that we planted 668 trees and shrubs and this is the lan-

guage used by Mr. Olin: "I think also there is a growing public sentiment against injuring any of the tree shrubs or vines along the drive, and I hope the time will soon come when everyone using the drive or any of the drives connected with it, will feel it is a part of his duty to protect it, and in that way secure for it the largest and best use for the public. Now, the feeling has grown, it has grown until the people of Madison have been educated to respect the trees and plants and vines just as much as they respect their homes. It is very, very seldom today that you will find any one going out in the parks or along the drives or in fact any where and injuring any tree or any flower, plant, shrub or vine. I have come to feel a great deal like a lecturer said at one of your meetings here, that he felt almost the same about seeing a tree injured as he would to see a human being injured, and that is the feeling that we are going to spread broadcast in Madison. To show you very briefly what horticultural work the city of Madison is doing, I will read one paragraph from the last annual report: "In eight years prior to 1909 the association had planted 140,839 trees, shrubs and vines. During the season of 1909, 9,110 were purchased from outside nurseries, 83 trees were obtained from our own nursery and 10,509 plants were collected, making a total for 1909 of 19,702. For the present spring we have ordered 199 trees and 8,309 shrubs and obtained from the nursery 136 trees and 560 shrubs and have collected 8,000 shrubs and 40 trees, making a total of 17,244 or a total, for the ten years, of 177,435 plants trees and shrubs. The principal planting this year has been in Brittingham Park, where the number of plants has been 10,426, Tenney Park 3,218, 3,090 on the drives, 350 in Henry Vilas Park and 210 shrubs in Orton Park.

Now, that is in a way only a beginning. In addition to this work we also develop playground places for children to be taken care of; we hire instructors to teach them to play, to teach swimming, to teach them to bathe during the warm months of the summer. We provide them with public boathouses in which they can keep their boats at a nominal fee, provided them with a river way which connects the lakes, and have just raised $16,000 to $17,000 to connect another lake with the two lakes that are already connected. We have perhaps a better chance here

to do work of this kind than they have in other cities. We have all the benefits which can be derived from a state university where agriculture and horticulture are taught, where all the modern methods are put forth, and we have this work right before our eyes, and in addition we have the help of those men who are educated along that line and who are educating others. We want you to see as much as possible of the winter scenes in Madison. If you are skaters, we provide several places for skating in our parks and lagoons. I trust that your convention will be a successful one, that you will assemble again in Madison a year from now, and I wish you God-speed.

Mr. Davis: Will it be out of place for me to ask the Mayor a few questions? I understand most of this work that you are speaking of has been done by public contribution or by the city, I mean, was it direct tax, or through contribution?

Mayor Schubert: The contribution through the association by private subscription has been $272,926. The city expended on this work $121,595. $84,000 of that $121,000 consists of bond issues at various times for the purchase of land necessary for the building of the parks and for connecting water ways. I should like to have gone into that, but the time is so short.

The President: Our Society fully appreciates the very cordial reception which has been extended by the mayor of the city, and we fully appreciate the cordial relations that are growing between our Society and the city of Madison. We of the state, because this work is developed at the capital city, feel that it will reflect glory not only on Madison, but also on the state of Wisconsin. Now I have the pleasure of introducing to any of you who do not know him, Dean Russell, of the College of Agriculture.

ADDRESS BY DEAN RUSSELL.

It is with pleasure that I come before you to extend the greetings of the university, as the mayor of the city has done with reference to relations existing between this society and the city.

The relation between the College of Agriculture and the State Horticultural Society have been of great mutual help; from the time of our dear friend, Professor Goff, who was the first professor of horticulture at the university, down to the present time there has existed a warm relation between the work of the College of Agriculture and that of this society. This society we of the university consider in the light of a parent, and I think we may look upon the development of the work of horticulture at the university as in a sense your child. That work has been expanding from its inception until at the present time it bids fair to take a position with reference to horticultural development that is commensurate with the attitude which the whole subject of horticulture is taking in the nation at large. Just now there is being constructed an adequate building for the housing of the department of horticulture. The main building is now in the process of erection, and the greenhouses and potting houses connected therewith are already built. Unfortunately a few weeks ago we suffered from an incipient fire which has delayed the occupation of the greenhouses and potting houses for a few months, but inside of two or three months' time that damage will have been repaired and these aids to the instruction and the research work of the College of Agriculture will be available. It is to be hoped by the opening of the college year next fall that the main unit of the horticultural buildings will be completed. These additions to our resources will cost somewhere in the neighborhood of about $70,000. Now, that represents a big development for horticulture at the university from the days when Professor Goff was there, many years ago. It used to be considered that horticulture was a sort of side issue at the university, that work in horticulture should take a back seat in comparison with some other phases of agricultural industry. The same view has more or less prevailed through the state at large with reference to the development of

horticulture, for as one looks back, fruit raising has been generally regarded as a side issue to the general business of farming. We are now experiencing a stimulus in this subject throughout the whole nation at large. People are beginning to pay attention to horticulture as a commercial proposition. The enormous increase of interest, not merely in the west, where it has been perhaps accentuated more than in other portions of the country, but throughout the Mississippi Valley and the East witnesses a remarkable change in the minds of the public relative to the importance of the industry.

Now, as long as horticulture was considered as a side proposition, where the farmer simply planted out a few fruit trees in order to get the necessary product for his own purposes, and where he marketed the excess, naturally but little care was taken under those conditions, and the result was that horticulture languished, as we might expect that it might languish under that condition of affairs. But with the development of horticulture along these lines has come the introduction of the fungous and insect pests which now ravage our orchards and horticultural crops, so that it is no longer possible for a man to plant any considerable number of orchard trees, or even small fruits, and have them exempt from the ravages of these insect and fungous pests. I am speaking now of portions of the country that are more thickly settled, for here and there in the newer portions of the country it is still possible.

Last year I was in the northern part of the state, back something like twenty miles from a railroad, and there I found a section of the country where there was a small community in which they were growing some of the finest McMahan apples I ever saw. I said to the man with whom I was staying, "can you grow these apples up here right along?" He said, "Yes." I said, "How many have you got?" He said, "I have ten barrels of those in my cellar." There they were, great big magnificent fruit, absolutely free from all blemish. I said, "Of course you spray?" I wondered how a man way back there in the back woods had learned how to spray. He said, "I don't know anything about spraying." I said, "Do you mean to say that you grew those apples without giving them any more care and attention than the average farmer would give them?" He said, "There are my trees and that is all I do for them; I planted them and they are growing this fruit." That is possible twenty

miles from a railroad, way back there in the country, where these insect pests have not been introduced, but you open up that country like the southern part of the state is opened up, and it will only be a short time before McMahan apples will be covered with the coddling moth, the same as our fruit.

With this development of horticulture that has come up in this small way, we are now meeting a set of conditions which is calling for an entire change of front. The distribution of these fungous and insect pests is practically making it impossible for satisfactory fruit to be produced, unless they are attended to in the right way, and that is bringing about an entire change in horticultural procedure. From many points of view it is a good thing to have to combat these pests, because it teaches us the necessity of utilizing the best scientific means for control, and gives an opportunity for the use of brains. If we had none of these pests there would soon be such an overplus of fruit that the market would go down to practically nothing. They say that the price of hogs, for instance, is determined by the amount of hog cholera that exists. Now, if we have got hog cholera, we know how to combat it, and the man who intelligently combats hog cholera can get the prices that are now paid for hogs. whereas the man that does not use brains in that connection suffers the penalty which ignorance has to pay.

In the early days of fruit raising, a similar condition obtained, but with the widespread dissemination of these fungus and insect maladies, we are reaching the condition where horticulture must become a commercial and intensive proposition, and with that comes a change in the attitude of mind which the horticulturist must have.

We see throughout the nation at large today this enormous development of horticultural interest, spreading not only in the West, but throughout our own region as well as the East. There are some dangers, however, which confront us in connection with this widespread development. Is it overproduction? I myself do not believe that this will prove a serious danger, because so many people are now going into horticulture, especially in the western parts of the country that go there lured by the glittering allurements of the printed page, but without having any adequate knowledge of how to handle their proposition. A year ago I took a trip through the fruit regions, paying special attention to these conditions. In Colorado, Yakima,

Bitter Root and Hood River. I found people pouring into those regions who were paying extravagantly high prices for fruit lands. I inquired further into the character of the population that were thus seeking this Golconda of gold that they were to secure from fruit and I found in a very considerable percentage of cases, in fact the majority of cases, where the question was asked, that it was the rich men's sons, for instance, who were sent out there by their fathers, or they were speculators, but they were not horticulturists. Now, you need not fear overproduction from that kind of competition. When those people go out there and put their hard earned dollars, or the dollars of somebody else into a proposition of that sort, without any adequate knowledge of the scientific care that is necessary to grow an orchard crop, you can rest assured that it will only be a short time before that property will be for sale at less than what they paid for it.

Another point is the distance of this fruit from the market and the difficulty and cost of getting it to the big markets. When all of the fruit trees now planted in Washington, Oregon and Idaho come into bearing, they told me in Spokane that it would take 180,000 freight cars to haul that fruit to market. When you consider that it takes thirty days for a refrigerator freight car to leave Spokane and go to the Atlantic seaboard and return and you see that the rush of the season is confined to thirty to sixty days, you can see what inadequate facilities there are for the transportation companies to carry a full crop when it is produced. Frequently these areas are connected with the markets in the East with one single thread of steel. I went through the Royal Gorge of the Arkansas and two days after I went through, there came a cloud burst which ripped up the Denver & Rio Grande road, covering it with three feet of mud. Peach trains were held up on the other side of that gorge for three days, while their cargoes rotted in the cars, because they could not get to market. That was the only thread of connection between the producer and consumer, those two steel rails which were subject to a cloud burst of that sort. The man that goes out and puts his money into that kind of proposition is taking long chances in comparison with what we would be if he remained in the Upper Mississippi Valley, or even went down East.

This question of the danger of overdoing the business in my

mind is not likely to be realized for the various reasons that I have mentioned.

If there is anything today which requires brains, it is the two subjects of dairying and horticulture. The handling of a dairy cow and the growing of orchard fruit requires a degree of concentration, a knowledge of scientific procedure and an application that is not met by any other phase of agriculture. That to my mind is one of the great advantages of the subject, because it gives an oppirtunity for the boy with brains, for the "laird o' pairts" to stay on the soil, and utilize the gray matter which the Lord gave him. We hear a great deal nowadays about the drain of the cities, that all our boys are leaving the farm. Why have they been going to the cities? Largely because there has been but little opportunity for them to use brains or gray matter in the agriculture of a generation ago. With the change which has now come, with the introduction of scientific methods, and the necessity of utilizing these methods, there is as large an opportunity for the boy with brains to use those brains on the farm as there is in the city, and you will find that many of them are staying under these new conditions, dairying and horticulture are the two phases of intensive agriculture that permit the fullest utilization of these brains.

With this development which is spreading over the entire country, practically from the Atlantic to the Pacific, there has come the necessity of more than mere manual application and even more than scientific procedure. We have got to know more than the mere matter of how to combat apple scab and codling moth, or how to handle this or that fungus pest, we have got to introduce methods of marketing and handling our products that are more up-to-date than they have been. When the farmer grew a dozen or twenty apple trees and put what he wanted for his own use in the cellar and then dumped the rest on the market, he got for that excess of fruit what it would bring, but what did it bring? The quality of the fruit was poor and has become increasingly poor with the spread of these fungus diseases, but with the application of these scientific methods we can secure perfect fruit, and that is the lesson which we are learning from the West today. There they are reaping the reward of their foresight, not merely from the application of these scientific methods, but from the fact that they have learned the art of combination, they have learned the art of marketing. They

told me at Palisade in Colorado that the Fruit Growers' Association of that town had increased the value of the land twenty-five per cent; that is, a man's extra compensation for his fruit product was twenty-five per cent greater by virtue of the fact that they had combined and pooled their issues and handled their product by modern methods in comparison with the old method of competition. Now, when a bearing orchard is worth $2,000 an acre, and you can add $500 to its value by simply combining and handling things on a modern basis, is it not time that co-operation should be considered an important feature of the whole subject of horticulture? This method we have got to adopt in the East, in order to compete with the West. We ought to do it of our own accord, not only because of the increase in our own returns which we get from cooperation in this respect, but from the fact that that is the modern mode of dealing with things. It is the application of the corporation method which we find in manufacturing industry. We would not think of going back to the old fashioned methods of our industrial manufacture and do away with the corporation, even with all the evils that are attendant upon the corporation. There is that underlying economic principle that in union it becomes possible to do that which cannot be done individually, and the modern industrial world is moving toward cooperation, toward collectivism, toward the union of forces in this way, so as to eliminate the losses which would otherwise occur, so as to reduce the cost of operation, and thereby make it possible to secure larger profits.

Now, I hope in this new development of Wisconsin, in these districts where horticulture is bound to increase with great rapidity, as, for instance, in the Door county peninsula, or in the Bayfield peninsula, which seems to be particularly adapted to the raising of certain kinds of fruit, that we will be wise enough to take advantage of the sociological principle of co-operation and develop these Fruit Growers' Associations in the same way that they have in the West.

I was talking with a man from the Hood River country yesterday, and he said, "We have got all these pests that you have here, and we have to combat them regularly, but we are getting stricter and stricter every day. The time is going to come—in some states it has already come—where the state government steps in, and if you are negligent in the proper care of your

own orchard, the state official steps in and puts an end to the trouble by doing the work and charging it against you, just the same as when you will not build your sidewalk in this town, the common council has the power to build it and charge it against the property and you have got to pay it. Now, for the state to force you to take care of your own orchard might be called paternalism, but it is necessary, because of the fact that we are your brother's keeper and we cannot get away from it, and if we are negligent in our practice, permitting spread and distribution of these maladies that will ruin our crops, then somebody with more power than the individual must take hold of the matter and control it.

The development of these associations in this way make such things possible. They are not merely selling associations, but they are associations for mutual improvement, and the great advantage, to my mind, in addition to the financial advantage, is the fact that these associations make possible the uplift and the improvement of their members along the lines of higher living. When you can get under the crust of apathy and ignorance and indifference, you completely change the man and if you can teach him in one way or another that it is necessary to spray his fruit trees you are going to reveal a new world to that man, and he is going to cast off those blinders that have blinded him in the past, and move on toward improved methods in other directions than merely the one by which you have first gotten hold of him. When you have done this you have transformed and converted him, but this must be done individually, it cannot be done collectively. It must be through the medium of individual contact and in societies such as this where you come for mutual benefit, to exchange your ideas, to give your personal experience, it becomes possible to receive a stimulus and an incentive which cannot be secured alone.

I thank you very much for this opportunity of appearing before your society and saying just a few words in regard to this very important subject.

Introduction of delegates from neighboring states being next in order, the President introduced Mr. G. O. Black of Iowa.

Mr. Black: I was sent here by the President of our State Horticultural Society as a delegate, he not knowing that I am a member of your Society. I am glad that I am here, although most of you are strangers to me. Just the other day I read an article in the Century magazine by Prof. Bailey, of New York. The title of the article is "An Iowa Plant Breeder." You probably all recognize who it is, Mr. C. G. Patten, of Charles City. If you will read that article on Mr Patten's work, it will give you an idea what we are doing in Northern Iowa for the advancement of horticulture. I have had the privilege of going over Mr. Patten's grounds a number of times and it is wonderful to see the painstaking and accurate records that he has kept of the work that he is doing. He has at the present time about 10,000 apple seedlings. These are not simply apple seedlings sown from promiscuously gathered fruit, but they are all from selected fruit, and a good share of them from crosses, some of them have been crossed down from the fourth and fifth generation, at least, and in that collection of 10,000 trees undoubtedly there will be something that will be a blessing to Wisconsin. It is conceded by Minnesota at the present time that some of his seedlings are better adapted to Minnesota than they are to our onw state, Iowa.

The President: I am sure we are glad to hear what Mr. Black has had to say in regard to the work of Charles Patten and we are proud of the fact that Mr. Patten used to be a Wisconsin man and he has told me that he carried with him to Iowa from Sauk County the seeds of his Patten's Greenings.

Mr. S. G. Soverhill, delegate from Illinois State Society: We in Northern Illinois have some of the up and downs that you Wisconsin people have, sometimes we think it is a little more down that up. Still we have succeeded in growing some very nice fruits and we are learning lessons all the time. A great many of us who came from the East thought we must grow certain fruits here in the West that we had been accustomed to growing in the East. They were in the habit of growing Baldwins and Greenings, Spitzenbergs and some such apples as those. Later we have learned that these are not a success in the West,

but we have succeeded in getting varieties now that I think are equal to those that are grown East.

Mr. H. G. Street, delegate from N. Illinois Society: We in Northern Illinois, just south of Geneva Lake, are watching your trial orchard there with a great deal of interest and it should be a good object lesson to those in Northern Illinois as well as the Southern part of Wisconsin, and we hope that the trial station that the Illinois State Society is maintaing just a mile and a half from your State line will be a good lesson to more of them. We are testing such apples as the Delicious, King-David and Jonathan, although that is not really new, the McIntosh, and it is rather hard work for us along line to decide what varieties to put out, if we try to limit curselves to just a few. I notice that the majority of those that I meet here are from north of Madison, very few from the southern part of the State. With us, the majority of those that are interested in horticulture in Illinois are pretty well south, especially that part of the State that Mr. Soverhill comes from, so that there is, you might say. for one hundred and fifty miles of territory nothing much of interest in the way of apple growing. Perhaps, it is due to the fact that the district is too much interested in dairying and the people do not have time for much else.

Prof. A. R. Kohler, delegate from Minnesota Society: The most important work in our State in which the Horticultural Society has combined and helped the College of Agriculture in Minnesota was in the case of helping to establish the fruit breeding farm at Lake Minnetonka. Many thousands of seedlings are being grown there at the present time of all kinds of fruit adapted to Minnesota and there is every probability that as the result of this work we will in time be able to add many valuable varieties to the horticulture of th Northern Mississippi Valley and we may also develop varieties that may be beneficial in Wisconsin.

THE LURE OF THE LAND.

Supt. E. W. WALKER, Delavan, Wis.

Mr. Cranefield has asked me to discuss the "Back to the Land" movement insofar as it applies to professional people. It is true that teachers, physicians and lawyers the country over are turning their thoughts toward the time when they shall reach that period of life at which they hope to shake off the heavier responsibilities of their professional career. They do not wish to retire absolutely to a life idleness. They must have something to do, something to look after; and thousands of these men, I may almost say hundreds even within my acquaintance, are turning to the pursuit of agriculture in one form or another. I am asked to say something about the whys and wherefores of this movement. I am, therefore, not expected to talk on anything pertaining in a practical way to the subject of horticulture. This is fortunate. I could not say anything on practical horticulture if I would. This field is all before me and I have much to learn.

My subject is a philosophical one. Why do professional people turn in later life to the land? Some time ago the following sentiment caught my attention: "Life is worth the living only to him who is a follower of illusions." There is much in this that is fundamentally sound. No matter what we are doing for life's occupation we are thinking of something else in the form of an illusion. This is necessary to maintain a mental poise and balanced judgment. The mind that seeks not to follow some illusion loses the zest of life and becomes a drudge. Illusions change. One lasts but for a short time. It either reveals its illusive character and we cease to follow, or it may be worked out in a practical way and becomes a reality. In either case it has served its purpose and abandoning it we pass on to other illusions.

The philosophy of every individual is necessarily worked out through his own experiences. I must, therefore, illustrate by something from experiences of my own. In indicating just what I mean by these illusions you will see why one professional man at least turns to horticulture as age creeps upon him. I recall

shortly after going to housekeeping that Mrs. Walker said "We are wasting a great deal of substance from the kitchen. We must have a pig." Dutifully I went to the stock yards and purchased the pig, paying therefor $2.50. I also paid fifteen cents for a tobacco pail and thirty cents for a half barrel to be used as swill pail and swill barrel respectively. This pig became the central factor in the family activities for a season. I kept an account book for his benefit and found that with the initial cost plus the cost of pail, barrel and shed the total expense amounted to $5.50 by Thanksgiving time. This did not take into account the fact that I troubled my father to drive out of his way three or four times a week to leave some skim milk from the creamery; nor does it take into account the fact that on the Fourth of July when we were away from home the pig became unduly hungry and broke out doing damage in the garden to the amount of several dollars. We had fully expected to kill the pig in the fall but he had become a sort of a pet and had become so much a member of the family that it was too much like cannibalism to eat him, and some way he had not taken on the generous proportions that we had expected. So instead of killing him I sold him. The price of pork had declined and I received for him $4.98. A losing venture, you say. Not so. He was an illusion and as such he was worth while. He was a safety valve by means of which I could let off superfluous professional energy and the amount of fun we had figuring out the career of that pig was well worth his cost. He warded off many a family jar. As a practice he was a failure. As an illusion was a success.

In later years, having purchased a place containing two acres of land I seeded down an acre and a half and bought some Shropshire sheep. They were good ones, imported from England. There were five ewes and a ram. My mathematical conclusion ran something like this: This particular breed of sheep usually breeds twins. It was easy to see that next year I would have ten lambs. In the natural course of events, five of them would be ewes and five of them rams. The rams I would sell at $25.00 a piece and would keep the ewes, thus doubling the breeding flock for the following year. It was equally easy to forecast that within seven or eight years I could retire from teaching and live on my flock of sheep. It so happened that the next spring I became an institute conductor. In this capacity I was away

from home during the spring vacation. As ill luck would have it one pair of twin lambs came during this time. It was in a March snow storm and I was not there to take proper care of them. They died. One ewe had one dead lamb. Another did not breed at all. I have forgotten the mishap to the fourth, but out of the flock one good, healthy lamb survived. It pleases me now to know that in the midst of my disaster I had enough sense of humor left to register this under the name of "Solitaire". Then the democrats came into power in 1892. They took the tariff off of wool, the bottom dropped out of the sheep market and I sold Solitaire for $10. But this was no losing venture. For a twelvemonth this little flock of sheep absorbed my thoughts to the extent that I could not shrink in upon myself and my own work, a thing that professional people are so prone to do. They kept me wholesome minded and I say in all seriousness that I believe I owe whatever I possess of profession and temperamental poise to just such illusions as these. It is, therefore, not because I am getting old that I am turning towards horticulture. It is because I am a follower of illusions. It is my hope that the apple illusion will turn out more fortunately than these earlier ones, but even if it does not it will serve its purpose as well as did they.

Most professional men were brought up as farm boys. I say this with no hesitation. I happen to have been some years ago in two clubs of professional workers, one of lawyers and one of teachers. The poll was taken one night in a club of prominent teachers in this state. Ninety-four out of a hundred were farm boys. A similar poll of lawyers showed that ninety-one per cent were reared upon the farm. This doubtless has much to do with the fact that later in life these men turn back to the farm. In age the mind loves to linger on the experience of boyhood. Of course we all have a certain personal quality about us that turns us one way or other without reference to our boyhood years. But still in a general way age attempts to ripen the boyhood experiences.

Now, on the premise that we are to live a balanced life we must be followers in one direction or another of something outside of our professional career, I would like to invite your attention to two or three reasons why I think professional people as they become older do turn towards some such pursuit as horticulture.

In the first place, it has been said that fundamental, elemen-

tal strength is imbibed in no other way so well as by absorbing it from the ground through the soles of the bare feet. This is surely elemental, isn't it? And harks back to our boyhood days; but I firmly believe there is much of truth in it. There is an unconscious tendency in each one of us to anchor to that philosophy. It leads those who possess real elemental strength to love the soil.

This love united with the fact that most professional workers were brought up on farms leads us to turn to something like farming and yet in middle life and age one hesitates to take up the more vigorous kind of grain and dairy farming. What so well avoids the hard and continual labor of these and yet secures the tendency of life's philosophy as horticulture?

Then again, Age tends to simplicity of life. I suspect no professional man escapes this feeling. He lives ever amidst the crowd. The physician and lawyer in his office, the teacher in the school room, the clergyman in the pulpit, all these can never escape the great fact of their professional lives. They live amidst the crowd. There is pleasure in it. There is growth in it. There is a condition in it which ought to build good normal, healthy vigorous young manhood and middle age. But there comes a time when a man loves to withdraw from that condition; when the pleasure of the crowds grows stale and may even irritate. That is the time when the spirit of philosophy grows. Age ripens this philosopical spirit. Then it is that a man loves to be somewhat by himself, yet he does not seek idleness. He desires to do something; to carry out some form of activity where he can be somewhat with his own thoughts. Many men make the serious blunder in withdrawing wholly from activity in old age. The philosophy of such tends toward cynicism. The wholesome philosopher of age must still be busy at something. What finer or more beautiful thing can life present than to crown a most active and strenuous career with this philosophical spirit?

The man who has lived in loneliness all through his younger years, therefore, never feels the above mentioned tendency. The average farmer looks ahead to the time when he will retire and move to town. He desires to be in the crowd because he has been away from it all his life. It is perfectly logical and entirely human for his ambitions to turn towards new experiences. Also the man of meager mental attainments, of little education,

of but little power to read or think spontaneously. When he retires seeks the crowd because he must have thought stimuli.

But he whose experiences all through his active years have been such as to put him in the crowd, in the midst of multitudes of people, finds creeping upon him as he grows older the desire for solitude. That is accentuated if he is a man of reading and thinking habits. I remember something like thirty years ago in this very city that I wrote a little poem—I am not going to inflict it upon you. I belonged to a little social club that met semi-monthly and I recall upon one occasion writing a little poem one stanza of which was:

"The noble thoughts, the great ideas, must have their birth in solitude;
Yet from society's full halls methinks there comes the greatest good."

I was a young fellow then looking ahead to the time, logically I think, when a man's best impulses and inspirations could come from his association with his fellows. That is the mental attitude of the university student, the student who expects to go out and feel the influence and inspiration of men and women. Therefore using society not in its superficial sense but with its fullest significance, I wrote "from society's full halls comes the greatest good." That was the philosophy of my youth. Now as the philosophy of age begins to ripen I understand that there is a limit to the application of my boyhood poesy. After all the best things, the best thoughts, do come to us, perhaps not in complete solitude as in the dungeon cell, but in our association with nature and Diety. That calls out the best that is within us. It requires a nature somewhat artistic, and very decidely sentimental and spiritual to feel this tendency. It is among professional men that we are apt to find such temperament, and therefore, these turn to horticulture in old age.

Still again, I call your attention to this thought. You may challenge it but as a teacher who has long observed in regard to the operation of children's minds I believe it is true that youth and early manhood love completed things and chafes at the process by which the thing is complete. The boy will work with zeal to complete his building. My manual training boys working daily at their benches are consumed with the desire to see in its completed form the minature sled, windmill, etc., but

they chafe at the drudgery of the process by which alone they can be completed. This is the habit of youth and young manhood, but there comes a time when the finished thing does not appeal to us; when we love to see growth; when the growth is more attractive than the completed article. Growing is more than growth; working more than work; running more than the race; climbing more than the hill. The process ever outweighs the thing. Therefore, immature youth loves the thing; pilosophical age loves the process. So I suppose there is a tendency for all of us as we become older to turn to an occupation where we can watch things grow; where we can see the process of nature as it is being carried out. All these things are entirely philosophical. Possibly they do not appeal to everyone and yet I suspect as I have been talking you have said to yourself "why. this fits my experience; this accords with my thought."

Now, then, for ten years I have had in mind possessing, as I became older, an apple orchard. I traveled through large sections of the irrigated West. I went up and down the Appalachian mountain region from Pennsylvania to North Carolina, visiting many of the great orchards there. Without going to them personally I talked with people who had visited the Michigan and Missouri sections. From all this I became much impressed with the thought that if we would do in Wisconsin what they do in these other places we could do equally well in the horticultural or orchard line. I may be all wrong in this conclusion but at least I have not arrived at that conclusion hastily. I have observed and I have studied.

Also I bethought me of this, that when I become old enough to shake off the heavy responsibilities of professional life I will be too old to be a pioneer and I shall not wish to go to the West or to the East and form new associations. I shall wish to enjoy my old age among the friends of my activities, of my youth and manhood. In passing let me say that if I were in my youth and horticulturally bent I would head for North Carolina or at least for the Appalachian region rather than the West, but that is not the question now under discussion. Having determined upon Wisconsin I read of what has been done by your Society for a good many years and talked with your secretary. Then I looked around and happening to live near a range of hills, clay hills with coarse gravel scattered through it, with

good slopes, I invited an expert on soils to visit the range with me. My next step was to learn of a few farms in this region that could be secured. The next and final step was to invite Mr. Cranefield to spend a day with me. Out of a dozen farms I had selected as good apple farms I invited Mr. Cranefield to inspect five that appeared to me the best. His judgment selected the one that I, myself, was most anxious to secure and that could be purchased. I showed him the field that I thought was the best of all. We went over it carefuly and I exhibited it to him with a great deal of pride. Courteously he fell in with my view, because right near it is a nice little lake filled with fish and he knew all the time I was thinking of the fish instead of the apple trees, but still he said it was a good field just about the right kind of soil. I said, "While we are looking over the farm let me show you the other piece on the hill. It will be worth the climb because of the view." As we plodded along the woodland lot he became a little more enthusiastic. I am not built for hill climbing as Mr. Cranefield is and he was several rods ahead of me and before I had emerged from the woods he was standing with his arms waving and exclaimed "Eureka! man alive, this is the most ideal apple orchard site that I had ever seen." It had not struck me that way at all. This shows you how much of a novice I am. By the way, I am going to beat Burbank all to pieces. Half a mile from my orchard site, the trees are not planted yet, still I speak of it as my orchard—there is a trout brook and a lake is on the farm. I am planning to graft a trout onto a quince root and develop a trout tree. I already have some basswood trees on the farm. Am I not right in saying that with this plan consummated I shall out-Burbank Burbank?

Doubtless I have talked enough for you to conclude that I am going to make a failure of this. Perhaps, it will turn out as the sheep and the pig did, but even so, my friend, I assure you that it will be worth while. I am going to live for the next seven or eight years in absolute certainty of having everything work out just right. I shall have all the fun seeing things grow that most philosophical men of old age ought to feel and not the least of the illusion I cherish in connection with this matter is that I shall be a member of this organization and may meet you in these sessions from year to year.

SMALL FRUITS.

LESSONS LEARNED IN A DRY SEASON.

Mr. E. A. Richardson (Sparta): I was very much pleased in listening to Dean Russell with the stand that he takes in regard to co-opration, because if there is anything I am interested in, it is co-operation in growing, packing and marketing our fruit, and I was very much pleased to hear him talk upon that subject as he did. Found one lesson that I have learned this summer in my work as manager of the Sparta Association was this, that while we are very apt to think that fruit growers, as a rule, that is, the banner fruit grower, is liable to fly the track when there comes a dry season like this year, when prices are up and there is a temptation to sell his own fruit our members at Sparta were loyal to our Association. It was somewhat of a surprise to me that some of them, getting the offers for their fruit that they did, stuck by us, but all that we were able to make a better showing to them through our Association than through the offers that they received from outside growers.

Another thing—it was my good fortune to be in Kansas during a portion of the harvesting of the apple crop this fall, Ben Davis and like apples, and the lesson was impressed very forcibly upon me that if they had co-operation there, that they could have got a much better price for their fruit than they did. At Sparta the bulk of the apples were selling for $1.00 to $1.25 a bushel; in Kansas they were selling at 25 cents a bushel; the freight from Kansas City to Sparta is 47 cents a barrel, I think, so you can see if they had had associations there, or if they had co-operated in hunting up markets, they would have had a very good margin of profit to pay any man a salary for doing it.

I take it that you are all conversant with the conditions of the weather throughout the last growing season of 1910. It was not only a dry season, but it was a season that had unusual weather conditions in other respects. We had no apples on account of the mild weather in March, followed in April and May by cold and snow, and the conditions were such that the lessons we learned may not be fully learned until another season. The

dry weather with us to a great extent cut our crop, I should judge about in half. The frost killed nearly all our bush fruits, all of our apple fruits and shortened our strawbery crop I should judge about one-third. We expected to pack 60,000 cases for shipment, but we only shipped about 11,000 cases. We commanded a good price, as we naturally would, fruit being scarce, but I learned this, that the fruit that we did get would not stand the shipping, it would not hold up, it would not look as good after it reached the market within some ten or twelve hours, as it usually does in the ordinary season. Two of our neighbors tried irrigating in an experimental way. One party had an irrigating plant that cost him $139, the pump, well and connections that he put up for irrigation. This he applied to one acre of blackberries. In conferring with him a few days ago, I asked him if he thought it paid him, and he said it did. He marketed fifty-seven cases of blackberries, 24-pint cases, which brought him $113. The plant cost him $139. At first thought, we would naturally suppose that that would not pay him, but our investigations are not complete and will not be complete until another season. He took into consideration the growth of his canes for next year. He had a very good growth, much better than any yard in the section where he was that was not irrigated. Of course we cannot tell whether the wood got properly ripened, or whether he watered them too late, or cultivated them so that the fruit buds might be damaged, until another season. I take it that we might think that the last season was very disastrous to us and we are very likely to mourn a great deal because we had a short crop, and we feel that we were rather, as the saying is, sat down on. But a great many of these lessons were taught to us before, and that is in the way of conservation, mulching and cultivating and conserving moisture in the soil. We have been taught those things not only by the Horticultural Society, but by the Agricultural College, but in a season of ordinary rainfall we are very apt to forget those things, and I take it that this dry season was really in a sense a blessing in disguise, it teaches us to practice economy, economizing the moisture that is in the soil and teaching us how to act in such times. In regard to the quality of the fruits, I found on our county farm where the superintendent irrigated the strawberries, that the strawberries

that were irrigated from that farm in shipping would not stand up as well as those that were not irrigated. While they looked nice and fresh when they came to the shipping station, yet they were full of water, and the conditions were not such as to have them hold up. I found almost invariably where we sent those out on local orders, we would get back reports that they did not carry through in good shape. These lessons, as I said before, are incomplete. We take it for granted that in a dry season we have got to economize, but at the same time the work that we do may have results the following season.

A Member: Would not culture have obviated most of the difficulties of a dry season?

Mr. Richardson: I don't know. Last year the frost killed a great many blossoms on the strawberries that were not favorably situated. On my own yard, I have two acres and a half, and I only picked three cases of strawberries off two and a half acres. The blossoms were killed during the early part of May. We had nine frosts in the first thirteen nights so that we cannot tell, at least I couldn't. Some people more favorably situated, on a good soil, got a very good crop. I think mulching and cultivating will help a great deal.

The president: Our boys have become interested in irrigation, piping, etc., the result was that instead of going without strawberries in our little family patch, we had enough for ourselves. In regard to transplanting, when it comes to getting your strawberries toward the stage of bearing you cannot do anything with cultivation. If you cannot pump on the water, cultivation at that point is not going to do much to remedy past mistakes.

Mr. Christensen: We have about an acre of strawberries and we have a 12-foot wheel arrangement and a gasoline engine that will pump about 3,000 gallons a day. We had strawberries worth perhaps $200 and we thought we possibly would have $50 at the expiration of the season. Then we have grown raspberries, most of them for next year. I think there is a great deal better showing than that made by Mr. Richardson.

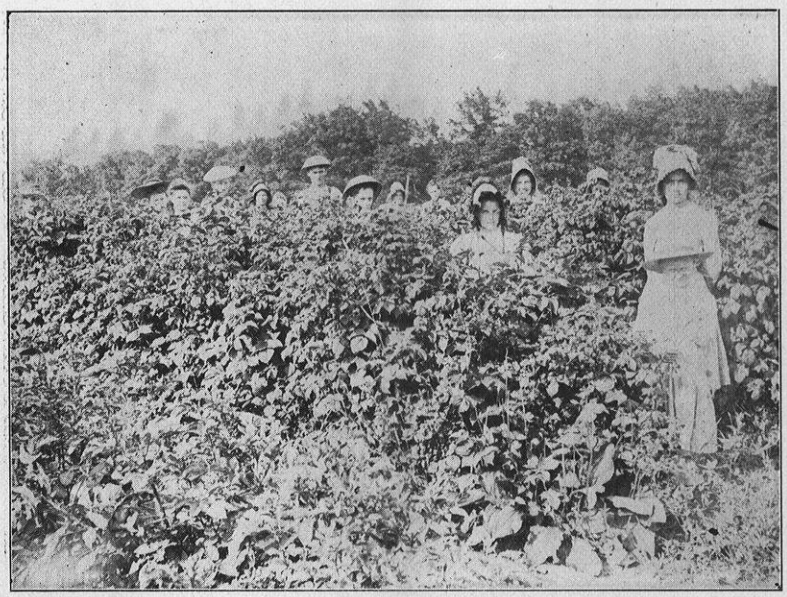
Prof. Kohler: I believe Mr. Richardson left the impression that irrigation produces berries that you could not ship very successfully. I would like to ask if the time the water was applied might not have something to do with the firmness of the berries, so that they would hold up in shipment.

Mr. Richardson: I presume it would. In regard to the benefits of irrigation, I have no doubt but what it pays to irrigate if we are situated right, but putting a plant in at that time, it does not seem to me as though it really would pay to irrigate, because we cannot tell until the end of next season, but certainly we get better growth.

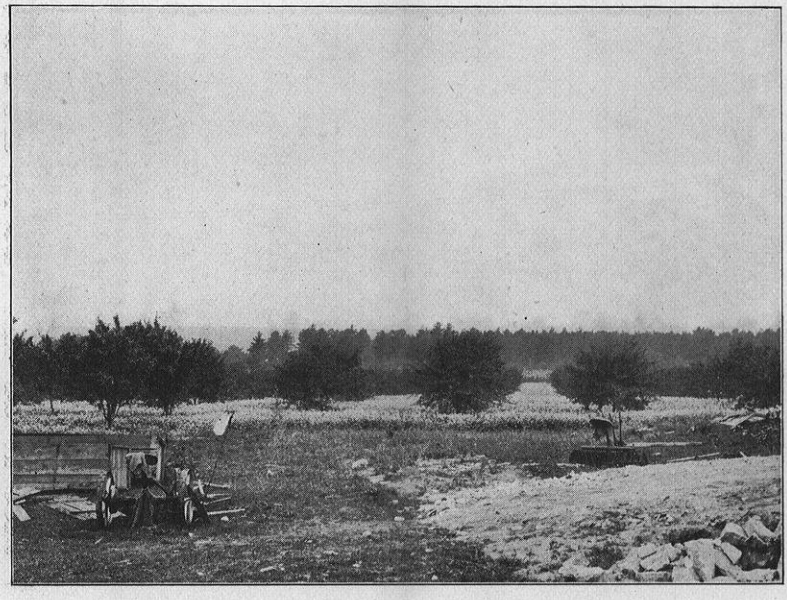
A Member: I would like to ask if there is any one that has had experience in irrigation as to whether it is not better and more successful to use warm water than well water, for instance, river water, or water that has been pumped from a well and allowed to get warm in a reservoir or tank? I noted the experience of a friend of mine this summer who was situated so he could put in a gasoline outfit and pump water onto his strawberries where he only had to lift the water a little ways from the river. I have not got the figures in my mind, but he a good deal more than paid for his plant, that is, his pumping outfit and pump. There were a good many others of us who were compelled to lose what would be much more than one-third of the crop, and he was putting in nice, large, handsome berries, and they were giving him a great deal better prices than other growers were getting that did not irrigate. But he had that condition in his favor, that he had the warm river water, and while I have some drilled wells and gasoline pumping outfit, I would be afraid to use this water as it comes directly out of those wells. I would like to know if any one has had any experience.

The President: I have had no opportunity for comparison, but I have used this cold water when the weather was so hot that it did not take long for the air and soil to warm that water up, but the result was good.

Mr. Richardson: I think that question was brought up several years ago by Prof. Goff, the question was asked him and he thought the temperature of the water did not make any difference.



Eldorado Blackberries, fruit farm E. W. Sullivan, Alma Center.



Four Year Old Cherry Trees. Orchard of D. E. Gingham, Sturgeon Bay, Sept. 4, 1910.

FRUIT RAISING IN JACKSON COUNTY.

E. W. SULLIVAN, Alma Center.

Jackson county lies up in central Wisconsin, on Black River. No doubt many of you have the impression that it is mostly pine stumps and sand. This is true to a great extent, but we have some land there as good as any in the state, and even that sandy land we find raises good strawberries, raspberries, blackberries and the more favorable locations are making a fine showing on apples and grapes.

I am not going to try to talk to you on all those kinds of fruits, but I am going to tell you a little about the strawberry, because the strawberry has been a great friend of mine, and I have been growing it for about twenty-seven years in the location where I am now, Alma Center. Twenty-seven years ago, when I commenced, there was not a whole acre of strawberries in Jackson county that I know of. I made a great many blunders in raising them. The first strawberry I got was a perfect flowering sort, and I knew nothing of them. I set out many of them and they did well for a while. Next thing I got an imperfect sort, or pistillate, and they did so nicely that I thought I would have a whole acre of those, so I set a whole acre of the imperfect sort. Then a neighbor told me he had a fine kind of strawberry, so I got about 300 of them, and by accident I set them up alongside the others. This was the old Gandy, a perfect flowering sort, so when my berries come to bear, I had pretty fair berries for the first row in, then a little further out they got poorer, and on the outside I had all nubs and buttons. So from this I learned the lesson that in a strawberry bed, if we set an imperfect variety we must have at least one row in two or three of the perfect flowering sort.

Then another mistake I made was in not covering my beds properly for winter. Because my berries did not die entirely and there was life in the spring, I thought that was all that was necessary, that they bore berries. But I found later that by covering I increased the yield one-half, and may be two-thirds.

After I had trifled with berries for about ten years I began

raising them until I made something out of them. The neighbors watched me for a while, and after five or six years some of them began to think I was getting a little too much of the root of evil and they began to fall in line with strawberry beds, and the strawberries have increased from that time on, and last spring at Alma Center and Merillan (the two places are four miles apart, Merrillan being on the main line of the Omaha, to St. Paul, and Alma on the Green Bay line) these two places had about 80 acres of strawberries and they formed two strawberry associations. It should have been in one, Merillan is the natural place to ship the berries from, but we had a very dry summer and the crop was only half a crop. We shipped something like 4,300 cases; the price we received was about $1.25 net. We shipped three carloads. The two places worked together. Most of the plants this year are looking fine, except some of the growers claimed that they got plants that were winter killed. This is the one thing that we all ought to look out for, that of getting winter killed plants. Where these winter killed plants were set out they have not got more than one-half or one-third of a stand. It is easy to tell winter-killed plants. The roots on the plants should be clear cream color right up to the crown; a winter killed plant is dark brown, or reddish brown, or sometimes there is just a little of the brown on the tips, other times it comes down two inches. These plants do not show much to the inexperienced man when he is digging them up, but any one that is used to them can see it readily, when they are dug up, if a bunch is put in water and it is washed off clean, you can see every spot where it is winter-killed. This winter killing is caused a great deal by having plants in exposed places where the snow blows off and these plants that are left and not dug up at once will bear half a crop, but I think this can be overcome to a great extent. When we have such exposed places for strawberries, if we plant two or three rows of sunflowers on the north and west side, it will do a great deal to catch the snow for the strawberry plants, and it is an advantage to plant a row of corn crosswise of the rows of strawberries. That would not interfere with the raising of the bed of strawberries; leave it stand in the winter time, it would make a great protection to catch the snow. When the snow blows off and there are thaws

and freezes, it does the bed a great deal of injury. A bed of strawberries that lies under a bed of snow all winter will bear a great deal more than if exposed.

We raise in matted rows, try to catch them in just as soon as we can to get the center of the row filled, then we work with fine tooth cultivators. These fine tooth cultivators draw the dirt toward the middle of the row and leaves it hollow next the plant, and we have got the middle of our row full of good plants, then wait until we get a good lot of runners. After cultivating them all one way, we put two boards into the cultivator, about four inches wide, and we fasten them with wire, then we run that right in the middle of the row with a horse. They will run pretty fast, let them stick out behind the cultivator two or three inches, we can roll over those loose runners and even in the dry summers that we have we can get a good catch of plants in about three or four weeks. They will come up through the dirt, and we will catch them, even with scarcely any rain. We think it is quite a mistake for people to plow under the old strawberry beds. It costs quite a lot to get a new strawberry bed started; I figure it costs about fifteen dollars for plants, and it costs at least five dollars for setting on an acre, and if the old strawberry beds are mowed and burned over, instead of being plowed up, I think it will be a great saving. I do not recommend burning all the straw. At least I think it is a good idea when straw is scarce as it has been this year, to go on and take up at least one-half or two-thirds of the straw, and then there will be enough left to make it burn over. Burning a bed too hard is not good for it, but if you can just get far enough to go over and kill everything of a weedy nature, it cleans up the bed in good shape. Now, if you put those $20 that you pay for plants and for setting into labor taking up those weeds and cleaning them up in first class shape, you will always get a better crop on an old bed than you will on a new one. That is about all I can tell you about strawberries.

Mr. Soverhill: How many years do you think you can succeed with your beds?

Mr. Sullivan: We have beds three years old that are the cleanest on the farm, but I hardly ever keep them over three years:

A Member: What do you cover your beds with?

Mr. Sullivan: Rye straw mostly, we have wheat straw this winter. If you are able to get marsh hay, that will be good.

Mr. Soverhill: Cannot you save your plants from freezing by covering them?

Mr. Sullivan: Covering does not always do it. I have had acres of strawberies winter kill that were well covered. There will be some places where there is no snow on and they will winter kill. If we put straw enough on, I guess it will do the work.

Mr. Kellogg: I would like to ask Mr. Sulliavn how deep he recommends covering?

Mr. Sullivan: We cover enough to get the plants out of sight, spread the straw out as thin as we can so that we do not see any leaves between the rows and later shake it out thin, because I think between the rows it is needed as much, if not more, than on the plants, because the leaves themselves protect the rows to a great extent, and between the rows there is nothing to protect it. We leave on the covering as late as we can, until we see some growth start, then rake the straw between the rows, try to do it at a wet time, if possible, if we cannot get a wet time, we have to take it anyhow.

A Member: Is it positively necessary to uncover them?

Mr. Sullivan: I think they will come through if the mulch is very light. It is better to leave a little, but there is always some left. I covered one strip with sawdust and they did very well. I thought some of getting sawdust this year when the mulching was so scarce, but we managed to get enough straw to cover ours, so we did not haul the sawdust.

A Member: I saw last fall quite a large patch of berries at Menominee that had oats sowed between the rows. I think it was sown possibly along the last of September. When I last saw them, the oats had a big strong growth, looking crosswise across the field you could not see the rows at all.

RASPBERRIES AND BLACKKBERRIES.

A. R. SOVERHILL, Tiskilwa, Ill.

My appearance here today to read a paper before this meeting is because my son, who was requested to give the paper on this subject is unable to be present.

Brush fruit is a very live subject at the present time, and while for the most part, those present at this meeting are growing small fruit of various kinds and thoroughly understand the business, my remarks will be more in the nature of instructions to the beginner based on my own experience as a fruit grower in Illinois.

In the first place it is desirable to raise brush fruit with as little hand labor as possible. In every instance where the conditions of things will permit the work of cultivation must be done with a horse and cultivator. To make this system possible certain preliminary steps must be taken. I would first select a level piece of ground and get it in proper shape for planting by having it well manured and cultivated the year before to some crop that will insure it being free from weeds. The ground should then be well worked up in April or as soon after as may be.

After the ground is carefully prepared the rows should be marked out as follows: First let the rows run the long way of the field and be 3 1-2 feet apart. In the first row on the side should be early potatoes, the next row berries and so on alternating potatoes and berries for six rows of berries, then leave out the berries for three rows and instead plant these three rows to potatoes or beans or whatever you want to plant that is early. Next row will be berries again and so continue in like manner until the whole field is laid out and planted. This is the way for the first year. When planting time comes for the second year, only one row of potatoes is planted in the space where the three rows stood the year before, for the reason that the spraying wagon must pass along here and it can straddle the one row. It is no trouble to spray the three rows of berries on each side and manure can be thrown from the

wagon the same distance if needed. The vacant strip will also be found very handy when it comes to burning the brush when trimming. One can build a fire on the windy side and burn a small amount of brush at a time as carried out. In this manner the patch will be free from brush and burned clean when the trimming is done.

Now as to the berry planting. Black berries and Raspberries need about the same room in the row. My experience shows about three feet to be right distance in the row. When the young raspberry sprout is about a foot high the top must be cut off and then cultivated. The row of potatoes should be dug early and this tends to leave the ground soft and mellow and if free from weeds there will be plenty of good plants for the next year.

As the plants increase in size it is necessary to provide means for supporting them. This is done in this way. Set a good post at each end of the row and on each side of the row. Eight feet in from each end of the row set another post with a ten foot brace running from the top of the first post to the bottom of the second. The intermediate posts should be about 30 feet apart. The posts should be from two to two and a half feet long above the ground. While touching the subject of posts, I should add that the posts mentioned here should be by all means hedge as they can safely be depended upon to last as long as needed. The posts should be set as soon as the frost is out of the ground. Here again care must be used in setting them. The posts should be set not less than 8 inches apart nor more than 12 inches apart of the bottom and leaned out so as to be 20 to 24 inches apart at the top. Next a No. 12 wire must be stretched along the posts on both sides one foot from the ground and the ends of the branches tied fast to it. The ends of the branches should be cut off 2 or 3 inches from the wires. This system has the following points in its favor: The vines are not in the way; the cultivator tooth can run under the wire and close up to the plant and get the weeds and best of all you have no berries on the ground to get dirty.

Cultivation should be started as soon as the ground is in shape to work and the result will be that you will gain two or three pickings ahead of your neighbor. Immediately and as

soon as picking is completed the wire must be raised to two feet then all will be right for ten years. This height protects the young sprouts so wind can't break them off and keeps them out of the way of the cultivator. When the new sprout gets 6 inches above the wire it should be cut off. It is highly important that this be done at once and not wait until the sprout is away up and then cut off a foot or two, for then you have lost a week's growth on the next crop. There is also an added advantage in the matter of picking the berries. Pickers are not hard to get when the rows are well wired.

In the case of black berries the wire is not needed until June of the second year. The posts are set the same as for raspberies except 6 inches longer. The wires should be three feet high to save all young sprouts. With wire at this height, six inches above the wire the sprout should be cut off above the wire each year. Berry patches handled in this way will last from ten to twenty years. Of course the plants must have proper care. By proper care is meant spraying as well as cultivating and trimming. The wire keeps the bushes out of the way of the cultivator. As it frequently happens in picking time a dry spell will come. In this kind of a case the berries are usually picked in the forenoon and cultivated in the afternoon. The berries are not damaged and with a dirt mulch to hold the moisture. This makes the last picking as good as the first.

Red raspberries may be planted a little closer than other kinds. New growth needs no pinching off until spring. Old wood and small young growth is better cut out soon after bearing. This is true of both black berries and raspberries. When the ground is frozen the old wood breaks off with little trouble. In no event should the matter of cleaning out this dead wood be left until Spring.

Don't say that it don't pay to spray. Blackberries, raspberries, currants, goose-berries, strawberries and grapes must be sprayed. Don't say that it don't pay to wire the plants. Just try a few rows as an experiment. I have picked 300 quarts on a row 40 rods long at one picking. There is no brush laying on the ground and no soiled berries which is a marked advantage in selling.

Currants and goose-berries want to be planted about the

same. Trimming every spring more or less. Spray at the roots and head off the worms and never have to spray on the fruit. The demand is constantly increasing. The Victoria is a fine bush and a good bearer in fact much better than the Fay. If the new growth of raspberry and blackberry have been topped at the right time there will three to six good branches to start and need no further cutting till Fall. Then cut back to from 6 inches to two feet according to size of branch. The large branches can carry and ripen four times as much fruit as the small branches.

My experience has shown the Snyder to be the best Blackberry.

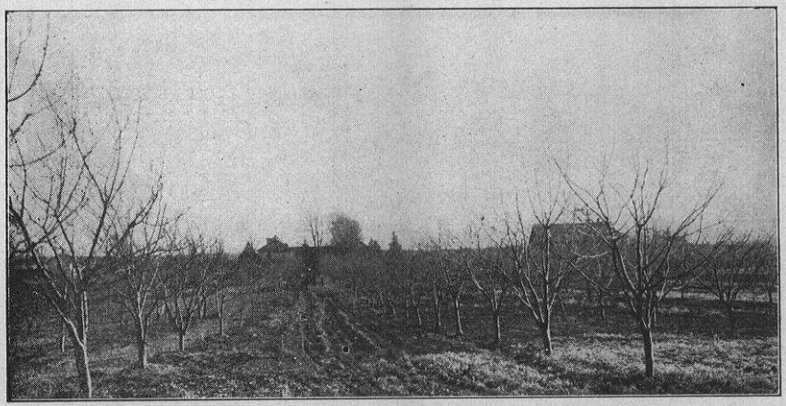
Raspberries—Cumberland Eureka, proven good; and Plum farmer has the promise of being a good berry. The Columbia is the best berry for canning we grow but not hardy enough for northern Illinois climate. Same is true with the Gregg. So many of the new growth kill but it is a very fine late berry.

AFTERNOON SESSION—TUESDAY, JANUARY 10, 1911.

FROST, DROUGHT AND STRAWBERRIES.

H. B. BLACKMAN, Richland Center.

The yield of strawberries in this section for the season of 1910 was far below the average. This was partly due to the severe freeze in April and May, also the drouth that prevailed during the ripening season and partly due to those that went out of the business due to poor prices in former years. The average wholesale price received for strawberries last season was a little over $2 per 16 quart case and there was not enough to supply the demand at that price. I will give a list of varieties and their behavior for the season of 1910.



Six year old orchard, H. G. Street, Hebron, Illinois; "grown under up-to-date methods recommended by the Wisconsin State Horticultural Society."

Senator Dunlap.—The freeze seemed to do this variety little or no damage. It set a tremendous load of berries, but the drouth affected it quite a little as the berries run medium to very small, had to pay two cents a quart to get them picked. The quality could not be improved upon. They also bore a crop in the fall.

The Highland was among the earliest to ripen its fruit. The freeze did not seem to affect it any. The berries averaged large with a bright red color which extends to the center of the berry. The yield would have been above the average but the dry weather seemed to be too much for it, as the foliage would wilt and expose the fruit (which is quite tender) and this cut the crop short about one-half. I think Highland is a very promising variety.

Warfield.—This went through the freeze with very little damage, set a big load of berries but the dry hot weather ruined it. In the hottest part of the day the foliage would wilt and roll up, exposing the fruit, which was cooked by the sun. The root system on this variety seems to be deficient, which is a very serious fault in a strawberry plant.

Improved Bubach.—The frost damaged this sort about 25 to 40 per cent. However the dry weather did not seem to affect it in the least. All through the fruiting season the plants remained fresh and green in the midst of the awful heat and drouth. The berries averaged large to very large and it yielded a fair crop of fancy berries. I had the Bubach on a heavy stiff clay soil and all through the ripening season the ground appeared to be as dry and hard as a brick.

Wonder.—The freeze almost ruined this variety and what fruit was left the dry weather finished. It did not bring a berry to maturity.

Pride of Michigan (Kellogg's strain) fared about the same fate as Wonder, plant, growth and type of berry about the same.

Buster.—Very similar to Wonder and Pride of Michigan. The freeze and drouth ruined it also.

Pride of Michigan (Baldwin strain).—From this variety I did not get enough fruit for even a fair test. The freeze and dry weather used it up.

Glen Mary.—This ripened up some very nice fruit. The

frost cut the crop short about half, but the dry weather affected it very little. Glen Mary has been one of my paying varieties in former years.

Parsons Beauty.—Started out to do wonders, but all of the blossoms and the fruit which had set also the most of the buds were frozen, there was not enough fruit left to tell what the dry weather would have done for it.

Red Bird.—The season of 1909 this variety did extra well, but the freeze and dry weather damaged it so badly last season that it bore no fruit. Introduced as extra early, with me it is not much earlier than Dunlap, and the quality is very inferior as compared to Dunlap.

Virginia—also sent out as extra early but with me it is no earlier than some of the standards. A very weak grower and not productive. The frost and drouth did not injure it much.

Fremont Williams.—I have grown this variety three years and it is the best late sort I ever tried. It is as late as Gandy or even later, more productive, better flavor and a more vigorous grower. The frost did it no damage as it does not show up its fruit buds until very late in the season. Berries average large with a bright red color, smooth and nearly round in shape. Affected but little by the drouth. It was one of the paying varieties for the freak season of 1910.

Pocomoke.—Frost and drouth affected it but little. Produced some very fine fruit. The yield was above the average.

Evening Star.—Another late variety claimed to be better than Aroma. It stood the freeze and drouth well but was only moderately productive and is not as late as reported. Winter kills bad unless mulched very heavily.

Blaine.—I cannot see that this is a better variety than Gandy. There were great claims made for it but with me it is so near like it that it could be classed the same. It did not stand up well during the dry weather.

July.—Fully as late as Fremont Williams and even more productive than Senator Dunlap, but the berries averaged medium to small. I think this was partly due to letting the plants set too thick. The berries are a golden color and only moderately firm. It stood the freeze and hot dry weather well, picked more fruit from July than any other variety in the field last season.

Stevens Late Champion.—The freeze seemed to damage this quite a little also it did not stand the dry hot weather very well, as to productiveness, it is O. K. However, the berries run to small and inferior, so many were inclined to to be bitter, think this fault was due to the dry weather as it was not affected that way in the season of 1909.

Pan-American.—Affected very little by the freeze and drouth, a poor plant maker, bears heavy until it freezes up.

Autumn.—Bears excessively but the berries are too small and inferior, damaged badly by the dry weather. Stood the freeze uninjured.

The above two varieties are not recommended for general planting.

Nettie.—Very late, stood the frost and drouth extra well. However, the berries are so sour and the color so poor that this variety will never be popular. Does best on a black loam soil.

The new varieties that I have on trial that will fruit in 1911 are Black Beauty (fig type), Grand Marie (fig type), Berlin, Red Prolific, St. Louis and Iona Market. Berlin and Red Prolific are very vigorous growers and seem quite promising.

Among the raspberries, Early King and Shippers Pride were only two that survived the freeze, but the drouth cut the crop short about 75 per cent. The varieties the freeze ruined were Cuthbert, Herbert, Eaton, Manitou, Cumberland, Hoosier, Cardinal, Plum Farmer and Munger. Gooseberries, currants, cherries plums and apples were all frozen.

In conclusion I would say I always mulch my strawberry plants very heavy. Put the mulch on from two to three inches thick. After careful tests and experience I find that a field of mulched strawberries will average 50 per cent better than a field that has not been mulched. As to mulch used, I prefer clean oat straw, wheat straw or marsh hay, corn fodder also makes an excellent mulch if it is run through the feed cutter, but any other straw such as barley, rye, etc., will do very well, but in my opinion not so good. I would never use manure for mulch as it is most always infested with grass seed, weed seed and causes more or less trouble.

Mr. Richardson: Do you use any commercial fertilizers for your strawberries?

Mr. Blackman: No, sir, I use barnyard manure.

Mr. Soverhill: Do you recommend pinching off the blossom of the Pan-American to stop its fruiting out of season?

Mr. Blackman: It is better.

Mr. Gonzenbach: We have heard something about substituting the growing of oats in place of straw for mulch, sowing the oats in July between the strawberry beds and allowing them to grow, and they are naturally ripe by the time the frost comes, and the oats makes a natural mulch. The advantages claimed for this are that it is somewhat easier and keeps back the late weed growth. I would like to know if any one here has ever tried that?

Mr. Coe: I have tried that and there are several serious objections to it. In the first place, we do not get growth enough of oats to make a mulch. That is one serious objection, another serious objection is that it checks the growth of your strawberry plants, you do not get the growth of plants that you would otherwise. That is enough to kill it in my estimation.

Mr. Blackman: Another serious objection I see to it is that it does not let the sunshine or air into the plants and they will not produce so many fruit buds.

Mr. Richardson: Mr. Sullivan spoke this forenoon about using sawdust for mulch. I would like to ask the gentleman if he has ever used sawdust or shavings for mulch.

Mr. Blackman: No, I have never used sawdust. I would hesitate somewhat to use the fresh sawdust, I do not think the old sawdust will injure. I have heard of success in using sawdust, but I never found out just what it was, whether it was fresh, or whether it was two or three years old. Planing shavings I would not hesitate to use. I would use anything for mulch that was not infested with weed seeds rather than to let my plants go unmulched.

A VISIT TO A FARMER'S UP-TO-DATE GARDEN.

H. G. STREET, Hebron, Ill.

Let us suppose that it is about the middle of June and we will take a trip over to one of our neighbors, about a mile and a half from my place, and he is almost a neighbor of yours too, being only a mile and a half from your state line. There are not very many farmers that are growing what you might call an up-to-date fruit garden, but it seems to me that it is not so hard to grow, if they merely put the same attention to it that they do to all the other work. We will have to go over to this neighbor to learn a lesson from him. As we come up to his place, we find that it is on a little elevation, at least fifteen to twenty feet above the average of the surounding country, and just east of his buildings he has a field of about half an acre, it is about ten rods long and eight rods wide. It is close to the road and it is fenced in with a good wire fence to keep out chickens, pigs and cattle, and we find also that five years ago this was a kind of clover field. The first crop of hay was cut and the second crop was left until about August and then about eight loads of fertilizer were applied on the top of the second growth. This was plowed in in August, then just before frost, about four loads of well rotted manure were spread on top of this. That lay over winter until spring, as soon as he could get in he went to work and thoroughly disked this five or six times, then he plowed it as deep as he could, then disked it again until it was in fine shape for planting. We find that in the first row he put in asparagus. These are the long way of the garden, about ten rods long. Then there is a row of grapes, on a trellis six feet high, four wires, the bottom wire two feet from the ground, and I think the first that this neighbor saw of that method was demonstrated by our friend Mr. Soverhill some fifty to sixty miles south of us. He has vines that are about thirty-seven years old. That shows that the hard winter of 1898 to 1899 did not affect them and they are about the only ones that we can find that were not affected. He does not believe in growing varieties that have to be cov-

ered in the winter and we find that we do not have to cover the hardy varieties. The method of pruning would be the same the first two years as generally advised. About the second year he leaves two of the best canes and cuts them back about half way. He lays one of those each way on the bottom wire, and the next year he will have enough so that he can leave about four canes. Next we find about two rows of black raspberries, they are composed of the Old Cumberland and the Caledonia; then he has a row of blackberries. These he trains just about the same as you were told before dinner by Mr. Soverhill. Next after that comes the strawberry. When I was there the last time it was about the 15th of June, we had not looked over these other things, had not found anything that was good to eat, but when we looked over the strawberries, we saw something was moving and on looking a little closer, a boy and girl jumped up. I think they were not strangers there and they were bareheaded and pretty soon they picked up their hats and they were full of nice strawberries. We found that they were in their accustomed places and they seemed to be right at home. We jumped about varieties and we found out where the children were were the Dunlap, they did not eat on the Warfield row, left those for canning. Besides those, he had the Brandywine and the Sample, and on the outside he had a dozen Norwood and a dozen Ozark. He likes to experiment a little bit. In inquiring as to how he cultivates, we found he puts them in about three feet apart, that is, the rows are three feet apart and the plants about two feet apart in the row, and instead of letting them go out to eighteen inches wide in the row, he keeps them down to about ten to twelve inches, and keeps them thoroughly cultivated even up to very nearly the time that it freezes so that no grass and weeds will be started at all. When it freezes up, of course he mulches with marsh hay and in the spring just spreads it enough so that they can get through without smothering them. The question was asked this morning if they would come through. A good many come through, but you will not get nice bunches if you make them go through too much, but if you open the mulch just enough, they will come through very well. I have not told you everything, but if you have any questions to ask, I will be glad to answer them.

Mr. Moyle: How did he keep the chickens out?

Mr. Street: He had a good woven wire fence, but it was not proof against the children.

THE WISCONSIN FRUIT GROWERS' ENVIRONMENT.

By GEORGE GIRLING.

Mr. Joseph Chapman, a prominent banker of Minneapolis, said to the Wisconsin Bankers' Association at their recent meeting: "I never believed in Bankers' associations spending all the time in their conventions talking about rates of exchange and discounts." I likewise believed that horticultural meetings should not be limited exclusively to matters strictly horticultural. It is probable that the Secretary knew that I was not an expert horticulturist so he would have me talk about The Fruit Growers' Environments. Let us, therefore tackle the subject assigned. The one thing of utmost importance is Life itself, and I first want to call your attention to the fact that in a recently published government list of mortality statistics of the various states the commonwealth standing at the head with the lowest death rate was the good old state of Wisconsin. Next to healthfulness comes the question of prosperity and I invite your attention to the fact that wherever on this globe of ours you find the maximum of prosperity it will be in a latitude and under climatic conditions similar to those of the same good old state of Wisconsin. Whether this condition is owing to climatic influences, fertility of the soil, the purity of the water, the energy of the people, or any or all of them is immaterial to the fact that it does prevail. The greatest vigor in manhood or womanhood, the greatest vitality in animal life, and the greatest perfection in vegetable life are well known to prevail in this latitude. And what about productiveness?

Let us look for a moment at some official figures, taken from the Crop Reporter of the United States Department of Agriculture, showing the comparative production per acre of important grain crops.

Among the twenty-five states producing twenty-five million bushels or more of *corn* during the ten year period ending 1910, Wisconsin stands fifth, the leading state (Ohio) exceeding Wisconsin by only 2.4 bushels per acre; Indiana by 1.5; Illinois by 1.3; Pennsylvania by 1.1; a difference hardly worth talking about.

Among the nine states producing one million bushels or more of *barley* during the ten year period ending 1910, without irrigation, Wisconsin stands first.

Among the sixteen states growing ten million bushels or more of *oats* during the ten year period ending 1910, without irrigation, Wisconsin stands first.

Among the seven states producing more than one million bushels of spring wheat during the ten year period ending 1910, without irrigation, Wisconsin stands first.

Among the thirteen states producing five hundred thousand bushels of more of *rye* during the ten year period ending 1910, Wisconsin stands fourth, the three other leading states exceeding Wisconsin by only a trifling difference.

Among the eight states producing ten million bushels or more of *potatoes* during the ten year period ending 1910, Wisconsin stands second, led only by a state which consumes an enormous amount of commercial fertilizer.

Of all the states reported as producing flax during the ten year period ending 1910, Wisconsin stands first.

Of all the states not using irigation according to the latest table for a ten year period in hay production Wisconsin stands fifth.

The statistical tables indicate that Wisconsin leads all non-irrigating states in sugar beets and comes within a ton per acre of equaling the average of the much talked of irrigation states.

The above statistics would be enough to convince any thinking man that if he were in Wisconsin he should stay here, or if he were not in Wisconsin he would do well to come here instead of spending valuable time in a fruitless endeavor to find a better place. But this is not all by any means. I have already called attention to the fact that vegetable life attains its highest perfection in latitudes and climates similar to those of Wisconsin. It should be a matter of pride to Wisconsin

Japan plums orchard D. E. Bingham, Sturgeon Bay, Wis., Sept. 4, 1910.

people and of interest to homeseekers and investors everywhere that under the encouragement of Professor R. A. Moore and his capable assistants, and with the high quality of seeds they have introduced, the Wisconsin farmer is not only in a position to grow crops of maximum yields but of such fine quality as to create a demand for them for seed purposes at high prices, not only in the surrounding states but in distant commonwealths and foreign countries. And I want to remind you that progress along this line dates from the recent past, and promises in the early future to assume proportions to which its present development will seem as nothing.

In this connection it may be said that in 1905, 275 members of the experiment association of which Professor Moore is secretary grew an average of 59.2 bushels of corn to the acre, while the average of the whole state of Wisconsin that year was 37.6 bushels. At the same time the average yield in the North Central states east of the Mississippi was 39.2 bushels
In North Central states west of the Mississippi was 32.4 bushels
In the North Atlantic states..... 36.7 bushels
In the South Atlantic states..... 16.0 bushels
In the South Central states.....21.8 bushels
In the Far Western states..... 26.3 bushels

That same year the experiment station at Iron River, within twelve miles of the shore of Lake Superior, grew 47.7 bushels of corn per acre, grown from pedigreed No. 8 Yellow Dent seed, developed by Professor Moore, from whose work the benefit already received by the state would many times over pay his salary for a lifetime.

The list of awards taken by Wisconsin at the last National Corn Exposition in Omaha, in January 1910 reads like a sweepstakes event for our state, Wisconsin taking *first on Barley, Rye, Buckwheat, Cloverseed, Bundle of Clover, Sheaf Barley, Timothy Seed and Wheat,* and second, third and fourth on many of the above. First on Oats went to Minnesota by a decision of three to two of the Judges. On the few remaining farm products Wisconsin stood second.

DAIRYING.

The best evidence that Wisconsin is supremely adapted to the production of the finest dairy products with the greatest

economy lies in the fact that the output has been increased during the last thirty years from practically nothing to a value of seventy-eight millions of dollars in 1910, leaving its title to being the greatest dairy state in the union disputed only by New York with the probability of Wisconsin being in the lead.

In these days when conservation is so popular it is worth while noting that this industry which pays the producer so handsomely and that robs the soil the least of all the branches of agriculture, flourishes most profitably only in such latitudes and climates as those of Wisconsin.

Blest as Wisconsin is with an invigorating climate and fertile soil, adaptable to the production of a wide range of crops she is in no less degree blest with that other essential to agricultural success and prosperity, the ample and nearby markets necessary to give value to food products. Within the state and the four immediately adjoining states there are over fifteen millions of people, while adding to this the four states bordering upon the Great Lakes to which Wisconsin products can be taken at a nominal cost of transportation, there are upward of thirty-nine millions of well-delveloped human appetites, or nearly one half of all the people in the continental United States. Human appetites give the only value to food products that they ever had or ever can have and it is no more useless to grow products in the absence of a consuming public than to grow them at such a great distance from the consuming market as to have all profits absorbed by transportation charges and deterioration in transit. The moral in this suggestion is not difficult to discover. From a standpoint of geographical location and transportation facilities, Wisconsin's markets are unsurpassed anywhere.

If in other respects the Fruit Grower in Wisconsin can produce results, in addition he is certainly blest with environments with which he should be satisfied. Now let us take a look at the situation from the fruit growers' standpoint. The Wisconsin apple grower has environment conditions peculiarly suited to the production of apples for the fall and winter market. In the production of these varieties he uses trees of early maturity, the greatest hardiness, and maximum productiveness. He has no need for storage warehouses, no need to wait many months for returns while paying cold storage charges,

but is able to put his products immediately into a market at a time when the apple appetite is keenest and when the supply is the lowest. He has practically no competition either by other fruits, which later enter the market, nor from extensive producers of the same varieties of apples. An examination of the market reports during the months when the Wisconsin apple as now grown, is on the market with its minimum freights, the absence of cold storage charges, the absence of the hazard in shipping and with consequent losses, will show that the Wisconsin grower receives a higher net return than does the orchardist in the regions that are now being so loudly proclaimed as the only places to grow apples. The future presents a cheerful aspect when we know that the state of Wisconsin may multipy its apple products by ten or a hundred without having approached the limits of the immense markets that are within easy reach, and without having to add to our present varieties the so-called late keepers. I admire the energy and activity of those who devote their time and thought to the development of new varieties of apples as well as other farm and orchard products, but it is my opinion that the development of new kinds of apples, especially the so-called late keepers, is entirely unnecessary in Wisconsin at this time, or any time in the early future. Our Duchess, Yellow Transparent, Wealthy, McMahon, Northwestern and Patten's Greenings and two or three of the varieties of crabs that are so well suited to Wisconsin conditions furnish a list of varieties that as far as markets and profits are concerned amply fill our requirements. I am not attempting to leave out other varieties of which there may be champions here in this audience, but what I want to impress upon you is that you now have a market at your very door, which you cannot for many years fill, regardless of whether your varieties are few or many.

I will add here what I have often said elsewhere that the Wisconsin apple grower can produce his crop and put it on the market at a cost less than the orchardists of many distant regions will have to pay in freight before reaching the ultimate consumer and also he has the advantage of an active market before the apple appetite has lost its keeness or the market has become supplied with the many other fruits that effect the situation. And let me add the further thought that no mat-

ter what may be the relations of supply and demand in the near or distant future the Wisconsin apple grower will be the last one to have his profits wiped out by a declining market, because of his unsurpassed location. The districts in Wisconsin suited to apple production are too numerous to be discussed fully in this brief time. The many districts are being rapidly developed and it is my opinion that the recognized apple districts in this state will be markedly increased as the industry progresses.

The area in Wisconsin that is suited to *cherry* production is undoubtedly more limited than that which is suited to the production of apples. However, it is an unquestionable fact that cherry growing will be one of the industries for which Wisconsin will be noted, and which like our apples will have a practically unlimited market. With orchards producing from $500 to $800 an acre there is no question that cherry growing will be rapidly increased in the early future. I will not attempt to state the amount of new plantings that are being made in this state, for the reports are coming in so frequently it would be difficult to make up any schedule now that would be correct when the spring plantings are done.

The grower of *small fruits* in Wisconsin has the same advantage as to market that applies to the grower of tree fruits. He is able to grow a wide variety with most excellent returns and put them in the immense nearby markets while they are fresh. Regardless of what is said by exploiters and special writers with reference to the returns to growers of small fruits in isolated sections, the fact is undeniable that the same growers located in the state of Wisconsin where long distance transportation, deterioration, and other losses are not encountered, would produce much more handsome results.

While the fruit growers in Wisconsin for many years at least may have little or no need for marketing associations, or any other associations to meet disadvantageous conditions, they do need and now have one of the best, strongest and most progressive horticultural societies that prevail in the United States, headed by our experience and venerable president Toole, and stimulated by our energetic, persistent and aggressive secretary, Cranefield. The Society has done noble work in the past and its present prosperous condition both from the standpoint of

membership and active usefulness presages its many triumphs in the future.

Although I have traveled over the state a great deal in the past my numerous trips last summer increased, if possible, my appreciation of the productiveness, prosperity and development in every section that I visited, and the more I studied the almost certain developments of the future, that will be applied to the various resources of the state, I cannot resist wondering how the greater Wisconsin of twenty-five years or fifty years hence will compare with the magnificent state of the year 1911. Last fall I had occasion to be with the Commissioner of Immigration in making the Wisconsin exhibit at the Illinois state fair, and when scores of Illinois farmers, or I may say hundreds, perhaps thousands for that matter, looked over the exhibit in admiration and voluntarily told us that they could not produce such results on their two hundred to two hundred and fifty dollar an acre land, I thought my admiration for Wisconsin had reached its limit. However, it has been my privilege to be in charge of the exhibit of the Wisconsin Advancement Association in the city of Chicago and when there I am told by every visitor that the products exhibited are marvelous, almost beyond their understanding, I begin to wonder whether or not I too have failed to appreciate the possibilities of the state of Wisconsin for agricultural achievement. What the development of the ten millions or more acres of fertile unused lands in the northern half of the state, together with the harnessing of the almost innumerable water powers and the use of their energy in running the factories, the presence of which will mean not only hundreds of millions of dollars in industrial institutions, but the employment of hundreds of thousands of workmen that will make many of these valleys not even second to those of the far famed Fall and Merrimac rivers—what these developments and the activities necessary to the development of the many other latent resources of the state will mean in the enrichment of the state and the increase of the prosperity of the people is a question too vast almost for contemplation, not to say for definite answer. We know that with these developments which are certain to come, that not only will the natural wealth of our now undeveloped regions be made available, but that this more complete utiliza-

tion of the state's resources will reflect its benefits upon the state as a whole, including the present highly developed portions, and we know also that from these additions to our now wonderfully rich state will come a large increase in the state's revenue that will richly repay for the endeavors now being put forth for these accomplishments.

Whatever may be the ideas of others as to the future needs and uses of the state for revenue that will come from the development above referred to I will content myself by merely pointing to the fact that in my estimation a large investment might well be made in the enlargement of the Agricultural college that will be necessary to accomodate the ever increasing attendance, the addition of many experiment stations in various sections of the state, and in the increase in the force of the various departments of the agricultural college, so that field work may be materially increased and not only the knowledge of agriculture be carried to the door of the farmer, but that he may be stimulated by the enthusiasm resulting from coming into frequent personal contact with those skilled people who are devoting the best years of their lives, many of them with inadequate and disproportionate compensation, in spite of which they are continuing to give of their abilities and energies to the cause of progress and enrichment of the state. We need more of them.

In closing let me say that while I have said little of fruit growing it is my candid belief that all that I have said as to the strength of Wisconsin's position applies to fruit growing even more than to any other line of production from the soil. You have the climate, the soil, the productiveness, the markets, and pleasant environments—and what else would anybody want.

SELF-BOILED LIME-SULPHUR SPRAY.

G. W. KEITT, U. of W.

Believing that, as practical growers of good fruit, you will wish a practical discussion of self-boiled lime-sulpher spray ,I have planned that we center our attention upon the following phases of the subject:

1. Adaptation.
2. Preparation.
3. Application.
4. Results.
5. Cost.

Before taking up these points in detail, however, I feel that it may be profitable for us to consider very briefly the general needs that called this preparation into existence, and to take a hurried glance at the history of its evolution.

During the two decades succeeding what we may term the birth of modern practical plant pathology, in the discovery of Bordeaux mixture by Millardet, in France in 1892, great strides were made along the lines of economic plant disease control. The evolution of Bordeaux mixture and the improvement in spraying equipment made possible the conquest of disease after disease, until our plant pathologists and horticulturists began, almost, to forget that any limitations were applicable to this great fungicide. This status of affairs, however, could but be of brief duration. In vain the owners of the great peach orchards of Georgia and other sections turned to Bordeaux when, in a single week, perhpas, the scourge of brown rot turned the most promising harvest into a dead loss, or when the ravages of scab (''black spot'', ''mildew'') rendered an otherwise perfect crop unsightly and unmerchantable. In desperation, they appealed to the United States Department of Agriculture for aid, while many growers pulled up their trees and went into other lines of work. The peach growers were not alone in their plea. The apple orchardists of the country were beginning to tire of russeted and misshapen fruit from many of their most choice varieties, as a result of spraying with bordeaux mixture.

Thus, in response to this general feeling of a great need for a summer spray that would supply the efficiency of Bordeaux mixture, without the injurious effects of that fungicide, arose the lime-sulphur investigations. By no means have these investgiations been confined to the Department of Agriculture or to any single group of men; yet, I think, to Prof. W. M. Scott, of The Bureau of Plant Industry, to whom this work was assigned, far more than to any other individual, belongs the credit for the successes that have crowned these investigations.

Realizing the apparent inefficiency of the copper preparations for the purpose in view, Prof. Scott, and others, turned, naturally, to the sulphur compounds for experimentation; and, out of this branch of the investigations, have arisen the "commercial" or "concentrated" lime-sulphur solutions that are so rapidly replacing Bordeaux mixture in apple spraying. Harmless, however, though this preparation is on the fairly hardy foliage of the apple, it was found to be impossible to the tender foliage of the peach. In other words, when the solution was made dilute enough to be harmless to the host plant, it was not strong enough to control the fungus. Thus, Prof. Scott was still confronted with the whole problem of peach disease control; but, by dint of thorough and persevering experimentation, he succeeded in creating a new field of possibilities in the origination of self-boiled lime-sulphur spray.

A brief consideration of some of the essential differences between the different lime-sulphurs, in order that we may better and more clearly understand the solution under discussion, and we pass on.

The lime-sulphur preparations, as you well know, may be divided into two distinct groups; viz., first, the "concentrated" solutions, which may be sub-divided as "commercial" and "home-boiled," according to the method of preparation, and, second, self-boiled lime-sulphur spray. These two groups of solutions differ widely in their preparation, their chemical composition, and their fields of usefulness. In the "concentrated" solutions, the active agent, being both fungicidal and insecticidal in value, consists of the higher poly-sulphids of calcium, formed in the process of preparation by a chemical reaction between the lime and the sulphur, at continued high temperature,

These sulphids of calcium are, however, also the active agent in the production of "spray injury." Thus, the preventation of their formation in injurious amounts is one of the primary considerations in the preparation of the self-boiled solution, the active fungicidal agent, in this case, being the finely divided sulphur in suspension in the liquid. In order to obtain a maximum formation of the higher poly-sulphids of calciums, it is necessary, in the preparation of the "concentrated" solutions, that the mixture be boiled. Conversely, in the case of the self-boiled mixtures, in order to prevent the formation of these compounds, continued high temperatures must be avoided. Hence, in large measure, the use of the lime as a source of heat in the preparation of self-boiled lime-sulphur.

Let us now turn our attention to a further discussion of self-boiled lime-sulphur preparations as above outlined.

Adaptation. Self-boiled lime-sulphur is peculiarly adapted to the summer spraying of tender-foliage hosts. It has been shown to be especially efficient in the control of peach and plum brown rot and peach scab, while it is equally applicable to brown rot of cherry and allied fruits. It has been found, under favorable conditions, to control certain apple diseases; but, in these cases, the "concentrated" solutions have proved more efficient, and equally harmless to fruit and foliage. In addition to the immediate, intrinsic values of the lime-sulphur solutions, however, I wish to call especial attention to their wonderful potentialities. Even at this early stage in its evolution, the self-boiled preparation has revolutionized the spraying of stone fruits, while the "commercial product" is rapidly coming into use in the summer spraying of pomaceous fruits. With these results behind us, let us be keenly alive to the possibilities that still lie before us.

Preparation. The *raw materials* necessary for the preparation of self-boiled lime-sulphur solution are few, simple, and relatively inexpensive: viz., lime, sulphur, and water. The quality of the lime, however, is a most important factor, a good stone calcium lime being absolutely essential. As the whole process of boiling is dependent upon the heat generated by the slaking lime the air-slaked product is utterly worthless for this purpose. If magnesium lime is used, chemical complications occur, leading to the formation of hydrogen sulphide.

The fungicidal value of the resulting preparation is lowered, while the hydrogen sulphide evolved is unpleasant and injurious to the manipulator. The sulphur may be readily secured in bulk "flour sulphur" and flowers "of sulphur" seeming to be equally efficient. The former product is usually somewhat cheaper.

The apparatus necessary for the preparation of this solution is as simple as are the raw materials used. It may consist of a stout barrel, a paddle, a pair of hand scales, or other weighing facilities, several buckets, a sifter, and a strainer. The barrel should be water-tight, and of good construction. Any ordinary oil, vinegar, or lime-sulphur barrel is quite satisfactory. Its capacity should be known, in order to facilitate the handling of the standard solution. The paddle should be stout and well made. It should be about six feet in length and four inches wide, with the bottom and the edges sharpened, in order to render possible a thorough mixing of the thick, pasty, boiling mixture. The nature of the buckets is of little importance the individual grower using those that he finds most efficient and satisfactory. An ordinary meal sifter—18 to 20 mesh to the inch—is satisfactory in reducing the lumps that may be in the sulphur. The ordinary strainer that goes with spraying machinery will serve for straining the solution. Brass mesh is desirable, in order to withstand the corrosive effects of the chemicals that pass through it.

The formula that has been found most efficient in the control of peach and plum brown rot and peach scab is as follows:

Lime	8 lbs.
Sulphur	8 lbs.
Water	50 gallons

The best conditions have been found to obtain when batches of four times the above formula are prepared. The preparation of the solution is quite simple; yet the process should be carried out with great care. The lime, thirty-two pounds, is put into the barrel, and nearly covered with water. As soon as this begins to slake, the thirty-two pounds of sulphur, which has been run through a sifter to remove the lumps, is added. It is merely dumped, in the dry state, into the barrel. If the lime is of the proper quality, a violent period of boiling will ensue.

From the time that the sulphur is added and the boiling begins, the mixture should be kept thoroughly stirred, while water should be added, from time to time, as the mixture gets pasty, and threatens to "burn." When the lumps of lime are slaked down, a fairly thick, hot, pasty mass should result. It is important that this be cooled off promptly, by the addition of water, as the sulphides of calcium, which, as above stated, are injurious to tender foliage, are formed if the solution is allowed to stand at this high temperature. Several buckets of water should be added, the liquid being constantly stirred, in order to prevent lumping. The solution may then be made up to any desired volume, one-fourth of it being used to charge a fifty gallon barrel, or the whole amount comprising a charge for a two hundred gallon tank. At this stage, the preparation is ready to be strained and applied. In straining, all free sulphur should be carefully worked through, as the free sulphur in suspension is the active fungicidal agent. In order to secure even concentration, the stock solution should always be thoroughly stirred before it is removed from the barrel.

Application. The same spray machinery that is used for general spraying may be used in applying self-boiled lime-sulphur. Barrel pumps may be used satisfactorily, though, here, as elsewhere, the power machines are more efficient. As the sulphur of this solutinon is in suspension, it is very necessary that the preparation be thoroughly agitated. Thus, all other points being equal, the machine with the best agitator is to be desired. There are many good nozzles on the market. Among others, the double Vermorel and the Friend have been found, in our experience, to be satisfactory.

The following schedules of applications are recommended by Prof. W. M. Scott, of the United States Department of Agriculture, being based upon the results obtained from the experiments that have been carried on under his direction in Georgia and other sections for the last three seasons:

For treatment of peach and plum brown rot and peach scab in Northern districts:

I. For early varieties, as Carman, Hiley, Champion.

1. Self-boiled lime-sulphur, about one month after the petals fall.

2. Self-boiled lime-sulphur, about one month to six weeks before fruit is picked.

II. For later varieties, as Elberta, Smock, Salway, etc.

1. Self-boiled lime-sulphur, about one month after petals fall.

2. Self-boiled lime-sulphur, three or four weeks later.

3. Self-boiled lime-sulphur, a month or six weeks before the fruit is picked.

For the curculio treatment, arsenate of lead, at the rate of two pounds to fifty gallons of self-boiled lime-sulphur, should be used in the first application, but not in the others. Where the curculio is a serious factor, an application of arsenate of lead, two pounds to fifty gallons of water, with two pounds of lime, may be made a few days after the petals fall.

The trees should be thoroughly sprayed, the aim being to "pepper" each leaf and fruit with spray, rather than to drench the tree. The last application should be made very light, though thorough, in order that the fruit may not be splotched with spray in such a manner as to detract from its value at harvest time. For this application, a nozzle with a small aperture should be used, in order to secure the spray as a very fine mist. With average care, there is no danger of putting on so much of the fungicide that it will be evident at picking time.

Results. The results that attended the lime-sulphur investigations caried on in Georgia by the writer and others, under the direction and supervision of Prof. W. M. Scott, demonstrated thoroughly the efficiency of self-boiled lime-sulphur in the control of peach and plum brown rot and peach scab. As a complete account of this work will probably appear in an early publication of the Bureau of Plant Industry, and as our time is limited, a detailed consideration of these results is not necessary. I shall merely give you two extracts from our tabulated results.

Plats No. 1 and No. 2 consisted, each, of seventy six-year-old Elberta trees. The blocks were adjoining, the second being merely a continuation of the rows of the first. The trees were in the same condition, and they received the same treatment, with the exception of spraying. Plat No. 1 received two applications of self-boiled lime-sulphur (Apr. 27 and June 18), combined with the arsenate of lead treatment for the curculio. Plat No. 2 was unsprayed. The summarized commercial results from these plats are as follows:

	Total bushels.	Per cent rot.	Per cent culls.	Per cent merchantable fruit.
Plat No. 1.	116.5	0.61	2.96	97.04
Plat No. 2.	53.75	26.25	45.91	54.97

As these figures show, the spraying produced, for these seventy trees, a gain of 81.8 bu., or approximately 130 crates, of *merchantable* fruit. This, however, does not by any means, tell the whole story of the superiority of the sprayed over the unsprayed fruit. Nearly all the sprayed peaches ran "extra fancy," while the unsprayed product had to go into the lower grades. The sprayed fruit was far ahead of the unsprayed in color, symmetry, and uniformity, while it ripened evenly and normally on the tree, and packed and carried to market in excellent condition. There was a demand for sprayed fruit, at $2.00 to $3.00 per crate, when the unsprayed product was "a drug on the market" at $1.00 to $1.50. While this much difference in price between the sprayed and the unsprayed fruit is, perhaps, a bit abnormal, there is a constant difference of at least $0.35 to $0.50 per crate, in favor of the sprayed fruit.

Just as striking as the above results, were those obtained from Summerour (Atlanta) plats, under relatively the same conditions, the plats having seventy trees, each, and receiving the same treatment as those above. As this varety ripens late, it was found that another application of lime-sulphur will be necessary to a thorough control of the diseases. However, while the control, under this treatment, was not perfect, the relative results are striking. They are summarized below:

	Total bushels.	Per cent rot.	Per cent culls.	Per cent merchantable fruit.
Plat No. 1.	135.	5.35	14.98	88.02
Plat No. 2.	53.5	38.74	93.51	6.49

As these results show, the Summerour crop of the unsprayed Georgia orchards, last season, was practically a dead loss, many growers not attempting to pack any of the fruit, whereas an excellent yield of good fruit was obtained from sprayed trees.

Cost of Treatment. Self-boiled lime-sulphur is a relatively cheap fungicide, the actual cost, of course, varying with the cost of lime and sulphur in different sections. In the South, the solution can be prepared for one-half cent per gallon, eight pounds of "flour of sulphur" costing, at the rate of two and one-half cents per pound, twenty cents, and eight pounds of lime costing a little less than five cents. The process of preparation is so short and simple that the cost involved is practically negligible. The cost of application varies so much with the cost of labor that an estimate is scarcely profitable. It may, however, be considered as a basis for comparison, to be the same as that involved in the application of any other of the standard summer sprays.

In conclusion, I wish again to emphasize the potential, as well as the present intrinsic value, of the lime-sulphur solutions; and I hope that the horticulturists will continue to cooperate with the plant pathologists in furthering the development of these promising fungicides.

Mr. Sperbeck: I should like to ask the speaker if this preparation was sufficiently strong to combat the oyster shell bark louse on the apple tree?

Mr. Keitt: No, I think not. We have as yet carried on no definite investigation as to any insecticidal value in the self-boiled lime sulphur. I have been inclined to think that the insecticidal value will be minimum, certainly, because you see the active agent as an insecticide of the lime-sulphur preparation is composed of the very sulphate of calcium that we are trying to keep out of this solution. The active agent in the concentrated lime sulphur solution is composed of these sulphates of calcium and here we have made every effort to keep out the sulphates and they are present only in a minimum quantity, so I am inclined to think there would be very little insecticidal value in the compound.

A Member: I would like to ask if this lime sulphur will spoil if made a few days or hours ahead?

Mr. Keitt: No, we have found that it will keep its efficiency certainly for a few days. No extensive experiments have been made in that regard as to the actual length of time that it will

keep, largely for the reason that there is no necessity for keeping it any length of time, owing to the ease of preparation. We have carried it over as much as four or five days ourselves, with no injurious effects.

Mr. Gonzenbach: I would like to ask Mr. Bingham to tell us what they do with lime sulphur in Sturgeon Bay.

Mr. Bingham: We have used it quite a little up there this past season. We found the commercial lime sulphur will free the trees of the oyster shell bark louse if used as a dormant spray, about 1 to 11, and for a summer spray we get good results using lime sulphur, judging from this year's use only. Some of us used it in the cherry orchard entirely, that is, spraying a certain number of trees, three or four applications, used it in other cases for apples, three or four applications, growing a good crop of fruit under those conditions. Other orchards we used it in that gave us not so good results, and then we used Bordeaux in other sections of the orchard, where we got perhaps about the same results that we got where we used lime sulphur. One of these orchards was struck with hail, showing imperfect fruit, and the codling moth seemed to be more in that orchard than in other orchards sprayed with lime sulphur. We use it in connection with arsenate of lead and we had some trouble keeping the arsenate in suspension, arsenate of lead settled quite noticably more than it would in the Bordeaux mixture, and I think if we would use that we would get better results by using it alone, or by keeping it sufficiently agitated, putting an extra person on the spray tank and keeping it constantly agitated.

The President: With 1 to 11, what would it cost?

Mr. Bingham: The cost per gallon as a summer spray, of the commercial lime sulphur, is about 1¼ cents per gallon.

A Member: I would like to ask Mr. Bingham if he noticed any injury to the leaves of the cherry trees by using the commercial mixture.

Mr. Bingham: No, we did not notice any injury at all on the apple and cherry, and we used it entirely on the Burbank and Japanese plums and European plums. We found the effect of the lime sulphur on our Japanese plums was much better, that is, the foliage was not affected at all as it was with the Bordeaux mixture.

The President: What is the effect on plum rot?

Mr. Bingham: We had very little plum rot, not enough to speak of; once in a while a specimen. It did not spread. Whether the conditions were unfavorable for the spread of plum rot, I do not know. Some years we have had it spread all over the orchard when we used Bordeaux, where we thought we had it fully sprayed. We did not have it this year.

Mr. Sperbeck: Isn't it a fact that we have to spray in the winter for this bark louse on the apple tree and that it is necessary to be applied stronger than the summer spray,

Mr. Bingham: It would not be safe to use it anywhere near as strong on trees with leaves as for the dormant spray. One to 11 or 1 to 9 would kill the oyster shell bark louse if the work was done thoroughly.

Mr. Richardson: Can it be made strong enough to kill that insect known as the rabbit?

WEDNESDAY MORNING SESSION, JANUARY 11, 1911.

WISCONSIN'S HORTICULTURAL CONDITIONS.

President WILLIAM TOOLE'S Address.

The year which has passed since the last winter meeting of our society, has been notable in several ways, both as regards climatic conditions and horticultural activities. Probably no member of the society remembers such a succession of frosts as prevailed last spring, almost entirely preventing any yield of fruit of several kinds, over a large part of the state. Notwithstanding these temporary reverses, there has never before been such an awakening to the possibilities for profitable fruit growing in Wisconsin, as prevails in our state at the present time.

If we have, at any time, felt jealous of the promoters of western fruit lands because they have attracted people and capital from our state we may soon become indifferent, because we know that our own state can offer inducements for profitable

Sturgeon Bay Cherries. A fair sample of the 1910 crop on eight year old trees.

investment of capital in apple growing, which, if understood, would be very attractive.

We have reasons to thank our horticultural brothers of the west, for the lessons they have taught us in business energy, in the direction of producing and marketing fruit. I have eaten of the fancy apples from the west and they are good; but a year ago I enjoyed apples grown on our own place that were better. If we follow their example of careful selection, we also can put attractive fruit on the market, at a lower price, for better fruit. As good a percentage of profit can be realized on apple growing here in Wisconsin, with less investment of capital either for installation or running expenses.

And judging from the quality of eastern grown apples which are placed in our home market, we can meet such fruit with our second grade, which will be of better quality than they furnish us at fifty cents a peck.

The conditions of marketing are such that many Wisconsin people do not know how good Wisconsin apples are. In the past we have made a record for Wisconsin apples, when we have shown at the various national and international expositions, and we have surprised the people of our own state, as much as those of other states. During the past few years, invitations have been extended to our society, to represent our state at some of the leading fruit shows, with exhibits of Wisconsin fruits. It seems to the officers of our Wisconsin State Horticultural Society, that what is most needed, is to show Wisconsin what Wisconsin can do. Why cannot we, late next fall, or in early winter, have a state show of apples which will fairly illustrate Wisconsin's horticultural resources; and if others, east or west, care to match fruit with us, we are not afraid of comparison.

Last season's experience has taught us that we must not neglect to spray. The untimely frosts of last year left us all the enemies of our fruit trees, and just about fruit enough to support them. There was more fruit than we thought, and if we had not neglected spraying, we could have raised apples in quantity, and quality, sufficient to pay well for the effort, with a good profit; and the breeding stock of fruit enemies would have been greatly reduced.

We have passed the time of necessity for exhorting wide

awake orchardists to spray, but we must not forget the careless growers, whose neglectful methods may become a menace to the success of those whose interests may become largely invested in fruit growing. While not forgetting that we owe a debt of gratitude to many small growers, whose experience has helped to teach much of what our Horticultural Society has brought together in the way of fruit growing knowledge, we must see to it, that none shall become indifferent to the value of horticultural progress. The State of Wisconsin's motto of "Forward" must be the moving spirit of every fruit grower who can be reached by the influence of the Wisconsin State Horticultural Society.

Among the beneficial activities of our society, what we have done to promote horticultural decoration of school grounds is worthy of special thought. I hope that each member of this society will follow its lead in this direction. Each should make a special effort in his or her school district to promote public interest in the subject of school ground improvement. Our secretary, in his annual report, will probably give all the data in regard to what has been thus far accomplished by the society in this line.

We find in our experience with beautifying school grounds, that it is necessary to consider the area needed for playgrounds; while many schoolgrounds are too limited, there are communities where the children do not know how to play. Would it be within the province of our society to suggest ways of helping children to the opportunity of enjoying the delights of childhood, which will promote healthful social conditions?

A year ago last winter, we were surprised to learn that many members of the legislature did not understand the purpose and work of our society. Our members should see to it that knowledge of what our society has done and is doing for the development of Wisconsin shall become more generally known. If I should speak in detail of the good work we have done it would probably be a repetition of what will appear in the Secretary's report.

The legislature has been generous in the past and has encouraged permanent, progressive work, the value of the results of which has proved to be very great; it would be a misfortune to the state, if there should be any interruption to the work

which is now established, because of lack of support. The space allowed in our annual reports is not equal to our needs. It has seemed necessary to cut the reports of our delegates to other conventions. We should endeavor to have more pages added to our report.

While the importance of apple culture will continue to require leading attention by our society, it will be necessary in the future, as in the past, to give well balanced attention to the whole field of horticulture. As our state increases in wealth there will be increased desire for beautiful home surroundings. More and more will attention be given to school ground improvement, and park, drive and cemetery plantings are increasingly appreciated. Attention to market gardening is coming well to the front, and suburban life becomes increasingly attractive. More than ever farmers appreciate the healthfulness of garden products, and beautiful lawns are not the exception in some farming districts. It seems as though we should give more attention to farm forestry.

We more than ever realize the value of our summer meeting to make it possible to consider all of the subjects requiring our attention. These meetings, being held in different localities, help to establish new centers of horticultural activity and make people acquainted with our work who else might not know of the benefits to be derived from affiliating with us. Not all summer meetings have been successful in attendance because of the location, but all have brought together valuable knowledge. With such summer meetings as those held at Oconomowoc and at Sturgeon Bay, we can, for the value received, well afford to risk occasional disappointments.

REPORT OF SECRETARY.

Nearly one thousand acres of apples will be planted in Wisconsin in the spring of 1911 and an equal or greater acreage of cherries. This refers only to commercial orchards of 10 acres and upward. If the home orchards were to be counted this acreage would be more than doubled. Of this nearly four hundred acres will be planted by orchard companies and the remainder by individuals in lots of 10 to 50 acres. When we

add to this what we already have, the Melville plantation of 60 acres, the Knight orchard of 135 acres, the hundreds of orchards of 5 to 40 acres, even the most skeptical must admit that we are "going some."

Not in 20 years, never in fact since the first apple tree was planted in Wisconsin has there been so much real interest manifested in fruit growing as during the past year and this in spite of the most disastrous season in 75 years.

Wisconsin indeed has arrived! Probably the most encouraging feature of the movement lies in the fact that with possibly one exception every dollar invested in the new planting is for the purpose of raising fruit and not for the purposes of promotion of "unit share" schemes.

The future successful development of tree fruit raising in this state must be through commercial orchards. The farm orchard idea has proven a distinct failure in the eastern states, in New York, in Michigan and just as surely will prove a failure in Wisconsin. Orchards large enough to command the time and energies of the owner from the beginning of the season to the end are the ones that will prove profitable while the farm orchard of 100 to 200 trees planted in sod, unsprayed, unpruned and visited but twice a year, at haying and at apple harvest season will surely leave us twenty-five years hence where we were 25 years ago.

If it is urged that we as a society should educate the farmers to properly care for such orchards I must answer, as a result of twenty years experience, that it is an utterly hopeless task.

From my experience I estimate that it would take 3,000 years to educate and convince the 300,000 farmers of Wisconsin in the way of raising fruit for market while 3 years will be enough to convince 3,000 men who must live from their investment the wisdom and the necessity of proper care of their orchards.

While there is scarcely a county or a township in the state that does not afford more or less land suitable for small fruits or orchards yet three counties are distinctly in the lead in the "new movement" viz., Door, Bayfield and Crawford and these three are destined to be the fruit counties of Wisconsin.

Door County is now known as the cherry county, and while the orchards so far planted are mostly in the vicinity of Sturgeon Bay, the time is near at hand when extensive orchards will

be planted all the way from Sturgeon to Ellison Bay and on Washington Island.

The influence of large bodies of water on retardation of fruit buds was demonstrated here last spring beyond any doubt. Door county possesses exceptional opportunities for fruit growing and it is not unreasonable to expect that 20,000 acres of tree fruits will be planted on the Door peninsula inside of 20 years.

The Bayfield county shore line from Washburn north and west to the Douglas county line possesses much the same characteristics as the Door peninsula, having excellent water protection. While we have heard mostly of Bayfield it should be kept in mind that the conditions which prevail there are common to at least 50 miles of the Lake Superior shore line.

Crawford county, with its thousands of acres of clay ridges, is at last coming to be recognized as one of the very best apple regions in the United States. The recently organized Gays Mills Fruit Farm Co., which has acquired 130 acres of land all of which will be planted to apples within the next five years is but the forerunner of other similar company and individual orchards which will enrich the crests and hillsides of the picturesque and beautiful Kickapoo region.

North, east and west of Chippewa Falls lie thousands of acres of hardwood ridges splendidly adapted to fruit raising. Other sections altogether too numerous to mention may be found where fruit raising might easily become the leading industry.

While an enumeration of the possibilities of our state may not at first glance seem to be a proper topic for the annual report of your secretary it should be kept ever in mind that this society is one of the forces shaping horticultural destiny in Wisconsin.

The business and affairs of the society for the past year are of interest to every member and are here briefly outlined:

The membership has shown a gratifying increase during the year and we now have 1,239 annual and 180 life members, a total of 1,419.

The quality of the membership is an even greater cause for gratulation than the number, for we have never gone into the

highways and the byways searching for members to swell our numbers, seeking rather only those who were honestly interested in horticulture and as a result membership in the W. S. H. S. is coming to be recognized as a privilege.

The activities of the society have been, with one exception, along the same lines as in former years.

The trial orchard work has been extended and is promising in every particular.

The attendance at the 1910 annual convention was larger than at any previous convention in the history of the society and yielded the richest material for our annual report of any convention.

The summer meeting at Oconomowoc was a success in every particular. The two features which have been too often lacking in our summer conventions were the special points of merit in the Oconomowoc meeting, viz., local interest and the attendance from outside points. The welcome given the society by Oconomowoc people will long be remembered by all who attended the meeting.

Owing to the unwillingness on the part of the State Board of Agriculture to cooperate with the society in making an extensive exhibit of spraying machinery and insecticides our board of managers decided to omit entirely the usual state fair exhibit.

We need a building exclusively our own at the state fair wherein we can show not only the work done by the society in our trial orchards, school grounds and other fields but also a complete line of spray pumps and spraying material.

Owing to the shortage in apples last season the demand for expert judges at county fairs was less than usual. All of the large fairs and many of the smaller ones now appreciate the value of expert judges in the fruit and vegetable departments and in the opinion of your secretary we can now well afford to withdraw our aid.

We have spent almost $1,000 in the past three years in aiding the county fairs and judging from reports of the judges employed there can be no doubt the money was well expended. However, if we continue much longer there is danger that the fair association will come to consider it as a prerogative rather than a privilege.

Our contribution to the Department of Farmers' Institutes has been continued for the present season, the society paying one-half the salary and expenses of a special lecturer on horticulture. Mr. Bingham was again appointed and attends four to five institutes a week. Mr. Bingham is the only special worker on the institute force, all the others covering two or more subjects.

The school grounds improvement work is proceeding slowly but in a satisfactory manner. Very many difficulties have been encountered but we hope to overcome all of them. Most of the school boards appeared willing to enter into a contract with the society whereby the district would receive $75 to $100 in value of trees, shrubs and superintendence, but few of them seem willing to give even the little time required during the season to cultivation, mulching, etc., which is so essential to success.

While everything has seemed to conspire so far to defeat the object we aim at we have not by any means given up in discouragement.

Two schools were added to our list in 1910 making seven in all. One of these is located a short distance south of Fond du Lac, known as the Mihills school and one 6 miles southwest of Waukesha, known as the Salesville school.

The work so far is largely experimental. It may be that we will need to change our plan. One thing is certain we should not stop short of our aim, changing the appearance of the 7,500 rural schools of Wisconsin.

While the secretary's report would seem to be incomplete without mention of local societies there seems to be little that is new to be recorded.

Two new locals have come into existence since my last report, the Sheboygan Society, organized December, 1909, with 14 members, and the Washburn Society organized Oct. 27th, 1910, with 46 charter members. To offset this two locals have died a lingering death, viz, Gays Mills and Barron, leaving the number of local societies, active and otherwise, the same as one year ago.

Three bulletins were issued in 1910 as follows:

No. 17—The Truth About Fruit Growing in Wisconsin, 24 pages. An edition of 10,000 copies of this bulletin, which aimed to set forth the advantages of Wisconsin as a fruit state, was quickly exhaused and a reprint of 5,000 copies was ordered.

No. 18—The Elementary Facts Concerning Orchard Practice in Wisconsin was confessedly written for beginners and contained only elementary facts as stated in the title. An edition of 5,000 copies was issued.

No. 19—Spraying, was largely a reprint of bulletins 15 and 16 and was issued to meet a never-ceasing demand for formulas and directions for spraying. 5,000 copies were printed.

A discussion of Society publications involves mention of our new magazine, WISCONSIN HORTICULTURE, the inauguration of which was the most important new business of the year and one big step in advance.

As is well known to older members our society at one time published a monthly magazine known as the Wisconsin Horticulturist which was sent free to members. This publication, established in March, 1896, suspended publication February, 1903. No records of the society are extant that show why the magazine was suspended but from conversation with members who were connected with its management it is learned that it was not self-supporting and a very considerable portion of the appropriation received from the state was used to pay bills. Mention is made of this fact merely to show us the way more clearly to success in our second venture.

The Executive committee in session at Oconomowoc, August 16, authorized the publication of a monthly magazine to be known as WISCONSIN HORTICULTURE, the paper to be sent free to members until further action should be taken by the committee.

Our new magazine has met with a hearty reception, everybody seems to like it and a few, a very few members, write for it. The future of the paper depends wholly on the will of the membership body. No person no matter how clever with the pen, or the shears, can successfully furnish material for successive issues of the magazine, but if a few members contribute each month the simple facts acquired in their experience we may easily have a paper which will be more valuable to members than any other feature connected with their membership. Whether or not the magazine will be sent free to members in the future must be decided by the Executive Committee.

These rambling notes called by courtesy a report cover in some measure the work of the Society for the past year.

In conclusion: A few words about the work done in the office of the Secretary may not be out of place.

Wealthy, Lake Geneva Trial Orchard, Aug. 1910.

Planted April, 1908.

The past year has been a very busy one in the office, the increase in membership necessitating an immense amount of clerical work and the Society is fortunate in having in Miss Memhard an able and efficient clerk who not only keeps the records with neatness and accuracy but is also a faithful and loyal partizan of the Society.

The information bureau has worked over time during the year in answering questions sent in by members and others. While our magazine WISCONSIN HORTICULTURE will relieve to some extent the Information Bureau it will not entirely supplant it. Many of the quetions, most of them, in fact, require an immediate answer.

A multitude of other duities edging in from day to day makes the office a busy place. Of work there is plenty but of drudgery none for association with members of this Society can never be drudgery; lending a helping hand when possible, aiding even if in a feeble way the development of horticulture in Wisconsin, the satisfaction of knowing that our Society is a potent, vital force, a power in the land, relieves whatever duties present themselves of any semblance of drudgery.

REPORTS ON TRIAL ORCHARDS.

REPORT SUPERINTENDENT TRIAL ORCHARDS.

My report as Supt. of Trial Orchards will, as usual, be brief as the details of management of the different orchards cannot possibly be of interest to this audience and for the further reason that the report of the inspection committee gives many of these facts.

From the viewpoint of the Superintendent, the trial orchards are all working out to a successful conclusion. There have been checks and set-backs but certainly no effort is worth while if the way is smooth and easy.

Possibly there are members who doubt the wisdom of spending so much money on this work but to these we can only say,

go and see what has been done; talk with the people of Marathon, county, investigate with an open mind before criticising.

It must not be forgotten that orchard demonstration is a slow process. We are only now, after 13 years, getting the best results from our orchard at Wausau.

The following brief review of the work is presented for the benefit of new members and our guests.

The Wisconsin State Horticultural Society in 1897—8 planted 10 acres of tree fruits at Wausau on land leased for 20 years. Marathon county was then considered "farthest north" for tree fruits and the venture a bold one. Soon after, a similar 5 acre orchard was planted at Medford and following the policy thus established ten orchards and one grape station have been planted in as many different parts of the state. In addition to Wausau and Medford we now have from one to seven acres as the following points: Whitehall, Poplar, Maple, Barron, Manitowoc, Sturgeon Bay, Lake Geneva, Gay Mills and Sparta.

These may be roughly divided into two classes; Experimental in which class we may include Wausau, Medford, Barron, Poplar, Maple and Sparta:

Second, Demonstration orchards which may include Manitowoc, Sturgeon Bay, Lake Geneva and Gays Mills.

From a purely experimental standpoint the northern trial orchards are a success but for quick returns from a dollars and cents standpoint the demonstration orchards in the southern part of the state are far in the lead.

These demonstration orchards inspire confidence. This is plainly shown at Gays Mills. Apples have been grown in the Kickapoo region for 50 years but no one considered seriously the raising of fruit for market until the trees in our Gays Mills orchard began to grow.

This is also true in Walworth and Manitowoc counties. If these demonstration orchards are brought to a successful and profitable conclusion we will have added to the wealth of our state thousands of dollars for every cent we spend.

As the report of the chairman of the Trial Orchard Committee will no doubt give in detail the condition of the different orchards no separate account will be given here.

The duties of the Superintendent become not less but more strenuous each succeeding year. Over 12 thousand miles of

travel are required each year in visiting the different orchards. The orchards comprise 55 acres and 4975 trees and each and every tree requires attention in the spring as to pruning; each rod of ground requires cultivation and of the eleven resident managers each has a different disposition from any of the others. This last is an item not heretofore appearing in any of the records.

As to the policy of the Society concerning the extension of the work there would seem to be no present need of establishing more orchards on either of the plans now followed. We are covering the state fairly well both where testing of varieties is needed as well as in sections where demonstrations are needed although applications for orchards are not lacking from almost every county in the state.

There is one phase of orchard work however that might well be taken up in the near future and that is the testing of the newer variaties of late keeping apples.

The standard winter apples such as Baldwin, Rhode Island Greenings, etc., were thoroughly tested and discarded 50 years ago but new varieties of high quality, late keeping and reputed hardiness have recently appeared that seem worthy of trial. Among these are Delicious and Black Ben.

If a small orchard of these and similar kinds were planted in one of our best known apple sections it would answer questions that hundreds of fruit growers are now asking.

REPORT OF CHAIRMAN TRIAL ORCHARD COMMITTEE.

J. H. PALMER.

The first orchard visited by your committee was the Barron orchard established in 1905. Here we found planted Duchess McMahon, Wolf River, N. W. Greenings, Longfield, Patten and Hibernal. These were all killed by the April freeze except the Hibernal. The new planting is fair but made little progress owing to drouth which was very severe here. Native plums were all right.

Next the Sparta Vineyard, one acre planted in 1908. Varieties Moores Early, Delaware, Campbells Early and Moores Diamond. The vines are thrifty and have made a good growth. The fruit was all killed by the freeze in April. The Whitehall, Trempeleau Co. orchard, established 1909 consists of one acre each of McMahon, Okabena, Hibernal, Wealthy and Duchess and one acre of cherries planted in 1910. All trees in this orchard are thrifty and have made a fine growth.

The orchard is situated on a north slope on clay soil mixed with limestone.

The Wausau orchard established in 1897 contained something like sixty varieties originally planted of which McMahon, Patten, Okabena, Longfield, Repka, Wealthy, Dominion, Duchess and a few others showed a fair crop of fruit this season, N. W. Greening not bearing. All trees are thrifty and fruit clean and free from worms and other insects. The crop was estimated at 25 per cent. of last year's, about 500 bushels.

The Manitowoc orchard established in 1908, was visited next. Wealthy, McMahon, Fameuse and N. W. Greening all appear thrifty and made a fair growth. The McMahon trees were headed very low and badly formed, a defect very hard to remedy. The cherry orchard planted last spring on a sand knoll overlooking lake Michigan has early passed into history. The drouth was very severe here and cultivation not good, the trees are all dead or nearly so.

The Lake Geneva orchard established 1909 contains McMahon, Fameuse, Talman Sweet, Wealthy and Duchess. The bark on the Fameuse trees cracked just above the ground, seemed to loosen and dry, destroying nearly the entire planting. These trees have been removed and the ground replanted to the same variety. The trees are all thrifty now. The cherry orchard planted last spring is good except a few trees planted in sod which are all dead.

Poplar orchard established in 1904. The condition of this orchard has improved somewhat since it was tile drained. Of about 40 varieties originally planted, Hibernal, Wealthy, Duchess, Patten, Okabena, Martha and Transcendent remain and are making some progress now. The plums look well and produced some fruit this season. In the Maple orchard Wealthy, Duchess, Hibernal, Patten, and Transparent are good. Wolf River, N.

W. Greenings fair. McIntosh, FaMeuse, Longfield and Utter, poor.

While in this lake shore region we visited some private orchards to learn something of the adaptability of this locality to fruit growing. Near Port Wing we found many orchards have been planted some of ten or more acres in extent and all we saw were promising well.

Medford orchard, established in 1903. A few cherries were planted here and are about all dead now. Plums are good. Of apples, Wealthy, Duchess, Wolf River, Fameuse, Price's Sweet, Hibernal, Longfield, Whitney and Transparent are good. N. W. Greening, Scott's Winter, Eureka, fair. Willow Twig, Gano, Newell, Tetofsky and Walbridge are bad. Of seven Windsor in the original planting two are alive and in fair condition. One Talman sweet still lives.

The Gays Mills orchard has made a remarkable growth in the two years it has been planted. One N. W. Greening tree measured nine inches in circumference near the ground. All trees are very thrifty. Varieties, McIntosh, Newell, N. W. Greening, McMahon and Wealthy. 100 cherries were planted last spring and are nearly all alive and growing nicely. The Vineyard is good but there was no fruit this season.

VARIETIES OF APPLES FOR COMMERCIAL ORCHARDS.

The President called on Mr. J. S. Palmer to give a list for a twenty-five acre orchard.

Mr. Palmer: Assuming that the orchard is to be in my own locality, I would plant, first, Duchess, Wealthy, the best apple to rely on in all seasons that we have, next I would plant McMahan it has good qualities enough to overcome what defects perhaps it has in quality of tree. Then I would plant Fameuse, the best apple to tackle in the Southern part of Wisconsin. It has stood for longer years that any other apple we have and still do business. That I think would be about a long enough list for any commercial orchard.

The President: For a fifty-acre orchard, I will ask Mr. D. E. Bingham.

Mr. Bingham: For a fifty-acre commercial orchard, I would plant in our section Duchess, Wealthy, Dudley, Snow, McIntosh, McMahan and Northwestern Greening. I would not plant as many trees of some of thes varieties as of others. I would plant largely of the red apple, taking perhaps the three first. Duchess, Wealthy and Dudley; and then Snow and McIntosh; those five red apples. And then say five acres each of Northwestern Greening and McMahan.

Mr. Daub: I see you omitted the Russet, give us a few reasons for not planting a few russets.

Mr. Bingham: We plant commercial orchards to make money and we cannot make any money out of the Golden Russet.

Mr. Daub: Is there any particular reason why you cannot make money on the russet?

Mr. ingham: If you plant Russet, you will get small apples, if you get any, you will get very few in our section of the country. There is a difference of course in varieties in different sections, but I believe that the Russet has no place in the commerical orchard of Wisconsin in any section of the State.

The President: I wonder if we might ask that same question of Mr. J. Palmer, why he would put it in a small commercial orchard? I remember his saying that he had made good money out of the Golden Russet.

Mr. Palmer: The Golden Russet in some parts of my own plantation has proved very good, but it is not a safe proposition in many localities, and even in my own planting I would not dare to plant it extensively. It does very well in favored locations, and I find it, where it does do well, a profitable apple. It is a good bearer with me where I have it planted and they always sell very well.

Mr. Daub: Perhaps I am a crank on the Russet apple, but I would at any time pay fifty cents or a dollar more for the Russet apple, and certainly more than for any apple raised under the irrigating system, or the Yakima apple. I have never seen an apple that I would pay as much for as the Russet. They are almost perfect in the "Garden of Eden," or Paradise Valley, I live close to it.

Mr. Bingham: I would like to ask Mr. Palmer if he does not find the Russet needs a deep soil, good, rich soil? All the Russets that I ever saw were on a pretty rich deep soil, that is, in

the lower part of the valley where there was some wash. In regard to this gentleman's remark that he would pay a dollar more for the Russet than any other apple the grower would have to have three dollars a barrel more for Russets to make the same amount of money out of his orchard that he would for the Wealthy.

The President: We will ask Mr. R. J. Coe to say what he would do in the way of choice for an orchard of 100 acres.

Mr Coe: I want to say that living where I do, I would not plant a 100-acre orchard of any kind, because we are not in the apple section, but for other sections of the State my list would be something like this, and you will notice it agrees very closely with Mr. Bingham's list. My list would be Duchess, Wealthy, Fameuse or Snow, McIntosh, McMahan, Dudley, Northwestern Greening and I think I would put in two or three acres of Talman's Sweet. That is the list I would grow in an apple growing section for profit in Wisconsin.

Mr. Gonzenbach: I would like to ask if any of the gentlemen can give us any information about the Delicious apple. I have been particularly interested in that, because some members of my family got a taste of Delicious and I have to pay for the Delicious apple, and the price I pay looks to me as if there must be a good profit to somebody and if there is such a profit, I want to know if we can grow it in Wisconsin.

Mr. Black: I suppose you look to me to say something about the Delicious, as the tree originated as a stray seedling in our State near Des Moines, and we find as it grows around Des Moines it is a very good apple, really the quality is much better than that of those that are brought in from the West, although they do not grow quite so large and fine looking, but they grow, they are hardy and the quality just suits my taste. Any one that requires a tart apple might find it lacking a little, because it is something on the order of the None-Such, and about as sweet, but I think it is thoroughly hardy. I have small trees growing, about three years old, and it appears as though they were going to be fairly hardy, would be all right to top-work on trees in Northern Iowa, and I think really you have a better location along the lakes here than we have there. Yet, I would advise any one here to try it sparingly until it has been tested in this part, but I think it is going to be the coming apple for a dessert apple.

Mr. Coe: This 100-acre orchard that I was talking about was purely a commercial orchard. I think if I were able to have a 100-acre orchard, I would be able to have a little fun as well, so that I should want to plant a few trees of a number of varieties outside of the commercial varieties, and among those trees I should want assuredly to put in some of the Delicious. I do not know much about the Delicious in Wisconsin, whether it will live long, or whether it will even bear fruit, except that I have been talking with a man from Menomonie, who is growing the Delicious and his trees are old enough to bear apples, and his statement is that the tree is a good grower and good bearer, and so far has proven hardy, and I think it is very well worth the trial here in Wisconsin, especially where we can grow other apples. I will say that we are going to plant about fifty Delicious apples this spring.

Mr. Soverhill: So many are talking about setting out large orchards the coming season, and I think the information should be given out that one should not set more than four rows of one variety. If they want to enlarge on that variety, then set one or two rows, two rows are much better in harvesting the fruit, then succeed with two other rows again. They will probably pollenize the two rows. Pollenization is something that we all want to study.

A Member: I would like to ask these gentlemen in planting 25 to 50-acre orchards, what part of the orchard they would set to Wealthy?

Mr. Coe: If you are going to plant a 100-acre orchard, you are going to plant for profit. I had a list made something like this: Wealthy, 25; Snow, 10; McIntosh, 15; McMahan, 10; Dudley, 10; Northwestern Greening, 10; Duchess, 12; Talman Sweet, 3. That makes 95 acres and you remember I said a few moments ago I wanted to have some fun and so I would plant five acres to a good many varieties to have some fun with and get some profit out of too.

Mr. C. L. Richardson: I would like to ask either Mr. Bingham or Mr. Coe as to the acreage they would plant of McIntosh Red.

Mr. Bingham: I would just as soon plant as many McIntosh as any other orchard apple we have. It is an early bearer and bears a good crop and the apples will sell on any market, it is a

Sod-Mulch Orchard. James Melville, Chippewa Falls.

good dessert apple, perhaps as good as any we grow, East or West, and I would not hesitate to make my planting of McIntosh equal that of any other commercial apple.

Mr. Bingham: Mr. Richardson spoke about the McIntosh. I wish to say a word in connection with my judging apples at Chippewa Falls Fair. I found there on exhibition as fine a Duchess as I ever saw, I found as fine Wealthy, I found some as fine Snow apples, not so many this year, but I found the finest McIntosh that I ever saw in my life, as large as a Wolf River, perfectly red, one of the prettiest crimson reds you ever saw, and perfect in every way. If, with the climatic conditions that we had this season we can get such McIntosh apples like the specimens I saw, you can get $5 a barrel everywhere that apples are sold.

Mr. Richardson: The reason I asked about the McIntosh from these two experts was because in James Melville's orchard at Chippewa Falls last year the Wealthy and McIntosh were the two apples that under the severe drought and the heavy frost of the spring stood up the best. I think I am safe in saying from an inspection of his orchard about picking time that he had nothing else that was in the class of those two last year. That is why I wish to call attention to the McIntosh Red.

WEDNESDAY AFTERNOON SESSION.

QUESTIONS.

No. 1. What effect will a fall crop of strawberries that ripened in many places this year have on the same vines next year.

Mr. Coe: You said that you thought perhaps I might make a guess on this, and it certainly would be a guess, for we all know that the strawberries form their fruit buds in the summer and in the fall for the next year's crop, and if by virtue of some conditions of the weather these fruit buds have produced a crop of fruit in the fall, I do not see how they are going to produce a good crop next spring. Therefore I should say the result would be a very material shortening of the crop next year.

Mr. Post: Several years ago we had a very wet season and

the plants made a strong growth in the fall of the year, they began blossoming in October and were almost white with blossoms. I sold two or three dollars' worth off that patch that fall, and there was a lot of green ones on them when the frost come, but the next year we had a good crop.

Mr. Coe: Don't you think you would have had a better crop if you had not had that crop in the fall?

Mr. Post: I don't know how that would have been. They were all I could desire the next year, although I thought there would not be any the next year, on account of there being so many blossoms; this year there were a great many on the patches and I have marked them just to see if it will make any difference or not. It did not that year and there were three blossoms that fall where ther was one this year.

Mr. Richardson: I do not think the crop of berries that you got last fall will make much difference in the crop that you will receive next year, because the amount that you receive per acre in the fall crop is very small. We shipped over two hundred cases and probably those two hundred cases were picked off from thirty to forty acres, you see that is a very small percentage, a small crop. One of our growers picked about thirty-two cases off from three and a half acres, which you see is a very small yield, and I do not believe that he will notice it, will see any material difference in the crop next year.

Mr. M. S. Kellogg: One fact in connection with this small crop of strawberies that we must not overlook is that we must expect to get our main crop next year from plants that have not fruited so far, and our observation is that there has been very little fruit on all these plantations that have been fruited last summer, those plantations that are old. I think, generally speaking, that the fall berries that we had this past fall will not materially reduce our crop the coming year.

No. 2. What size crates are best for marketing strawberries and where can I get them?

Mr. Rasmussen: We prefer the 16-quart crates, the strawberries in quart boxes, Michigan quart.

The President: I will ask Mr. Rasmussen, as he has had in mind very much the importance of an agreement on uniform size of packages, if at this time he will give us a little brief discussion in regard to the desirability of uniform sized packages.

A question was asked in regard to the distance apart that trees should be set.

Mr. Bingham. We plant the Wealthy 20 by 20, other varieties, 25 by 25.

Mr J. Palmer: We have always planted 24 feet each way. I think that in my experience would be about right

Mr Coe: About 24 by 24 feet. If I had the courage to take out the trees when they get older, I should plant 20 by 24 and take out trees, but to be on the safe side, I should plant 24 by 24, or 25 by 25.

A Member: When is the best time to prune?

Mr. Black: I think the best time is when the growth starts in the spring. I think then the growth is more rapid and the cuts will heal over sooner, so there will not be so many wounds open for insects and funguous diseases to get in. That has been my practice and I find that it will heal over and make a sounder and better tree. From that time up until in June.

A Member: I would like to ask if there is not a chance for loss there, if it would not be advisable to prune before the sap starts? There must be some loss of energy in that tree where the sap has developed, when the limbs are cut off.

Mr. Black: I think as a general thing that the tops of the trees are too thick, and that is a fine way to thin fruit. I have not noticed any loss.

Mr. Beddell: It has always been my practice for the last eight or ten years to go around in the winter time and mulch my trees after we have had a great deal of severe weather and the ground is frozen, and I have worked on this theory that by getting frost into the ground and then putting mulch around, that it would hold that frost longer in the spring, and thereby keep the fruit buds back so that I would not stand the same chance of losing them by frost. I would like to know whether I am right or wrong in that practice.

A Member: It seems to me that the time to prune is just before the growth starts in the spring, so there will be less so-called bleeding of the twigs and that question that you asked in regard to the starting out of the buds is more a matter of warming up of the wood itself than the warming up of the soil.

Mr. Rasmussen: I have a paper, Mr. Cranefield asked me to write a paper which I could read in five minutes, I cut it down to three.

SHALL WE VOLUNTEER, OR SHALL WE BE FORCED TO ADOPT A UNIFORM SIZED BERRY BOX?

By Mr. N. A. RASMUSSEN.

What I have regarded for several years as one of the most serious problems with which the fruit grower is confronted is our short measure berry box and as I have watched the situation, conditions have rapidly grown worse. At one time in one of our local stores last season we counted seven different sized berry boxes, every one short measure, but they were all made, filled and sold as quart boxes. How long will the public put up with this kind of treatment before they will call on the State to take hold of the matter and then we may have a law that will not look good to the berry grower.

A few years ago we had mostly short measure milk bottles. The manufacturers told us "use short bottles sell your milk per bottle not per quart and make some money, no law can prohibit that." But a law did prohibit it and today only full measure bottles can be used.

The law seems to have gotten after weights and measures of all kinds, they must be true and up to standard and the day will surely come when a berry box law will go into effect.

What about our apple barrels and boxes? A few days ago I purchased a barrel of apples from one of our local commission men and I called his attention to the size of the barrel. He said that it was a full size barrel a 17 inch head and, so it was but it was straight up and down and looked more like a coffee drum than an apple barrel.

About the only objection one could have to a law of this kind would be, that goods put up in dishonest packages could not be shipped into the state and I do not think any one, grower, dealer, nor consumer would object to that.

Now, brother horticulturists, let us have a committee ap-

pointed to draft a bill to this effect, get it before the Legislature and let Wisconsin lead with this law as she has with many others and I feel sure that our neighboring states will join us and help the good work along. Let us not wait until we are forced to be honest but let us hold up our heads, raise our voices and say "the Wisconsin Horticultural Society is for honesty and justice."

Mr. Smythe: In Michigan we have not a law controlling the size of boxes or barrels, but it is coming to the time when we have got to have it. The 16-quart crate, which is the berry crate with us, is supposed to hold sixteen quarts, they generally hold full quarts. Now, there is coming onto the market a short 16-quart crate. We are paying just as much money for the 16-quart crate that is holding a short amount as we were paying for the other crate. The consumer is beginning to find out that we are using the smaller crate and we are getting less money for that box of berries. We are paying as much for the crate, as much for the transportation and just the little gain that we are getting now by putting in less quantities of berries, we are paying for in the end, and it is a very short-sighted thing to do to put up anything like a short package. We have a short bushel in Michigan, and the time is coming when the people will not pay as much for the short as for the standard bushel. It seems to me this is one of the wisest moves that we can make, and I only wish we could make it a National law instead of a State law. We had an Institute at Benton Harbor at which a resolution was passed asking our help to put such a law through the state of Michigan this year. These things move slowly, and we will have to work quite a great while before we can get it through. Last year about the 10th of January there was a bill presented to Congress for the control of the size of barrels and boxes. Our Western friends did not like that, because it did not allow them to use the sized boxes they wanted to use and they killed it. Now, then, it has got to come, because it is the thing. We want to get these farmers down to where they will be honest, reliable men and we can look a customer in the face and say that when we put up a barrel or basket of fruit there are so many cubic inches in it. In Canada there is the Fruit Marks Act, which provides that whatever fruit is put up, the size of the package

is marked on it, the owner's name or number, and if it has been inspected, the inspector's name is on there, so that no man can put up bad stuff on the market and make the consumer take it if it is not up to the standard, and I am very glad that this subject has been brought up here, because it is a vital thing and the Horticultural Society is bound to take it up and not let it get into the hands of the consumers.

Mr. Rasmussen: Is not the wine quart the Michigan quart?

Mr. Smythe: It is the wine quart, it is not a full dry quart. I think the standard quart is sixty-nine and some cubic inches; that is dry measure; and the wine quart is something like sixty-three or sixty-four.

The President: I think that no more important move could be made, and no move that would make it more general than to push the whole matter before Congress so far as Interstate Commerce permits it, have honest packages clearly defined so as to be the only ones recognized by law, then the States will be compelled to adopt something to correspond. At the same time I would not by any means remit our efforts for honesty in our own State.

Mr. C. L. Richardson: I would like to call the attention of our Society just for a moment to a phase of the question wherein we can handicap ourselves. We can pass a law in this state stating the size of a berry box or of an apple barrel, or any other package, but under the rulings of the supreme court in interstate commerce cases, we cannot prevent a party from another state shipping in a box or package of different size and marketing it in this state in competition with us, and therefore it seems to me that it will be of vital importance to us if we do not wish to handicap our local dealers, to see what we can do in the line of a general federal law at the same time, because if we do not, we are going to place our local growers at a certain handicap in this matter. This was taken up in Minnesota two years ago.

Mr. Rasmussen: Would a dealer be allowed to ship into the state and to offer for sale boxes of berries that are not up to standard any more than a quart bottle of milk?

Mr. Richardson: They can be brought into the state and sold the first time. If they were brought into the state and sold to a commission dealer in bulk, the commission dealer could not again

make a second sale, but if, on the other hand, those barrels of apples were shipped into a state consigned to John Jones, to Thomas Brown and to other parties, the state law cannot prohibit that first sale, because they are still in transfer until the time that they do become the property of that party under the terms of the sale. The one transaction is a complete transaction over which the state has no control under the interstate commerce act, but after that first sale to a party in the state, they then become subject to the jurisdiction of the state and you could prevent a second sale.

ORCHARDING IN MINNESOTA.

Professor A. R. KOHLER, Minnesota Agricultural College.

To discuss orcharding in Minnesota, one hardly needs to go outside of apple growing. The apple is the only fruit of much consequence that is grown within the state. Cherries are a negligible quantity. Plums are grown to a fair extent, principally in the southern third of the state, but in no way comparable with apples in quantity.

Plum growing in Minnesota is attended with great variability in results. Many growers find it unprofitable, while others make it pay. The worst enemy of the plum is the curculio. It has been demonstrated at university farm that the curculio can be kept pretty well under control by the proper use of arsenate of lead. Those who spray thoroughly for this pest undoubtedly find it profitable to grow plums if their other conditions for the crop are favorable.

The 1910 crop of tree fruits was a failure in Minnesota for reasons with which you are familiar. Practically no plums were picked, and the apple crop was but a very small per cent of a normal crop.

The apple producing section of Minnesota is the east half of that part of the state to the south of the twin cities. The heaviest producing counties are those along the Mississippi river below the twin cities, and the counties next to these as the lower end of the state is reached.

The surface is more or less uneven in many parts of this section, and the soil on the slopes is more or less clayey in nature. This affords many good locations that are well adapted to apple growing.

According to the twelfth census of the United States, there were ten counties in the above named section that produced from 4,500 to 10,000 bushels of apples in 1899. Apple growing has been on the increase in this section since that time. This may best be illustrated by referring to Fillmore county, for which I have figures at hand for some of the years since that time. Mr. O. W. Moore, of Spring Valley, says that from 7 to 10 carloads were shipped out of the county in 1900, and that perhaps twice that amount was used for home consumption In the 1908 annual of the State Horticultural Society, he gives a list of shipments from nine stations in the county, which amounted to 78 carloads, or 37,440 bushels if there were 160 barrels to a car. I do not have his figures for 1908, but for 1909 he says, in a letter, that about 35 carloads were shipped out and 25 carloads used for home consumption. Thus the yield has more than doubled in the last ten years, and Mr. Moore says there is a large prospective increase in the next 10 years.

Most of the orchards of the state are not large. I know of a number that contain upwards of 4,000 trees, and there are undoubtedly many others of equal and larger size.

The predominating commercial variety in the apple producing section is the Wealthy. Following it come the Duchess, Patten's Greening, Okabena, Anisim, and a few others of minor importance.

The distance apart at which growers have planted their trees and their present opinions concerning the distance apart at which they should be planted is an interesting study. In September, 1909, I sent out a circular letter, in which I asked a variety of questions concerning the practices of apple growers. It was found as a result of this that the vast majority of the trees are planted at a distance ranging from 16x16 to 20x20 feet. Some were planted closer, and a small proportion at distances seldom over 20x24 feet. Because I was of the opinion that most Minnesota orchards were planted too close, I included in this circular letter a question asking how far apart they

would plant a new orchard. The data which follows was taken from replies received from the principal apple-producing section of the state, as previously given. The answers were classified, according to the age of the trees the growers had, into those who had trees 1 to 5 years old, 6 to 10 years old, 11 to 15 years old, and over 15 years old. As the summary of this data is given, you are especially requested to notice how those whose orchards were young thought their trees were planted far enough apart, and how the distance given for setting a new orchard grew greater as the trees grew older.

Of 12 whose trees were 1 to 5 years old, 1 gave a closer distance for a new orchard than he had set before, 9 gave the same distance, and 2 gave greater distances. The one who said he would set closer than before had 250 trees set 24x24 and 20x24 feet respectively, and gave 16x20 feet as his distance for setting a new orchard. His reason was that close-set trees pollenized better and bore younger. The 9 who said they would set a new orchard the same distance apart as before had an aggregate of 6400 trees, planted at an average distance of 17x19 1-2 ft. One who had 300 trees set 14x16 feet said he would set a new orchard 18x20 feet. Another who had 200 trees, also set 14x16 ft., said he would set a new orchard 12x13 feet, and cut out part of the trees later.

Of those who had trees 6 to 10 years old, 2 gave closer distances than they had set before, 2 the same distances as before, and 9 gave greater distances. One who gave a smaller distance had about 175 trees 10 years old, set 25x25 ft., and had planted a new orchard of 500 trees 20x20 ft., 8 years later. The reason he gave was that he could get more trees on an acre and still have room to cultivate. Another, who gave a smaller distance, had 200 trees set 12x34 ft., and said he would set a new orchard 12x20 ft. His reason was that land was too high-priced. The two who gave the same distance for a new orchard as they had previously set their trees had 500 and 200 trees respectively, set 20x30 and 24x24 ft. respectively. Eight who gave greater distances had an aggregate of 4625 trees, set at an average distance of 16 1-2x19 1-2 ft. The average of the distances at which they stated they would set a new orchard was 20 1-4x22 1-2 ft., or an increase of 3 3-4x3 ft. Another who had 400 trees set 15x30 ft., said he would set a new orchard 13x22 ft., and later cut out every other tree.

All of the 8 who had trees 11 to 15 years old gave greater distances for setting a new orchard than they had previously set their trees. They had an aggregate of 745 trees set at an average distance of 15 1-4x17 1-2 feet. The average of the distances at which they stated that they would set a new orchard was 20x25 ft., an increase of 4 3-4x7 1-2 ft.

Of 6 who had trees over 15 years old, all gave greater distances for setting a new orchard than they had previously planted. One who had 50 trees set 16x16 feet simply said "much wider." Four, who had an aggregate of 640 trees, had them set at an average distance of 17x18 1-2 ft. The average of the distances they gave for setting a new orchard was 24x25 1-2 ft., or an increase of 7x7 ft. It is significant that the man of this group who had the most trees, namely 400, gave 25x30 ft. as the distance apart at which he would set a new orchard. One who was not included in the average, because he did not state the number of trees, said he had them set 22x26 ft., and that he would set a new orchard 30x40 ft.

The reason most frequently given for planting farther apart was that close planting did not give enough room for team work between the trees. Quite a few especially mentioned a lack of room for spraying when set close. That the trees should have more light, so as to give better color to the fruit, was frequently mentioned. Others said the trees crowded each other too soon when planted close and so on down the line until the whole category of reasons was given.

It is altogether probable that if a consensus of opinion were to be taken among these same growers ten years from now, a marked increase in distance apart over the present opinion would be found to prevail.

The lesson to be gained from the experience of these growers is of the utmost importance to prospective planters, and it is to be hoped that those of you here in Wisconsin who expect to set out new orchards, and especially those who have had a limited experience with trees, will profit by it. While the practice of planting close may not be so general here, it is altogether probable that a corresponding condition would be found to prevail if the data were available.

Most of the apple orchards in Minnesota are planted on a northern slope, in a clay or clay loam soil, with a clay sub-soil. Many have limestone underneath, which they consider favorable.

Very few growers cultivate their orchards after the first 3 to 5 years. Most of the orchards are in a clover timothy sod. They are usually mowed twice. Most of them leave the grass where it is cut, some put it around the trees, and a few feed it for hay. The data at hand from the few who cultivate their bearing orchards was not sufficiently extensive to determine whether it pays or not. It seems that around Lake Minnetonka a number of orchards have been ruined by cultivation because it increased the susceptibility of the trees to blight. The Jewell Nursery people, who have a large orchard, cultivate theirs, and believe very strongly that it is the better system. Whether to cultivate the bearing orchard is probably a local problem. It is my belief that it pays to cultivate if the orchard will bear it. If cultivation results in an excess of blight, it had probably bet ter be kept in sod more or less of the time. If the orchard is on a steep slope where there is apt to be much washing of the soil, it should not be kept under cultivation all of the time. Where the whole surface cannot be cultivated, it is undoubtedly a good practice to work up more or less soil around the trees each spring, especially around young trees. It seems that the conditions around Lake Minnetonka are less favorable to cultivation of the orchards than they are in the greater share of the principal apple producing sections of the state.

Mulching with strawy manure is quite an extensive practice. The mulch is most generally applied in the fall, partly for winter protection, and partly for adding plant food to the soil. The amount was from 2 to 6 inches, more generally the latter. Some used the grass they cut in the summer for mulch and applied it when cut. The practice of applying strawy manure mulch in the spring was quite frequent also. The object given in these cases was to hold the moisture during dry spells in the summer.

Very few applied any fertilizer outside of that contained in the mulch. The use of wood ashes was mentioned in some instances.

I have no data on pruning, but according to observation, there is much room for improvement in this respect.

Of 25 who had enough trees of good bearing age so that spraying should have been quite an object, 5 said they did not spray. 4 did not answer and it is to be presumed they did not

spray, 1 sprayed once, 7 sprayed 2 times, 1 sprayed 2 to 3 times, 3 sprayed 3 times, 2 sprayed 3 to 4 times and 2 sprayed 4 times. Thus, about 1-3 did not spray, and 2 applications predominated among those who did spray. The usual remedy was a combination of Bordeaux mixture and arsenate of lead, and the usual time for the 2 applications was just after the blossoms fall and 2 to 3 weeks later. The barrel outfit was most used. One used a power outfit, and several were spraying large trees with knapsacks and the small compressed air outfits. The latter growers must have done very inefficient work.

It is little wonder that so many of our growers should fail to spray when we consider, for instance, that many do not regard the codling moth a serious pest, even though it may infest a large per cent of their apples. They are too accustomed to seeing wormy apples and the results of other injury to realize the aggregate of the preventable damage done. They take the injury too much as a matter of course.

The codling moth is perhaps the worst pest in the state. Many say the plum curculio does more damage to apples than the codling moth does. Scab is also more or less destructive. Fire blight and sunscald do more or less injury, and there are of course a few other minor pests.

Reported yields per tree that could be used in computing an average were not very numerous. I will give you a few figures on the Wealthy and Duchess for the year 1909. It will be remembered that 1909 was a fairly good apple year in this section, but probably only about two-thirds as goods as 1907.

A few here and there reported yields of one peck per tree. on trees 5 years old, and occasionally on trees 4 years old, but it seemed evident that most trees of that age were not bearing much.

Th results of the reports on trees over 5 years old are given in the following table:

Variety.	Age.	No. of reports averaged.	Av. bu. per tree.	Range in yield given.	Av. age per tree.
Wealthy	6—10 yrs.	9	1	0—3	8¼ yrs.
Duchess	6—10 yrs.	7	1	0—3	8 yrs.
Wealthy	11—15 yrs.	4	2 1-8	1—3½	14¼ yrs.
Duchess	11—15 yrs.	Only 2 given	. . .	....	.. yrs.
Wealthy	Ov'r 15 yrs.	5	5	1--10	22½ yrs
Duchess	Ov'r 15 yrs.	8	5	0—9	31½ yrs.

Up to 7 bushels per tree was given for 14 year old trees in 1908. The man who reported no yield from 30 year old Duchsss trees in 1909 reported 10 bushels per tree for 1908. One man who reported 20 bushels from a 30 year old Wealthy tree was not included in the average because he had only one tree of that age. Much may be said about the reliability of a grower's report of his yield per tree, but it remains, nevertheless, that the reports which were here considered seem quite reasonable, and they are probably as nearly correct as such reports can be obtained. With an average of 130 trees per acre, which, though too many, is the actual number which has been planted, there should, if the yields given are reliable and making no allowance for imperfect stand of trees, have been an average yield of 130 bushels per acre for trees about 8 years old, 276 bushels per acre for trees about 14 years old, and 650 bushels per acre for trees over 20 years old in the year 1909. This is for the principal apple-producing section of Minnesota. The yield per tree would undoubtedly have been larger and the general quality of the apples better after the twelfth or fourteenth year if they had been planted farther apart

The results would seem to indicate that planting double with the intention of cutting out later is advisable, but since probably not one man in a hundred will cut out the extra trees when he should, the practice of planting double is to be very strongly discouraged. If I were *sure* that I would cut out the extra trees when I ought to, I believe that I would plant 18x32 ft. apart This would ultimately leave the trees 36x32 ft. However, since I am not so sure that I would cut out the extra trees at the proper time I personally believe I would plant about 28x32 feet. This is for the apple producing section of Minnesota. I do not pretend to recommend for your state.

The methods of marketing are simple. The barrel is the universal package where the fruit is shipped. Grading is not yet as well done or as generally done as it should be. The success of the western box pack has aroused the growers about Lake Minnetonka, and the Excelsior Fruit Growers' Association is making arrangements to pack Wealthys in boxes this year. If they have a fair crop and get a good experienced man from the west to do the packing for them, according to western methods of grading and packing, there is little doubt but

that they will make a considerable success of it within a few years. The expense of getting a western man should be necessary only the first year. During this time he should train such local help as would be likely to be available in subsequent years. I expect their inclination to let more or less wormy and otherwise defective fruit go into the boxes to be their greatest stumbling block. They will have to spray even more thoroughly than they have been spraying, and do everything else that they can do to get the fruit to the packing tables in first-class condition, in order to help make box packing a financial success.

In reply to the question asking "What is your opinion of apple growing for market in your section of the state?" nearly everyone answered to the effect that he thought it was a good proposition. It is noteworty that many added "if the orchard is properly cared for." It is questionable whether it will pay a general farmer to plant an orchard as a mere side issue. If the greater per cent of his interest is in field crops, the greatest per cent of his energy will invariably go there. A man is more apt to make a success of growing apples if he is dependant upon them for the greater share of his returns. He must make it a business and study up on the pests, learn to combat them in the best manner, learn to care for his trees and crop in the best possible manner in every other respect. select the right varieties, plant them in the right soil in a good location, get as near as possible to a railroad station on a good railway system, get acquainted with the markets and marketing, and put up his fruit in the best possible manner. Growers who will do these things to the best of their ability who have a fair degree of intelligence will undoubtedly reap large profits from growing apples in those sections of Minnesota best adapted to this fruit.

MICHIGAN GRAPES.

R. A. SMYTHE, Pres. Michigan State Horticultural Society.

We are growing a great many grapes in Michigan. I think Michigan ranks about fourth in the grape production of the United States. I am not definite as to this, but we are growing a great many grapes. We have in one quarter, known as the

Pawpaw and Lawton Grape District, almost the entire country given up to grape growing. They are picking their grapes and packing them and sending them out through the Packing Association, which they find is a very desirable way of disposing of the goods. They get a very much better price, and I think the consumer profits by buying through an organization, because they are sure of a good pack. If a man in this organization packs badly, he has some number or sign on his basket so that it can always be proved, so that if a car of grapes comes shipped out of somewhere and it comes here and we find there are a certain number of baskets in this car that are not up to grade, the man will notify the member himself, and that man will lose whatever is in this car. That is one way to make us pack honestly. It is a misfortune that so many of us have to eke out an existence on fruit farms, and we are desirous of getting so much out that we are inclined to put in a little something that is not up to standard. That is where the Westerners have us beaten. They put their packing and sorting in the hands of experienced men. A man who grows the fruit rarely ever packs it himself, so a grower would not be apt to put anything in that a man who inspects it would not send out. We think the quality of the Michigan fruits is far superior to anything in the United States, from the fact that we are surrounded by water, and the cliamte is a little better for grapes than it is elsewhere and we have a long, warm fall quite late. The Armour people in looking over the country to found a grape juice factory, looked all over and they came to a small place in Michigan, because they found on examination that the grapes in that particular quarter contained 16 per cent more sugar than they do in some of the other growing quarters in the United States, and 10 per cent more than the California grapes. It is sugar, of course, that they are looking for and that is why the quality of the Michigan grape is so much sought for. We have a great many acres in grapes, and more grapes being put out every year.

For the production of grapes, too they are going into better cultural methods, and the variety, for commercial purposes, is almost exclusively the Concord. There are other varieties grown, but the Concord is the standard variety of grapes. The grape juice industry has come into the state and we have numerous

factories all over the state making grape juice, and it now is becoming quite largely a summer drink, and a very healthy drink it is. There is some wine made in the country, but very little. Many of the growers are adopting this practice of picking grapes and sending them into the packing house, sorting them over, and the illy shaped bunches, bunches with straggling berries on them, are put into Jumbo baskets and these are sent to the vinegar factories. So there is no loss of grapes. A man can always sell grapes, of course he cannot always get the same price for them. Most of the grapes are shipped out in iced cars. We ship a great many grapes to Texas, Arizona and Kansas, and they go into the northern country. I do not know that it is necessary for me to go into details as to what the cultural methods are. I wonder how many are growing grapes in this State, will you raise your hands? There are not many growing grapes here. Do you have to lay them down in winter.

Mr. Reigle: I lay them down.

Mr. Kellogg: Not in the southern part of the State.

Mr Smythe: I should judge you are in the same latitude that we are and I should judge your grapes would grow in the southern part of Wisconsin, but I know your winters are a great deal colder than our winters. The price of grapes varies. This fall we got a good price, because our crop was only about one-eighth of a crop. The grower got from 17 to 23 cents, ordinarily we got from 9½ to 12 cents for an eight-pound Climax basket. That is another thing that is creeping in. The standard has been a Climax eight-pound basket, now they are getting so they are buying them in six-pound baskets. That is a thing where the consumer does not realize the fact that he is being beaten two pounds on a package. I think the time is coming when they wil not be allowed to do that, the time is coming when we must do something on this package bill, everybody unite in it and see if we cannot do something. If we cannot do it as a State, let us try to do it in the United States, and we must agitate this thing to bring it about. We can fool some of the people some of the time, but we cannot fool them all the time.

Mr. Soverhill: What is the best time for you to trim grapes?

Mr. Smythe: We trim grapes as soon as the leaves are off and the[illegible] are dormant, and if the weather is pleasant they begin trimming right away.

Mr. Sperbeck: Is the Worden one of your best varieties?

Mr. Smythe: No, sir; the Worden is an excellent home grape, but it is very much inclined to shell, it is a grape that cracks very badly.

Mr. Kellogg: What has been your experience with the Campbell's Early?

Mr. Smythe: Campbell's Early is a good marketable grape. but not a good eating grape, and it is almost too bad to whet up people's appetite wanting grapes, to sell them Campbell's Early, because then if a really good grape comes along, you cannot tempt them again.

Mr. Street: What do you find the best material to tie the canes onto the wires with?

Mr. Smythe: We use twine, a sort of jute twine; we wrap it twice around the vine and then twice around the wire so that it does not slip.

Mr. Moyle: What is your experience with Moore's Early? Is that grown on a large scale?

Mr. Smythe: It is grown to a certain extent, but not on a large scale.

A Member: Are any of the white grapes profitable, commercially?

Mr. Smythe: No. sir; only a certain amount will sell. If you have a good local market, it is all right.

A Member: Do you grow the Delaware?

Mr. Smythe: That is another one that is not a good market grape, unless you have a special market. We grow them and ship to Chicago in a flat, holding about 4 pounds to the basket. To a certain extent, we can sell them, but beyond that they do not sell.

A Memebre: How about the Brighton?

Mr. Smythe: The Brighton is excellent in quality, but it is a poor grape because it does not fertilize in bloom. Unless you grow it with other grapes, you very seldom get a good bunch. it is always straggling. Munson's King is a good grape.

A Member: Do you think it will take the place of the Concord?

Mr. Smythe: I don't think so. It is a larger grape, but it is more acid. It is later than some of the earlier varieties and the flavor or aroma is not so pleasant.

Mr. Reigle: What price did the growers get in Michigan for grapes produced in 1909?

Mr. Smythe: I would say the average was about 10 cents a basket. You see 1909 was one of the largest grape years we ever had.

A Member: Is that a profitable price?

Mr. Smythe: Yes, that is a profitable price, if you take it on land that is not too expensive. A good crop of grapes would be from fifteen to twenty-five hundred baskets per acre, eight-pound baskets. The grower furnishes the basket, the ordinary basket costs $2.85 a hundred.

Mr Reigle: About what is your average price on grapes?

Mr. Smythe: I think if a man can get anywhere near 11 cents, that will allow him, if he can average a cent a pound that would be $20 a ton for his grapes; he is doing very well, he is making money. You will hardly average that.

Mr. Kellogg: Wouldn't he better raise hay?

Mr. Smythe: He would if he could raise it on that land, but he cannot raise hay on that land.

A Member: How far apart do you set your grapes?

Mr. Smythe: Either nine by eleven, or ten by ten. The prevailing practice now is to set them nine by eleven so as to get more room for passing between the rows.

A Member: About what is the average number of pounds to the acre?

Mr. Smythe: Now, you have got me, I cannot answer definitely as to that. I think they will pick in the neighborhood of about four eight-pound baskets, that would be about thirty-two pounds to the hill. The expense of picking per basket is one cent.

Mr. Gonzenbach: I wonder if I might be permitted to remark that might be of interest to some of these gentlemen who have been discussing grapes here as a by-product almost to fruit growing to have me tell them something of grape-growing as I saw it in my boyhood over in Europe and the enormous value of the industry over there over almost the entire continent of Europe. The vineyards there have been cultivated for hundreds of years. On my own home place there was a grape vineyard that had been in cultivation that we know of for one hundred and fifty years. This talk about grapes has brought me back to my boyhood days when we would talk grapes, and

sleep and drink and eat them. It is the life and the blood of the nation almost. The noble houses of Europe are supported principally from products of grapes and when there is a failure in the grape crop they have to come to America and marry neiresses, and it is interesting to me to hear this discussion. I might further say that the cultivation of grapes is carried on to an extent which is almost unknown here. We do not know anything about training grapes on trellises. The grapes are all trained to a single stem and trained on a pole as you would beans. They are cultivated almost continuously from the beginning of the season to the end of the season, and while the berries of the grapes are not as large, the yield is very heavy indeed.

Mr. C. L. Richardson: Mr. Smythe stated the grape growers market their crop through an association I would like to know in what manner, whether it is pooled, or how they manage about payment.

Mr. Smythe: When a carload of grapes is sold, they know the grapes at that point, and they are sold by the Association there, they are almost all sold by wire, and as soon as the grapes are sold, the money is ready in the bank for the grower. Does that answer your question?

Mr. Richardson: In a way, but does each grower put so many baskets in the car and get his returns, or is each day's pick pooled and prorated?

Mr. Smythe: No, each grower gets according to the number of baskets that go into that car.

Mr. Richardson: Then, the product is sold on its merits?

Mr. Smythe: On its merts. They do not take the number of baskets by weight; if you have so many baskets they have to weigh so many pounds. If they do not weigh that number of pounds, they check on your weight so it behooves every man to put all the grapes he can into the basket.

Mr. Richardson: Each individual's product is sold on its merits?

Mr. Smythe: On its merits. Each man that puts fruit into that car has his number on the bottom of the basket and if that car is reported, if any grapes are bad, that man has to stand whatever loss there is on the entire car. I think the Association now has been in operation ten years.

THE APPLE SEED.

Mr. G. D. BLACK, Iowa.

If the title of an address should read "A Man," you would not expect the speaker to say much about the coat that covered his back, nor of the bones, flech and other constituents that composed his body. You would expect to hear of his life and character that had been inherited and received through the influence of others. You would expect to hear of his characteristics of mind and disposition that could act upon the lives of others and would continue to influence coming generations. It is in this manner that I wish to consider an apple seed, not by making a chemical analysis of its material parts.

The Creator has not revealed unto us the mystery of the invisible thing in the seed that we call life, but by the manifestations of the characters in a life which we call heredity we are enabled to dimly read the history of its ancestors. In the life of each apple seed there are numerous forces in varying degrees of potential ability that it has inherited from past generations. These powers are shown in the straight body of Peerless and the crooked growth of Pattens Greenings, in the hardiness of Pattens Greening, which enables it to withstand the Manitoba blizzard, and the tenderness of the Jonathan, which is not able to stand upon its own legs in Northern Iowa, in the horizontal limbs of Longfield and the upright Whitney, in the slender growth of Limbertwig and the heavy growth of Tetofsky, in the large healthy leaf of Yellow Transparent and the sickly leaf of Walbridge, in the early bearing Bismarck and the late bearing Christmas, in the blight resistant Peerless and the Red Warrior which blights to death by its side, in the immunity of Northern Spy to crown gall and wooly aphis, in the adaptability of some varieties to certain soils, in size of fruit of the large Wolf River and the small Allen's Choice, in the eating quality of Delicious and the unsavory taste of Hass, in the sweetness of Sugar loaf and the acidity of Scott's Winter, in the bright color of Brilliant and the dull color of Black Annette, in the emerald Green-

ings and the golden Fall Orange, in the leathery covering of the Russetts, in the stripes streaks and splashes of color and patches of russet in many other varieties, in the dots of the various colors, forms and sizes on the fruit and on the bark of the tree, in the white flesh of Fameuse and the yellow flesh of Arthur, in the many different forms of the fruit and its different parts and the differences in form, size and color of the seeds themselves and in the color, hardness and texture of the wood of the tree.

Those who have made careful research and study of the apple have found so many different characters that in describing varieties they have been obliged to form many classes. Dr. Robert Hogg, a noted English pomologist divides the different varieties into 1536 classes and subdivisions. Dr. Ed. Lucas, of Germany makes 1620 separate groupes. These inherited characteristics had their beginning and were originated as the result of certain conditions and environments. There is cause for each one of them. None of them came by chance. I have gone thus into detail that we may more fully realize that the most important elements in a seed cannot be seen until developed by growth, and then we can only see the manifestations of these realities. With our manner of propagating the apple it is hard for us to comprehend the possibilities embodied in one apple seed. All the Wealthy apple trees in existence are the product of one seed planted by Peter Gideon who denied himself the necessities of life that he might obtain apple seed to plant.

An author has thought of heredity in man as a stage-coach in which he is riding with all his ancestors as fellow passengers. Others have pictured it as a tree with its numerous braches. Nothing conveys the life and characteristics of the apple to my mind more clearly than a mighty stream of water and its tributaries. The Mississippi river receives through the streams that flow into it nearly all substances that are found in the greater portion of the United States. The chemists will find traces of gold and silver from the Rocky Mountains, traces of iron and coal from Pennsylvania, and disease germs that have come through the drainage canal at Chicago. He will not only find foreign matters in its waters but also where it has been deposited on its bed and along its banks. You may take thousands of samples of water from various places in this river

and have them analyzed and the chemist will tell you that no two of them are exactly alike. Each sample will differ in composition and proportion of its elements. A sample taken from the head-waters of the river is comparatively pure. As we go down the stream the impurities increase. We may consider an apple seed as a sample taken from this great pomological river that I have in mind. We can analyze this sample by planting it and letting its invisible elements show themselves in tree and fruit. Some of the characters may lie dormant during several generations and then assert themselves under favorable conditions. We are familiar with this principle in animal life and the same is true in the vegetable kingdom.

The junction of the Missouri river with the Mississippi is like the crossing of two varieties that are the products of many previous crosses, in that it brings together in one variety many elements both good and bad, some of which are not common to both parents. In this process the elements common to both parents may be intensified and become dominant while some of the weaker ones of each may be dropped. Man has helped to broaden this stream by bringing together many different species and permitting them to cross-fertilize each other.

When I retired at night I was thinking of the analogy of the life in the apple to a river in many different ways. It is not strange that I dreamed of a river and its banks lined with fishermen among whom I recognized the familiar faces of Mr. Patten, Prof. Black and others. It seemed that instead of catching chubs and suckers they were pulling out of the water apples of different sizes and colors. Some of the fishermen after long, difficult search had found the best places and when they were fortunate enough to land a large red and yellow specimen, the others would gather around to congratulate and admire. Then many would try to cast their lines where the fine catch had been made.

The breeders task is to make such combinations that the good qualities will be enhanced and the bad tendencies eliminated.

As an illustration of the dominance of character there is a tree in my test rows known as Hybrid Wild Crab. It resembles our own native crab apple very much in leaf color of bark and other respects. The fruit is also a fair sized native crab apple with its characteristic fragrance and taste, but is about half

covered with red. I have so much doubted its hybrid origin thinking that its red color might be a freak of nature, that I expect to plant a quantity of the seeds next spring and see what the next generation will bring forth. Last June I picked up from under the tree fruit that was still sound and in fair condition. If we could combine the hardiness of tree and long-keeping of this crab apple with the size, quality and color of Wealthy and at the same time drop out their faults, we would have an ideal apple for the upper Mississippi valley, but we could not expect that the tendency in both to blight would be diminished in their offspring. In the distant future when the breeding stations of our country have compiled accurate records of their work, man will be able to more fully understand the causes of these hereditary characters. Then he can be systematic in his crossing, inbreeding and selecting. Then he will accomplish things that we might think impossible now. It is not convenient for many of us to make crosses by hand pollenization and keep records of them. This is logically the work of the general government because the public is benefitted more than the individual. Most of us can save and plant seeds from the finest and best apples that have grown on trees adapted to any locality. We know that a variety of corn is improved by selecting the best ears for seed, and that garden vegetables are made better by saving seeds from the best beets, melons and tomatoes. It is reasonable to believe that the favorable conditions that caused the apple to grow large and fine and develop good quality will exert a beneficial influence on the embryo trees contained in the seeds. I believe it will pay us who live in Northern Iowa to plant seeds of Wealthy, Fameuse, Duchess and Malinda, as these have already produced promising new varieties. If a few scions of Delicious or Johnathan were grafted in the tops of the trees from which the apples for seed are selected it would probably not harm the quality of the fruit of the next generation.

A few years ago when I commenced to get a glimpse of these mysterious forces in life and heredity, my religious training had been such that in my ignorance I thought it sacrilege to assist nature in making the so-called new creations in plant life. I have since then come to understand that each individual in the animal and vegetable kingdom is in a certain sense to

a limited extent a new variety being different from any other.

We read in Genesis that God gave man dominion over all other forms of life, and placed him in the Garden of Eden to dress it and to keep it. That he might be able to properly perform this task God created him in his own image by giving him a calculating and intelligent mind. With this divine authority in mind let us continue in conjunction with our Creator to improve and keep every tree that is pleasant to the sight and good for food.

GRAPES IN NEW YORK.

REV. C. S. KNIGHT, Baraboo.

I am honored by you in having this opportunity to speak of the grape culture of my native state and I sincerely hope that I may be able to give you the information you desire.

In order that you may understand the situation I will ask you to come with me in thought to the top of a range of hills that rises to an elevation of about 700 feet, in Chautauqua Co., western New York, known as the Chautauqua watershed. The water that falls upon the south slope of these hills eventually reaches the gulf of Mexico and that of the north slope into the Gulf of St. Lawrence.

Looking south we view a rolling well wooded country, home of the dairy farmer and catch a glimpse of the shining waters of Lake Chautauqua, home of the world famous Chautauqua Assembly, gleaming among the trees. Turning northward the vast expause of lake Erie lies shining at our feet, its blue waters dotted with white sails and streaked with smoke from the funnels of palatial steamers.

Between the lake and the hills upon which we stand stretches a level plain two to 3 miles wide, the ancient shore of a primeval lake, Erie, the old shore lines being still very plainly traceable. But no waves break on the water worn pebbles of this shore now, instead the sun smiles down upon its vast successions of vineyards, shaded drives, orchards, beautiful resi-

Seven Year Old McMahan. Orchard of D. E. Bingham, Sturgeon Bay. Sept., 1910.

dences and prosperous towns and cities of this Southern California of the East, the Chautauqua grape belt that extends east and west farther than one can see.

I. HISTORY.

Here in the village of Brocton, 92 years ago Deacon Elisha Fay planted the first grape vines. They were wild vines brought from the Deacon's boyhood home in New England. But, while the vines grew luxuriantly the fruit was unsatisfactory. So in 1822 the Deacon procured at great trouble roots of Millers Burgundy, Sweetwater and Black Hamburg. But these also proved a failure.

This worthy pioneer did not give up however, but in 1824 he procured Isabel and Catawba from Long Island and planted a vineyard, 8x2 rods in extent, which proved to be Chautauqua's first successful vineyard. From these vines in 1830, the deacon made 10 gallons of wine, a thing deacons ought never to do.

In 1834, Lincoln Fay, a nephew of Deacon Fay, started the sale of grape vines, but there was very little call for them until 1850 and in 1859 there were only 20 acres of bearing vineyard, where now there are thousands.

During the decade that followed the Concord was introduced, a grape lacking in the food and wine values of the Catwaba, yet a prolific grower, producing fruit beautiful to the eye and pleasing to the taste. From the introduction of this variety the development of the industry has gone on till there are now 30,000 acres of grapes in Chautauqua Co., every acre of which is worth from $100 to $400.

The first complete carload of grapes was shipped to Philadelphia by Jonas Marten, of Brockton, in 1880. Since that first car the business has increased until as many as 8000 cars have been shipped in a single season.

II. SOIL AND CLIMATE.

The soil of this section is especially well adapted to the grape industry. The bed rock, according to Tarr, is upper Devonian shales and sand rocks, this is overlaid by Dunkirk clay, gravel, gravelly loam, sandy loam and shale loam.

Vineyards located upon the clay loam are most productive, though the quality is not so good as those raised upon the shale

loam. Grapes raised upon the gravel ripen a week or more earlier than those on other soils for this reason, most of the Moore's Early, Worden and Niagara are raised upon this soil to supply the demand for early grapes.

The climate is exceptionally favorable in the Chautauqua district. This is due to the proximity of the lake, which heated by the summer sun, acts like a huge hot water bottle to keep away the autumn frosts. We do not look for killing frosts before the middle or last of November. The lake also equalizes night and day temperatures in summer. The in-shore and off-shore breezes, night and morning, keep the air in circulation and help in the protection from frosts.

The rainfall seems to be just about right. Very little falling during the maturing months of August, September and October. This whole region is proverbially free from heavy dews, which acounts, no doubt, for the freedom from black rot and other fungi that this region enjoys.

III. CUTTINGS.

Most of the 12,000,000 grape vines now growing in Chautauqua county, N. Y. have been raised from cuttings. Good quality canes are clipped into lengths of 9 to 10 inches, leaving 3 buds on each, these are stuck about 2 inches apart in rows 18 inches apart by hand and are kept free from weeds and well cultivated during the summer. After the frosts have killed the leaves these roots are plowed out, taken to nursery cellar and graded into 1, 2, 3, and culls according to the quality of the roots they bear.

IV. PLANTING.

For planting we first plow a series of dead furrows 8 feet apart, in these we dig holes 7 feet apart and in these we plant our grape roots covering with loose top soil and keep them well cultivated all summer. The next spring we drive chestnut or locust posts from 21 to 25 feet apart in the row. To these we staple a black iron, No. 9 wire from 28 to 32 inches above the ground to which we tie the young vines.

The following spring we add another wire from 22 to 36 inches above the first and tie the canes to this. We now have a vineyard that with proper care will produce good crops for a lifetime.

V. CULTIVATION AND PRUNING.

We aim to manipulate the ground to a depth of several inches from the first of May to the middle of August, keeping a dust mulch to bridge through the drouth we usually have in mid-summer.

A gang-plow, 2-horse diamond cultivator and a horse-hoe will keep a vineyard in good culture without the expenditure of more than one dollar an acre for hand work.

We trim or prune our vines in the winter cutting away all but 8 or 10 canes, which are to bear the next harvest.

It is custmary to branch the vines at the lower wire extending an arm for two or three feet in both directions along that wire and from these arms to lean the canes that are to bear the next crop.

After the trimmers have passed through and done the cutting, the brush pullers pull off the brush which is dragged off and burned. After this as soon as the weather becomes sufficiently warm for such work we tie the canes to the top wire with 4 inch pieces of no. 18 annealed wire, tied in such a way that when the brush is pulled off the following winter these tie wires drop off the wire and leave it clear.

We cut the tops of the canes leaving only one bud above the tie, and are ready for God's fresh air, rain and sunshine to grow an abundant harvest.

VI. PESTS.

About ten years ago we were visited by the leaf-hopper, which settled upon the under side of the leaf, sapping the vitality, killing the leaves and exposing the grapes to the sun.

We tried sticky shields, like fly-paper, carried along both sides of the row and so caught a good many, also whale oil soap solution, 1 pound to 10 gallons of water, but as this stains the fruit a solution of 8 to 10 parts kerosene oil is better.

Burning up leaves and rubbish in and around the vineyard is a good practice. These hoppers did considerable damage for several years then left us and we have had no further trouble from that source.

The little trouble we sometimes have with grape rot, mildew rotting of stems and the root-worm is controlled by spraying 2 or 3 times with Bordeaux mixture thrown from a 2 horse power sprayer, making a fog on the leaves.

VII. HARVESTING.

Grape harvest in a Chautauqua vineyard, seen through the golden haze of a bright October day is a beautiful sight.

The rows and rows of luxuriant vines, loaded with the rich blue vintage. The warm air heavy with the sweet aroma of the delicious clusters, the merry songs and laughter of the pickers as they rapidly fill baskets and crates. The chuckling grape trucks loaded with fruit being taken to the shipping station all go to form a scene that leaves an impression upon the mind both delightful and lasting. Most of our grapes are shipped through the Chautauqua and Erie Grape Co., though some growers do their own marketing. Cars are filled with grapes from half a dozen different growers, each load being carefully weighed and inspected before being put in the car and each grower receiving so much for each full weight basket that he puts on board.

Our grapes go all over the country and are welcomed in every home. You may wonder what we do with the thousands of car loads of perishable fruit that must be disposed of in the short period of 6 to 8 weeks.

If we ever had any trouble we have had none since the introduction of the unfermented grape juice business. This was originated by Dr. Welch, of Westfield, N. Y. and has rapidly grown until he has two immense factories that work night and day during the pressing season with the exception of Sundays, for the doctor is a Christian.

The methods used in the Welch factories are as follows:

The best grapes obtainable are run through a machine which rattles them off the stems and breaks the skins. In this condition they are dropped into the steam jacketed cauldrons, where they are heated almost to the boiling point, from these cauldrons they are hurried hot to the hydraulic presses that extract the last drop of juice and also rich velvety lining of the skin. Still hot they are corked tight in 5 gal. glass demajons and placed in the cellar.

Before final bottling this juice is re-heated and bottled hot. No sugar is ever used and no alcohol can form because the juice is always hot while exposed to the air.

Conclusion: The grape industry has brought wealth and prosperity to Western New York, good schools, summer resorts, autos, electric railway and the opportunity of travel, but I fear

that very few look up with thankful hearts to praise God from whom all our blessings flow.

Mr. Street: I should like to know how they keep up the fertility of the soil, whether they sow any cover crop and also at the same time how they loosen up the ground in the spring. He spoke about the gang plow, as I understood it, and I would like to know whether they plow a few inches deep in the spring or how.

Mr. Knight: We do not often use very much fertilizer, it does not seem to be necessary. Some do plant clover in the vineyard and find it to be a pretty good plan, but it is not at all common. We do use a light gang plow to a depth of about two inches to begin with. When the soil is fairly loosened with a gang plow, we keep it loosened with the cultivator. We use a horse hoe for plowing around the vines, right close to the vine. Where we cannot touch it with a horse hoe, we use a hand hoe. We sometimes plow toward the vines, sometimes away from them. Plow away one year, plow to the next. Just before the grape harvest, it has become the custom to drive a sort of smoother, something like a snowplow to smooth it over, to facilitate the work of the pickers. Our brother from Michigan spoke about tying with string. We used to tie with string, but we find the up-to-date most satisfactory, and the way the brush pulls off most easily and quickly, is to use a four-inch piece of No. 8 annealed wire and by a little twist of the finger we can tie this against the upper wire and cut off the end of it above the wire.

A Member: Do you use the four-cane method?

Mr. Knight: Not to any extent; a few tried it as an experiment, but it is not common.

Mr. Smythe: We use the four-cane system entirely in Michigan, where the platform system is not used.

Mr. Soverhill: Do they use any sugar in putting up the grape juice?

Mr. Knight: Not a particle.

A short recess was here taken, after which the Students' contest was taken up.

THURSDAY MORNING SESSION.

Question No. 1. What attention should an asparagus bed have?

Mr. Irving Smith: In our practice with asparagus, we have manured heavily in the spring. We manure in the spring because if it is done in the winter, it retards the thawing out and opening up of the soil, in other words, makes it a little later, so we always manure in the spring and work it down thoroughly. If it is a home bed, work it down with a six-tined spading fork, turn it under by hand, or if it is a commercial proposition, go over it with a disk. If the ground is pretty light, the disk will be better without the harrow. Work it as deep as you can without tearing up the ground. Keep it cultivated between the rows, keep the weeds out during the season. Perhaps that covers the point.

Question No. 3. Is there any profit in trying to grow pie plant in Wisconsin for winter market?

Mr. W. A Toole: Near almost any small town, I think there would be a profit in it, especially if he has a greenhouse to utilize what otherwise would be wasted. In most of the small towns I do not think it would pay to put up special houses for housing them, but possibly near the larger cities; that is, cities the size of Madison, where the prices seem to be higher in the market generally, it might be better to go into it on a fairly large scale. Under our conditions, why it is simply a little extra crop that we get by growing it under the benches.

Mr. Palmer: Isn't it possible to force it in the ordinary furnace cellar,

Mr. Toole: It is possible to grow it in any ordinary cellar and I do not know but what we might get large enough returns from that to pay for the trouble. It rather musses up the cellar somewhat when you grow it in large quantities.

THE CABBAGE-RAISING INDUSTRY IN SOUTHEASTERN WISCONSIN

W. J. MOYLE.

Back in the sixties Mr. B. R. Bones, of Racine, Wisconsin, a man with a naturalistic, horticulturist turn of mind, found himself growing among his other garden crops for the Racine market, that very ordinary common place vegetable, the cabbage. This fact attracted no attention until 1874, that season Mr. Bones ventured into the business of making sour kraut, having quite a large acreage of Early Winnigstadt and the local market being glutted and as it was too early in the season to store for winter use he cut them up into 45 barrels of fine kraut.

During the following winter he managed to dispose of 12 barrels, storing the balance, 33 barrels, in a barn cellar as such an unheard of quanity could not be sold.

The next summer after some boys opened the cellar there were 33 explosions and in a few days as Mr. Bones humorously expresed it. The effluvia would have out done 33 German corpses in the last stages. (It made a fellow want to pull a skunk on his nose for fresh air.)

With varied success Mr. Bones however kept on growing cabbage until 1887, that season he grew 8 1-4 acres, mostly Fottlers Brunswick and Flat Dutch, the varieties at that time best adapted for winter use.

This eight acres of cabbage made him the laughing stock of the entire community, his neighbors said he would never sell them. People drove miles to look at this remarkable field of cabbage. A little lake of beautiful green as it were without a break on its surface. From this field was harvested a crop of 20 tons to the acre. Four carloads were hauled direct from the field and shipped to Kansas City, the balance was stored. That winter when cabbage went up to $45 a ton in Kansas City he tried his best to secure refrigerator cars to ship in but the Railroad Co. refused to furnish them, claiming the cabbage would spoil the cars. He was the forced to barrel his cabbage in order to ship.

The cash return from this crop going over $2,300 or around $250 per acre. People stopped laughing, Mr. Bones was proclaimed "Cabbage King."

The next season he had some cold frame cabbage plants sent him from Peter Henderson and Co., New York, for testing, on these there were eggs of the cabbage worm butterfly. These hatched and got the first foothold on Wisconsin soil.

In 1888 a cabbage planter being unheard of, he set out 14 acres in the old back way that we follow in planting a few dozen in the garden. Wm. Hanseke planted 4 acres and thus was started the cabbage industry of southeastern Wisconsin.

The crop above mentioned yielded well but the market was poor and little was realized above expenses, however in 1889 a much smaller acreage was planted and the tail end of this crop sold for the remarkable price of $106.20 per ton.

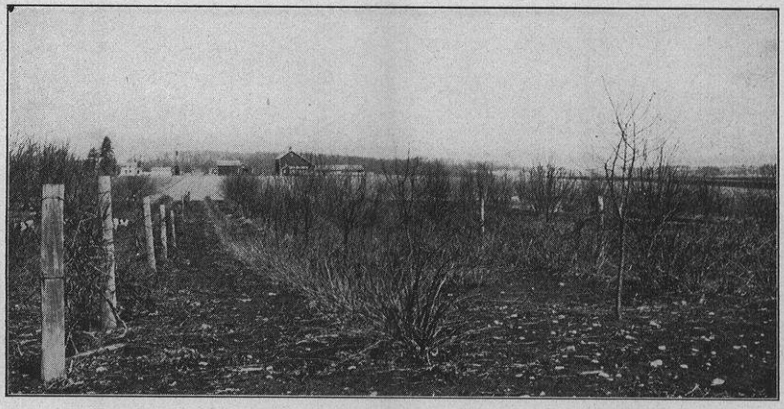
About this time W. Attle Burpee introduced the Danish Ballhead. Mr. Bones bought 2 oz. of this seed out of which he raised 4000 plants and 3999 1-2 solid heads in the fall, from the stalks of these he raised 84 pounds of seed which was widely distributed under different names, yielding the grower, however, very little profit for his trouble in growing the same. This is the cabbage commerce today. The Danes called it Solid Emperor, Mr. Burpee is credited with renaming it "Danish Baldhead."

This variety originated on the island of Arnager, Denmark, was imported into Holland and then introduced in this country under the name of Late Holland, Hollander etc.

Mr. Bones was also the first man to investigate the disease of the cabbage known as black-rot. Through his efforts an expert bacteriologist from that department of Washington, D. C., made a careful study of this disease on his farm, distinctly isolating the germ and giving it the afore mentioned name. This disease has no remedy known of and once effected will remain so for many years so cabbage grown on this land is of necessity discontinued.

The climate and soil around Racine seemed particularly adapted to this vegetable and the acreage grown increased rapidly until the season of 1909 when Union Grove, one of the principal shipping points of Racine county billed out 625 carloads. A half-dozen other shipping points within a radius of 30 miles had equally as good records. It is therefore safe to estimate

More Union Grove Cabbage.



Fruit Garden of J. H. Turner, Hebron, Ill.

The Cabbage Market at Union Grove, Wis.

the crop at 50,000 tons from this part of the state that season. Figuring this on a $5 per ton basis we find it putting into the growers pockets the nice little sum of $250,000.

In this estimate we have not taken in account the three large kraut factories in active operation in this territory. They use thousands of tons. The F. W. Gunther Co., of Racine, from a small beginning in 1882 bought 7000 head by count at 5 cents per head.

In 1883 this Company established the weight system paying $22.50 per ton. Mr. Gunther believes himself the first to adopt this method in the U. S. For a number of years they bought by weight and sold by head. It was like a gold mine but the trade soon caught on. This firm has enlarged until their present capacity in 4,500 tons annually or approximately two and one quarter million head.

At Franksville, Wis., is situated the "Frank Pure Food Co." factory, one of the largest and best equipped in the United States, which also annually converts thousands of tons into the finished product.

What becomes of all this cabbage might be asked? It is shipped all over the country! Chicago, alone, when its appetite is keen, will clean up 20 car loads a day.

Many growers have built themselves storage buildings holding their crops for higher prices. Early in the business some remarkable stories are told of wealth thus acquired. One man cleaning up $40,000 in a single deal.

The past few years, however, little has been made from storing cabbage.

In conclusion, we would say that the cabbage crop of Racine and Kenosha counties has become an important and profitable factor in the farmers rotation. It is here to stay and only goes to show how great and varied are the Horticultural possibilities of the State.

A Member: How many tons do you get on the average to the acre?

Mr. Moyle: From twelve to fifteen tons on an average is a good yield. This year we got only about seven tons to the acre, on account of the drought. Fifteen tons is the ordinary crop, that is, with the Holland; with the sauer kraut cabbage we can get twenty tons with good cultivation.

A Member: What distance do you plant and with what do you plant?

Mr. Moyle: Plant with the cabbage planter made at Racine. Put them in rows fifteen to eighteen inches apart, according to the varieties, and the rows so that we can go through with the sulky cultivator, thirty-eight to forty inches apart. Cultivate one way and hoe between the plants. We put about 7,000 plants on the acre.

A Member: What do you do for the cabbage worm?

Mr. Moyle: Nothing. We plant big enough so that they can get all they want to eat and then there will be plenty left.

A Member: I just took a pail and a whisk broom and sprayed on salt solution. If you will put a worm in salt water, it will dissolve in a very few minutes.

Mr. Moyle We have tried salt, but the tendency is if you put any quantity on it, the cabbage head will burst. The cheapest way in dry time is to take a shovel and throw dirt on the heads.

HOT BEDS, COLD FRAMES, AND THEIR USES IN CONNECTION WITH MARKET GARDENING,

J. W. ROE, Oshkosh, Wisconsin.

We gardeners find these harbingers of spring quite indispensable. A season of prodigous profits are the early cold months of winter. This is a time when gardening on paper is usual, estimating future crops, laying out our summer work and enjoying the prospect of spending the money that will come rolling in.

But there comes a time when the sun gets higher and when the pile of cash in our pockets has shrunken then it is we feel we must get out and hustle to make a little with which to grease the wheels. Then we get at the hot beds.

I'll tell you how we build them. We lay out our beds for 20 sash in length and between the beds we allow 9 feet for a drive way. The spaces between the beds are filled in with cold frames after the hot beds have been packed.

If the pit system is used, drainage has to be provided by use of tile. To build a bed of this kind we first remove the soil to a depth of 12 in. and 6 ft. apart. The posts on the lower side should be 6 in. shorter than those on the upper side which will give the sash pitch to the south when the bed is complete. This allows the water to run off and also allows the sunlight to strike in more freely.

The posts having been set and sawed to a line, we next spike on top a 2x4 set edgewise and flush with the outside of the posts. These are for the sash to rest on. The lower side of the bed measuring from the bottom of the pit should be 10 inches high. Braces, 2x4, are put in, spaced, so that the outer rail of each sash has a bearing on the brace. Board up the sides and ends next, raising the boards a little above the 2x4 frame. This will allow the sash to butt up against the board at the bottom and will break the wind from blowing in on either side. Some make an outer casing and fill in with cinders. We have not done this on account of the expense. We bank the outside with manure. Would advise the use of common cypress lumber. The cold frames are made for 5 sash and are movable. The corner posts are 6 in. longer than the width of the 12 in. boards at the top and side of the bed are flush with the boards at the lower side. This gives a pitch to the frame. In buying sash profit by the experience of one who has found many requisites wanting in common factory sash. Buy the best clear cypress sash made of 2 in. stuff and don't allow them to paint them, as you will want to see if you get what you are paying for. Do your own glazing. Bed the glass with one-eighth in. lap in good putty mixed with linseed oil and with lead. Putty won't stay on top of the glass and only helps to rot the rails. One light coat of oil paint every year will make the sash last a long time. Use fresh horse manure that has still the heat in it. Fork it over until the whole pile is thoroughly mixed and all of it heating, then pack the bed 12 inches deep and tramp down well so that the bed will not settle much. Then use from 4 to 5 in. of soil over all. This completes the bed. Allow the bed to lay 3 or 4 days to get rid of the first heat. By that time the bed ought to be in shape to sow or plant.

What to grow in hot beds depends on your market. Leaf lettuce and forcing radishes are always in demand in the

early spring. They are safe crops as they stand more grief than other crops. A small bed started early will furnish lettuce plants for a large number of sash. They are transplanted where they are to grow when in the second leaf, planting them 4x5 inches apart. The soil should be moist but not wet and do not water until after the plants get a good start to grow. But if the sun is hot, shade during the noon heat. Water only when quite dry. Some day when the weather will allow, take off the sash and stir the ground.

Watering is a particular part of the work and must be looked after by one with judgment, as too much is liable to rot or mildew the crop. This is especially true of lettuce. Water should be applied during the early hours of the day and when the sun is shining and after watering give plenty of ventilation. The ventilation of the beds should be looked after and the sash raised according to the heat of the day, closing up in time to hold the heat as the sun goes down.

Radishes are easy to raise. Do not force them too much as a few days longer in growing will produce a better radish and they are not so liable to go to tops. A common mistake is to sow radishes too thick. All the small imperfect seed ought to be sifted out. The stand of radishes should average from one-half to an inch in the row and the rows to be five inches apart. Better radishes are grown from large plump seed and in less time.

Forcing carrots can be sown at the same time with the radish seed and in the same rows. The radishes do not bother the carrots much and are pulled in time to give the carrots a chance.

Beets seeded for greens follow a lettuce crop nicely. Kohlrabi and cauliflower plants can be transplanted into the beds between the radishes and quickly follow the radish with a crop of early vegetables. Our beds are used also for starting plants for later planting in the fields such as tomato, early cabbage, peppers, etc. Our melon and squash plants are started in the beds. We find that we get away from fighting the bugs in this way and also get the crop out sooner.

A good way to do this is to cut sods into sections of about 4 in. square. Then fit the inverted sods into flats. Sow the seed in each sod and place under the glass. When the plants are ready to plant take the flats into the field and plant directly from the flats.

Cold frames are handled the same as the hot-beds, the only difference is that not much manure is used and that they are laid better. In the south the cold frame is used altogether and they find the sash enough protection. Here we use mats or boards for night protection, which means a lot of work, especially on Sundays when your man don't show up to help with the chores. I should not advise a man to go in very big in this line unless he can stand exposure, as planting early beds is usually done when it is not very pleasant sitting down and with bare hands working in the moist earth and often it happens that orders have to be gotten up in rainy or cold weather. On such days hot beds are not hot beds but cold frames in every sense of the word. Nevertheless there is some fun in getting a start of old Dame Nature and some profit.

The soil for the beds is prepared and piled up in sufficient quantities in the fall and covered so that it can be gotten out without the use of the pick when wanted.

Mr. Bedell: I would like to ask Mr. Roe if he ever had any experience with cement hot beds?

Mr. Roe: I have never gone into the cement hot bed business. At the time the cement age was practically upon us, we started in building greenhouses instead of hot beds and I found that a little more satisfactory in my line. It costs about the same to build the greenhouse with the piping as it does to buy the board and sash, and the cost of working in the hot bed. We found it about as cheap to build a substantial greenhouse and it worked just as well.

Mr. Irving Smith: I would like to ask Mr. Roe why we must water in the early part of the day, why must we water only when the sun shines, why must we give special ventilation after watering?

Mr. Roe: The reason for watering early in the morning and when the sun shines is this, that we have all day for the moisture to rise and the leaves to dry off, and if the sun shines, that dries the moisture also, and it dries off the plants more rapidly. The period of cloudy weather and dark nights is very productive of mildew, and especially in the early months of the hot bed season, it is very difficult to get a crop through without some mildew, and we find that it is well to stir the ground

if possible, as soon as the surface of the ground is dry enough, so that we could loosen it without its being sticky. That allows the air to enter and also helps to stop the mildew. The most particular part in hot bed growing or in the greenhouse is watering. We do not trust watering to any man that is not experienced, until possibly, later on, in May, or the last of April, when the sun is usually drawing the water very rapidly. I attend to the watering myself and never think of turning another man in there.

Mr. Irving Smith: Why do you water young plants after they have grown instead of immediately after they have been set?

Mr. Roe: The young plants of the lettuce especially are very susceptible to root rot and when the change is made from transplanting, unless the root starts immediately, if the ground is too moist, the root will start to rot and turn black, and if the ground is just simply moist the root will strike quickly, and there is not that danger. It is better to establish and leave the plant. The leaf will wilt down, and by the next morning the plant will strike a very fine white root, and the leaves will stand up again, and you will be surprised how dry the ground can be when you plant lettuce and find that you do not need to water it at that time. If you do water it, you are very much in danger of flooding the roots and drowning them out and loss is likely to folow.

REPORT OF COMMITTEE TO INVESTIGATE EXHIBIT AT LAND SHOW.

Mr. L. G. Kellogg: At the November meeting of the Board of Managers our President appointed Mr Cranefield and myself as a committee to investigate the possibility of making an exhibit at the Land Show, which is annually held in Chicago, with the end in view of making an exhibit there for the purpose of diverting a portion of the professional and other people who are now investing their money in Northwestern orchards, to plant their money in good old Wisconsin. This Land Show is quite a mammoth undertaking. As near as I can learn upon the best authority, it is backed by some of the largest railroad companies in the

United States. And I think that the evidence will bear me out in that. The Land Show is held in the large Coliseum building in Chicago and the space is sold to the different States in the Union and some of the States secure perhaps three or four allotments of space at fabulous prices. I was informed that the State of Wisconsin, through the Immigration Commission of which I think Mr. Campbell is secretary, secured a small space about 10 by 16 feet, and displayed the products of the State, together with some fruit, and this space I am informed cost about $700, so from a financial standpoint I do not think it would be possible for this Society to go to the Land Show and make an exhibit. However, they might unite with the Immigration Commission, perhaps obtain space there and make a very creditable exhibit. There was also held in connection with the Land Show at the First Regiment Armory, a duplicate of the National Apple Show, which was moved bodily from Spokane, Washington. There were a great many carloads of apples displayed, whole carloads of single varieties like York Imperial, Newton Pippin, Spitzenberg and Grimes' Golden. This was a very fine show, but was attracting very few people. The Land Show seemed to attract the bulk of the people and one point that struck me more forcibly than any other was the number of land agents that you met on every turn and corner, that were endeavoring to unload those Western lands at fabulous prices. From the impression that I received during the short time that I was in Chicago I would not deem it advisable for this Society to endeavor to make an individual exhibit at the Land Show.

Mr. Daub: I would like to ask Mr. Kellogg if he did not find the public a little bit skeptical in regard to investing in these lands?

Mr. Kellogg: No, I should say, on the contrary, they were very much interested in these Western lands, and as near as I could learn people were buying. I saw them investing in this land that they haven't even seen. They were easy.

Mr. Daub: Then you mean to say that Barnum was a true prophet?

Mr. Black: Our Society in Iowa was anxious to understand the conditions out there and two or three of our members were out there looking the ground over and we found from their re-

port, on good outhority, that most of the land there that will produce these fine crops of apples is sold and that at the present time real estate agents are laying out land where they never can get water onto it. They are planting trees in the winter and they are selling planted orchards for a large sum of money $1,000 an acre. Those trees next summer will not live if there is no moisture there at all and you cannot get the water there. but they have got the land sold and that is what they are working for.

The President: We have gone over that ground pretty thoroughly, but really the thing we have in mind is that Wisconsin people do not know what a good State Wisconsin is. That is the direction, I think, that our Society should turn its mind toward, let them know the good things that we have and then they will not be looking so much elsewhere.

Mr. Reigle: I have in my hand a personal letter to me which seems to have the stamp of truth upon it in regard to Washington State. I will read a part of that letter and the mathematics of it I want you to figure out for yourselves. It will be quite easy. (Reads).

SWEET CORN AND ITS CULTIVATION.

WM. NELSON, OSHKOSH.

In raising sweet corn we aim to get it planted as early as possible; as, the early corn brings twice the money in the market. It pays to spend a little extra time in starting the early varieties. I start my early sweet corn on sandy soil, which is my earliest land. I cover land well with horse manure and plow it under. Plow about 4 inches deep as early as possible in the spring, then pulverize quite deep after each hard rain, to warm the soil; until the weather is favorable for planting. There is quite a little chance work in planting early corn, as we may loose the first planting; but I always have plenty of the early seed on hand, in case this does happen. I planted my early sweet corn last spring on the 20th of April, just before the hard blizzard we had on the 23rd, and it proved alright. I plant about 4 acres of the

early corn each year. As soon as the weather looks favorable for planting, I take about half as much corn as I intend to plant and soak it until the sprouts begin to appear; to do this, I put it in an earthern jar and cover with water over night, then drain off all the water, cover with a damp cloth and keep in a warm place until the sprouts begin to show, which will take about two days. You will perhaps wonder at my sprouting the corn in this way but I find, after the sprouts have started. and there is life in the kernel, it will stand a great deal more wet and cold weather, than it does otherwise and also makes it earlier. While this corn is sprouting I work the ground up fine and mark it both ways, having the marks 2 ft. 8 in. apart each way. Now I take the corn which is sprouted and put an equal part of dry corn with it in case anything should happen to the sprouted corn. I plant this with a hoe, being careful to get it not over an inch deep. Putting about 8 or 10 kernels in each hill. Be very sure to plant exactly in the square, or it will be more difficult to cultivate. As soon as this corn begins to peep through the ground, I drag with a fine tooth harrow, which helps to keep the ground warm, and destroys the little weeds, which have started to grow. When we can see the rows we begin to cultivate with a fine tooth Planet Jr. cultivator, and continue with this until the corn is 6 inches high. Then we thin the corn out, leaving about four of the strongest, most vigorous stalks. At the same time we pull out what few weeds are in each hill. After the corn is thinned out I use a coarser cultivator.

I plant White Cob Corey for my earliest corn, then Perry's High-bred. I used to plant the Early Minnesota, to come on after the Corey was gone, but by carefully selecting the earliest corn for seed each year from the Perry's High-bred I find it is ready for market as soon as my Corey is gone, and it is a much larger corn than the Minnesota. I plant my Perry's High-bred 2 feet 8 inches apart the same as the early corn, using a hand planter, dropping 5 or 6 kernels in a hill. This is planted deeper than the early corn which I planted with a hoe, therefore it will stand more dragging, which saves time, as cultivating takes much longer. The stalks of this variety grow quite tall and rank, so I thin this corn to 3 stalks in a hill, instead of 4. Now I want to tell you about a field of fodder corn, which I planted

a few years ago. This land was timothy and clover sod, which I covered with coarse barn-yard manure early in the spring. Then I left it until about the last of June when it was covered with a very heavy hay crop. Then I plowed under both hay and manure and pulverized it thoroughly and planted it to corn on the 3rd of July. This was a bumper crop. I never did like drilled corn on account of the weeds, for they are our worst enemy; so being raised in a potato country thought I would use my potato marker for this field of fodder corn, and row it both ways. This marker was 2 feet 8 inches. The yield of this field more than came up to my expectations. I had in twenty acres of corn that year and this field of fodder corn of about 4 acres grew so fast and got ripe so that I husked it, and it proved to be the best, and produced the greatest number of bushels per acre of any corn I ever raised. Thereafter I discarded my corn marker to use the potato marker to mark corn ground, getting better results with the field corn as well as with sweet corn. Field corn only plant 2 or 3 kernels per hill. If possible have the potato field join the corn field as by doing so you save a lot of labor by cultivating both at one time. I began selling my early sweet corn last year on the 25th of July. Putting it up in sacks of 100 ears and selling directly to the dealers; first at $1.50 per hundred ears, then at $1.25 and later at $1.00 per hundred. I have sold late corn as low as 50c per hundred ears and think it is a profitable crop even at this low price. I consider the stalks very valuable as fodder, more so than the field corn. My early sweet corn last year brought me over $30.00 per acre, but the late corn did not bring so much, though we get so much more fodder per acre, and consider it so valuable for feeding stock that this crop proves very satisfactory. I have not had very much experience in raising Evergreen corn as it is not ready for market until about the 1st of September; and as I raise about 6 acres of muskmelons each year, they are ready to market at this time, so I give my full attention to them. I prefer saving my own seed corn, to do this, I leave a few of the best rows, and do not pick them when picking for market. When this corn is fully matured I carefully select the best ears for seed, husk them, tie together with binding twine, putting about a dozen ears in each string, and hang in the attic where I leave it until the following spring,

when I take it down and shell by hand. Removing the small kernels at the tip, and the large thick kernels from the butt. Then I put 100 kernels in a small box of earth to test it, and it should test 95 per cent good seed.

Bq keeping a few good Holstein cows, and a few pigs all of the crop not marketed is consumed on the farm, and brings big returns; although it is not directly in cash. The manure produced is also a big item and worth considerable money. I find from experience that all of the fodder from the sweet corn is eaten greedily by the live stock with very little waste but with evident relish. I also consider the little extra time spent in preparing a good seed bed pays well. As does also frequent cultivation, as we cannot in this part of the country raise a good crop of early corn and a crop of weeds on the land at the same time.

Mr. Davis: I never have planted any corn by guesswork, I never made allowance for so many to come and so many to rot. If I wanted a field to raise and sustain three kernels that is what I planted, if I wanted two, that is what I planted, if I wanted four, that is what I planted, and I always got what I called for and expected. I planted two rows about thirty rods long with two kernels to the hill and when it came up I went up and down the rows and every hill had two stalks of nice light spears and then there was a snow storm and there were about two feet of snow drifted over corn alongside the fence and I do not think there was a hill but what had pretty nearly a full stand of corn. About saving seed corn, I never had to buy seed corn in my life. I have had lots of men husk for me and tell them to save seed corn and I never knew them to pick out one ear in fifty that would make good seed corn. I can show you good seed corn and all you want to do is to save your corn early and be sure that it is well cured and keep it where no moisture can get at it.

ONIONS.

H. C. CHRISTENSEN, Oshkosh.

The annual onion crop of the northern portion of the United States is estimated at three and one-half million bushels. It is of such commercial importance that it is one of the few vegetables to get a special crop report. The onion is not a lazy man's crop as its successful culture requires more labor than the average vegetable.

The soil best adapted to its growth is a black loam; the deeper and richer the better. It also requires a generous application of fertilizer to the soil; either in the way of well decomposed stable manure or commercial fertilizer, we have always used the former, never having used the latter except in an experimental way. The land should be well drained, for while the onion requires a great deal of moisture for its growth it will not do well on soggy soil. Onions do well on the same soil for a number of years, but the maggot and fungous diseases make an occasional change necessary. In preparing the soil for onions, we like to grow some crop the previous year, like celery, cucumbers, or cabbage, that can make use of a large amount of fresh stable litter either as a mulch or plowed under. When the crop is removed the land is plowed late in the fall, and during the winter as heavy a top-dressing of well rotted manure as can conveniently be worked in, is applied. We use the spent manure from our hotbeds of the previous spring for this purpose.

As early in the spring as the land is dry enough to work, the soil is thoroughly pulverized to a depth of five or six inches. The soil is then smoothed off either by raking or planking so that a fine, level seed bed is secured.

The seed is sown in rows sixteen inches apart. Care should be used to make the rows as straight and even as possible so as to facilitate work with the wheel hoe. Seed should be sown thickly enough to mature eight to fifteen bulbs to the foot; more or less according to the richness of the soil. A much larger number of seeds will need to be sown but care should be taken not to get them too thick as it is difficult to thin onions.

As soon as the plants appear above the ground the wheel hoe is run along the rows and as often thereafter as the rain packs the soil or the growth of weeds requires it. Cultivation should be kept up until the growth of top prevents it. The most tedious part of onion growing is weeding. As no machine has been invented than can distinguish between a weed and an onion plant it must be done by hand. We employ boys provided with sharp knives for this work; keeping at it not longer than five hours a day. Longer than this they tire and then they do poor work. We prefer to go through the patch three or four times and take out the weeds while small. It may take a little more time but the onions are disturbed less than when the weeds are allowed to grow large.

As soon as most of the tops have fallen over, the onions are pulled. Five or six rows are thrown together. They are allowed to cure in the sun for about 10 days; when they are topped off in crates. Boys and girls are employed for this work, being paid so much per bushel. The onions are then hauled to a shed or barn and placed on shelves for farther curing. From here they are marketed or if stored are placed in the cellar when cold weather comes. Running them over a screen with a 1¼ inch mesh, removes the small ones and also the leaves and trash.

For the northern market the yellow varieties are the favorites; the globe shape being preferred. We like an onion with a rather thick skin that does not crack and a little darker than straw color as it seems to keep better than a thin skin light colored one. There is not much call for red ones, except for shipment south of Chicago. The white onions are not as good keepers as the yellow but usually command a little higher price if the quality is good. They are better than either the red or yellow for bunching as they keep fresh looking longer and are easier to peel.

The question of seed is one of great importance to the grower. Only the best should be used. It will pay any grower who is going to store, to grow his own onion seed. In the fall select as near ideal onions in shape, size and color as possible and keep them in the cellar over winter. When planting in the spring reject all those that have made any growth in top or root and by following this out for a few years, a strain of onions will be secured that for keeping quality cannot be excelled.

We have tried growing the large Spanish onions, by raising them in the hotbed and transplanting them to the field. While we could get the size of the imported ones the quality seemed to be lacking. This is a good way to grow any variety for exhibition purposes as they will grow larger than when sown in the field.

Mr. Street: I would like to ask Mr. Christensen if he practices rolling the tops down as soon as the first ones commence to fall.

Mr. Christensen: I think possibly because we raise our own seed and grow onions year after year, we do not have that trouble. Possibly for the first year or two they ripen unevenly, but after that they ripen more evenly.

Mr. Black: I have had good results with hen manure, it is almost equal to guana.

Mr. Christensen: We find that hens and gardens don't agree very well.

Mr. Hagar: Has the gentleman ever tried sowing onions in the fall?

Mr. Christensen: I have tried the hardy white variety recommended for fall sowing and one year I succeeded in wintering them over, but I have tried it a number of years since and have not been able to winter them.

Mr. Irving Smith: Do you find it necessary to plant 16 inches did you say, apart in the rows?

Mr. Christensen: Yes, from 14 to 16. My neighbor plants them far enough apart to cultivate with a horse.

Mr. Smith: Don't the tops stand up sufficiently straight so that weeds will grow in between them after they get to a point where wou do not wish to cultivate any more. Will not the weeds grow in between 16-inch rows if you have light soil, that is, will the tops shade the ground sufficiently to keep the weeds entirely out?

Mr. Christensen: We find by having them 16 inches apart we can go through them more frequently and more conveniently then when they are planted 14 inches, and we are not troubled that way.

Mr. Smith: You say you pull them soon after the tops fall

away, you do not wait until the tops dry before you pull them.

Mr. Christenesn: We allow them to partly dry; they are still partly in the green stage when we pull them.

Mr. Smith: At what stage in an onion's growth comparatively, does the top fall over? Is it one-half, or three-fourths or more grown?

Mr. Christensen: I think it falls down when it is pretty near fully grown. There are exceptions, if we happen to have, as we did this year, have a dry season and then have a rain after the bulb has grown.

Mr. Roe: I want to ask about keeping onions directly after taking them off the field, will it be possible to crate them up, put them in, two layers wide, and pile them up under the roof, at the same time keep them there for a month or six weeks without re-handling.

Mr. Christensen: I think that is what the eastern growers are doing. I see some of them recommend piling them up in tiers, one above the other, as high as six or eight, and keeping them in crates.

Mr. Reigle: What experience have you had in growing Prize-taker?

Mr. Christensen: We have grown good sized bulbs, I think weighing two or three pounds, and still larger ones of the Gigantic Gibraltar.

Mr. Reigle: Cannot you get better prices for those than you can for the rest?

Mr. Christensen: We have been able to get a better price, but the imported ones come in competition and they prefer the imported ones to the home-grown.

Mr. Reigle: And the consumer knows the difference in some cases?

A Member: How many bushels do you get to the acre?

Mr. Christensen: From two to six hundred. We do not make any big claims.

The President: How do you keep them, in an ordinary cellar, those that you carry over?

Mr. Christensen: We simply place them on shelves about 10 inches thick in the cellar, to keep them. If you raise your own seed you are sure of keeping them, if you do not, you have to rely always on the seed you get, you will have difficulty in keeping them unless you keep in cold storoge.

Mr. Moyle: Have you had experience in planting sets in the spring?

Mr. Christensen: I have never had experience in that way; I hardly think it would pay, unless you have an early market that will take them and pay an extra price; you will find the large majority of the sets will run to seed, you can hardly get them small enough so that they will not produce seed.

Mr. Moyle: Some of the growers in our locality are growing sets by the hundred bushels for some markets, I don't know where. They are grown by acre and shipped out; I should like to know who uses them.

Mr. Christensen: Are they not used for the green onion business?

The President: We have a local market gardener who raises sets a great deal for the bunch onion trade. This same person is very much pleased with his experience in starting early in the hot bed and then transplanting. He says, while it seems a great deal of work to transplant them, other labor is saved, because there is less labor afterwards; there is no thinning and much less weeding and he gets very attractive onions for the early market, and all he has yet been able to raise are very acceptable in the local market.

Mr. Reigle: What is the wholesale price for onions in your locality, per bushel?

Mr. Christensen: We simply grow for the local trade, we do not ship, and we have been getting the last few years from .75 to $1.00 per bushel, but we retail them to the stores and do not sell to the wholesaler.

Mr. Roe: A question that has not been touched on at all is this onion maggot. Is there any remedy that can be applied, or is there any preparation on sale that will exterminate this pest?

Mr. Irving Smith: I have never heard of any remedy except to stop growing onions, that cures them. That is what they did up at Green Bay and we used to raise them by the train loads up there. The onion maggot came in and we were simply driven out of business; you could go out with a wheelbarrow and bring in the crop from one acre of ground. They will eat the onions off when they are not over two inches high and from that they will keep on, if you are fortunate enough to get a few, they will keep on until you ship them out in the fall. We will have to look to our professors I guess for some remedy.

Prof. Kohler: I believe the United States Department of Agriculture has done a little work along the onion maggot line. A great deal can be done towards controlling the maggot by pulling the onions as fast as they are attacked by the maggot and destroying them thus doing everything possible to prevent them from getting a foothold. In that manner, where maggots have been troublesome, onions have been grown twenty years on the same land. Now, I would like to ask what experience you have had with California grown onion seed as compared with eastern grown onion seed. What is the status of opinion in regard to it?

Mr. Smith: I would like to have one word on that proposition. We thought we were pretty smart a few years ago when they first came in and we found for a few years that by planting onions a little later, we avoided the maggots so we planted them later; that year they ate off the late onions. Then we learned if we planted on heavier soil, the maggots would not eat them, and we planted on heavier soil, and the maggots moved. That has been our experience, that we never knew one year what the things would do next, or where they would stop that year and personally I do not believe his conclusions are correct in that, that the pulling up of the onions would be a prevention to any great degree, from the experience we have had, I think that it is simply the fact that the maggots for some reason did not develop very freely there. When they would eat acres from one to two inches high you have quite a job on your hands in thinning them out.

Prof. Kohler: I cannot talk about this so much from personal experience, but I will say in regard to this pulling proposition, that will prevent their becoming large in numbers, they do not get rid of them entirely but I know that they have been kept down to such numbers that they could continue to grow onions successfully by this method.

Mr. Christensen: I want to say one word in regard to California and eastern grown onion seed. I am positive the eastern grown seed is preferable to the western grown, from the very fact that we have a colder climate, and the onions must be stored in the larger part of the onion growing section, it requires some selection. In California they have a climate that does not require any storing. I have seen acres of onion seeds

growing, and where they grow such large quantities, they cannot take the pains they can in growing small lots, as they do in the east.

RABBITS.

C. L. RICHARDSON, Stanley Wis.

The law protecting rabbits has been a structure of slow growth. As long ago as 1898 the hunting of rabbits was prohibited under penalty of fine or imprisonment in the county jail. The closed season has varied from time to time and varies at present in different counties. The latest law upon the subject—that of 1909—provides:

"It shall be unlawful and is hereby prohibited to take, catch, kill, hunt or pursue;

"Any rabbit, . . . between the first day of February and the 10th day of October next succeeding, except as otherwise provided, and excepting further than (that?) in the counties of Chippewa, Rusk, Eau Claire, Pierce, St. Croix, Portage, Waupaca and Waushara, it shall be unlawful to take, catch, kill, hunt, or pursue any rabbit, . . . between the first day of February and the 10th day of September next succeeding; but in the counties of Crawford, Grant, Iowa, Kenosha, La Fayette, Richland, Sauk and Vernon, there shall be no closed season for the hunting of rabbits."

"It shall be unlawful and is hereby prohibited to have in possession the green hides of any of the above enumerated animals during the closed season for taking of same and all guns, traps, boats or other implements used in violation of the provision of this act may be seized, confiscated, and sold by any warden as provided by law.

"Any person or persons found violating the provisions of this section shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars or by imprisonment in the county jail not less than thirty days nor more than sixty days or by both such fine and imprisonment." (1909)

"Any person who shall have in his possession or under his control any variety of fish, animals, . . . during the closed season prescribed by law therefor (except alive) . . . shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars or by imprisonment in the county jail not less than thirty days nor more than ninety days. Such possession or control . . . is prohibited, and the penalty attaches, whether the said animals . . . were taken within or without this state or lawfully or unlawfully taken."

"It shall be unlawful and is hereby prohibited to hunt, take, kill, or pursue rabbits with ferrets, or to have a ferret or ferrets in possession while hunting, but this act shall not prohibit such hunting upon any lands by the owner or occupant thereof, or by any person having the consent in writing of such owner or occupant, provided that such owner or occupant or any such person shall also have a license to hunt."

"All guns, traps, boats or other implements used in violating any provisions of this section and all game taken in violation thereof may be seized, confiscated and sold by any warden as provided by law.

"Provided however, that nothing contained in this section shall be construed so as to prohibit the owner or occupant of any land from hunting and killing rabbits thereon at any time without a license."

On account of the defense sometimes set up that fish and game after capture are the exclusive property of the captor it has been provided:

"The ownership of and the title to all fish and game in the state of Wisconsin is hereby declared to be in the state, and no fish or game shall be caught, taken or killed in any manner or at any time or had in possession except the person so catching, taking, killing or having in possession shall consent that the title to said fish and game shall be and remain in the state of Wisconsin for the purpose of regulating and controlling the use and disposition of the same after such catching, taking or killing.

"The catching, taking, killing or having in possession of fish or game at any time, or in any manner, or by any person, shall be deemed a consent of said person that the time of the state shall be and remain in the state for said purpose of regulating the use and disposition of the same, and said possession shall be con-

sent to such title in the state whether said fish or game were taken within or without this state." R. S. 4560.

"It shall be unlawful and is hereby prohibited for any person or persons to hunt any game of any kind with a dog or dogs during the month of November, in the counties where deer are allowed to be killed or hunted." (4560a—20. 1909.)

The state fish and game warden or any of his deputies may enter buildings, camps, wagons and practically all places except sealed railroad cars and dwelling houses, without warrant, and search for and seize any fish or game found in vioation of law. The fine varies from $25 to $100 and costs, or from 30 to 90 days in jail. (1b.a—23.)

In shipping fish or game the name and address of the sender must be in plain letters on the address side of the package, and must state the number of game inside. Failure so to do or falsehood is punished by fine, confiscation and imprisonment.

A license to hunt is required with certain limitations. "Any resident or non-resident of this state who shall pursue, hunt, kill or trap any of the birds, fowls or animals protected by the laws of this state without being at the time of such pursuing, hunting or killing, in possession of a license duly issued to him, which license shall cover the period in which he shall be so pursuing, hunting or killing such game, or who shall furnish to another person during the open season for such game, or permit such other person to have during the said open season a license issued to him, shall be fined not more than twenty-five dollars nor more than one hundred dollars or be imprisoned in the county jail not less than one month nor more than six months, or by both such fine and imprisonment. Provided, that nothing in this act shall be construed to prevent the owner or occupant and members of their families of any land from hunting and killing rabbits thereon at any time or in any manner without a license." (1489a—1)

"Any person while hunting, pursuing or trapping game shall have such license on his person and shall display the same upon the request of any person authorized to enforce the fish and game laws. The failure of any person to display such license as hereinbefore provided shall be deemed prima facie evidence of the violation of the provisions of this act."

Hunting licenses are for residents or for non-residents. Res-

idents pay $1 for such license, and non-residents $25 for a full hunting license including deer and $10 for a limited license, not permitting the killing of deer.

"Residents" are defined as those persons residing within the state for one year previous to the time of issuance of the license. The state game warden may issue licenses in his discretion to actual settlers who have been a less time in the state. (1498s—1. 1909)

Elsewhere the law provides:

"Any person who shall pursue, hunt or kill game protected by the laws of this state without being at the time of such hunting, pursuing or killing in possession of a license duly issued to him, which license shall cover the period in which he shall be so pursuing, hunting or killing such game, or who shall furnish to another person during the open season for such game or permit another person to have, during such season, a license issued to him, shall be fined not less than fifty dollars nor more than two hundred dollars, or be imprisoned in the county jail not less than two months nor more than six months." (4562a)

A following section provides similar fine or imprisonment for all residents of the state violating the law, with the following exception "Provided nothing in this section shall be construed so as to prohibit persons residents of this state under section 1498s of the statutes of 1898, under eighteen years of age from hunting, without the aid of a dog or dogs, . . . rabbits or squirrels during the open season therefor, without the payment of a license fee, on land owned or occupied as a homestead farm by their parents."

Having considered the law on rabbits the question arises: What is a rabbit? Why is a rabbit? And what are you going to do about it? He is if not a touring car, at least a "run about"—of which a new model appears pretty frequently. The 1911 model is just out, equipped with sun- and rain-proof top, pucture-proof tires, Bosch magneto—all bosh in fact—torpedo body and long eccentric springs. It is warranted to run on any road, or where there is no road at all, requires no lights and the motor requires no gasoline, will not overheat in summer or freeze in winter. Both body and running gear can be secured in white or light brown as desired.

His status is difficult to define—it is so fleeting and evanescent.

He has this in common with a partnership that all the tribe are held responsible for the actions of any member of the firm. He is not a corporation—though often invisible he has a body and sole. He is not a mortgage, although an incumbrance upon the land; he is not a cloud upon title, but a cloud upon the happiness of the orchardist. He is not the personal property of the owner of the land, for the law declares that title thereto is and remains in the state. He is not a tenant-at-will or at sufferance, for his tenure is not with the consent of his landlord. He is not a tenant from year to year for his rent day never comes around, he cannot be removed by process for tenants holding over, and there is no efficiency in an action of ejectment—he is in chronic contempt of court. He might perhaps be regarded as a covenant of warranty as he runs with the land—only the owner is not thereby assured of peaceable possession nor quiet enjoyment. He might be defined as a perpetual nuisance, equipped with a powder-puff at one extremity where the tail ought to be, an automatic self-sharpening set of teeth at the other extremity, where his brains ought to be, and in his midst, direct-connected to the aforesaid teeth, a single-cylinder, forty horse-power appetite for apple-tree bark.

The proper remedy for this pest is to spray with the celebrated sulphur-saltpeter-lead solution. A suitable outfit can be purchased at small cost and most farmhouses contain an old-fashioned outfit. From three to four drams of the sulphur-saltpeter powder in dry form is placed in the machine, rammed down and held in place with a wad of paper. The granulated lead, of about four or five size is then poured in and similarly wadded down. A percussion cap and hammer secure the discharge of the contents when desired. Then go out into the fields, orchard or wherever the nuisance abounds, direct the machine at the aforesaid nuisance and discharge the contents thereat. With a little experience, a single application will be found successful. Apply on your own premises any day in the year.

THURSDAY AFTERNOON SESSION.

A GARDEN FIFTY BY NINETY FEET.

By Mrs. WADE H. RICHARDSON, Wauwatosa, Wis.

My garden is new, only eighteen months old and very little should be expected of it for sometime, and my experience, in such work, consists in practice for one summer on an old garden which we rented.

There we had a little more than a half acre in the garden plot, and on it were forty-eight large currant bushes, two Duchess and two Yellow Transparent apple trees and four large early Richmond cherry trees. These and the well tilled soil gave us a great advantage over my new place. Forty crates of fine currants and some bushels of apples and cherries produced more than half the income of that garden.

I like to grow things, I always have some house plants. Living in a city flat I would almost try to have a little bit of a garden on a window sill.

So when the opportunity came for us to have the whole of fifty by ninety feet in a garden, we pitched into plans and work with perhaps more willingness than wisdom. Besides my natural liking for outdoors, flowers and gardening, I had a determination to try to disprove the statements you so often hear among city people, that a garden costs more than it comes to, that you can't compete with people who understand the business, or those strawberries will cost you twenty-five cents apiece when you count all the cost in time and money.

Our little patch is on a high bluff, at the back overlooking the beautiful Menomonee Valley and faces southwest on a street. The sunlight is a little interfered with on the west by a very large black cherry tree, native to the place, and our house and a neighbor's house. The soil is sandy and not very rich and the drainage is even too good. Perhaps this does not seem an especially choice place for a garden, but it delights us and it looms up like a little farm to our city trained eyes.

We laid out the garden with one walk lengthwise in the center and two crosswise about thirty feet apart.

We allowed the one-third nearest the street for early potatoes, we did not try to raise late potatoes, and all the other delightful things both hardy and perennial had to go in the other two-thirds.

The ten grape vines, two gooseberry bushes and six perfection currants are disposed along the fence of the rear portion of the garden. The asparagus bed of fifty plants is next the currant bushes in two rows on the southeast side of the patch. Just outside of the fence, at the back and near the house, we have two rhubarb plants, two of horse-radish, a little spearmint and a plant of Tarragon. On both sides of the long walk we have one row of strawberry plants.

We could not spare any more of the space in the garden for hardy things but we wanted some fruit trees. So on the lawn, instead of the ornamental shrubbery we might have used, we have two dwarf Duchess, one Yellow Tranparent and two dwarf Wealthy apple trees, and one dwarf pear, two plum and two cherry trees. We use part of the steep bank at the back, where it is springy and full of wild raspberries, for blackberries and raspberries.

Last spring the weather looked so fine in March that we were in a hurry to plant things. The land had been put in good condition the fall before, so that with little spading it was ready for seeds. We had a small hot bed made, using only three small sash not meant for hot beds, costing fifty cents apiece. For the frame we found enough boards in the cellar. Into this we put tomato, cabbage, cauliflower, cayenne and sweet peppers and some flower seeds. I had learned that the multiple onion sets do well when planted in the fall and those were really growing. By the seventeenth of March we had some of them on the table.

Fortunately a neighbor advised us to delay planting in the open ground until the twentieth of April and we minded him or the great snow storm of April would have ruined things.

We planted in rows running lengthwise of the garden rather than in raised beds so as to hold the water better. Lettuce, the May king, we put in a short row and later transplanted from it. Radishes, onions, parsley, Swiss chard, beets, carrots

and early potatoes went into the ground about the last of April. By the middle of May we had one planting each of early red valentine beans, wax beans, bantam corn, little gem peas and all of these we planted again at intervals of two or three weeks till July fifteenth. May twenty-sixth we put in two twenty foot rows of pop corn which yielded one peck of fine corn.

We started our osage melons and cucumbers under glass in an ordinary soap box and transplanted them in their places in June. They take more room than some things. The melons had about fifteen by thirty feet but they did very well. The Kentucky Wonder and Lima beans were planted the latter part of May. There was a row and half, about forty feet of lima beans, which produced abundantly. We had all we could use fresh and three pint cans for the winter.

The space about the hills of melons was used for transplanted lettuce, which all came out before the melons needed the room.

June is a busy month. Transplanting tomato, cabbage, cauliflower and the other hotbed plants must be done then and the weeds kept down. Okra, leeks, Brussels sprouts, celeriac, celery, garlic, more onions, summer squash, Hubbard squash and pumpkin were not forgotten though not given much room for each.

Between that merry-go-round of crops, transplanting, weeding and guarding against pests, June and July were spent, but we did not give all our time to it by any means and we did not hire work done. A little while in the morning, an hour or two in the evening or after a rain and things did well.

Gardening was so new to me that I was unacquainted with some of the pests which were preparing to bother us. I had to be introduced to the cut worm, but having seen him I studied it a little with murderous intent. I learned how to find him by the little wreck he leaves, caught one at work and found that he did not reach the stems of my tomato and cabbage plants much above the ground. I did not find anything that would kill him but something heavy on a hard piece of ground, but when I put in my cauliflower and tomato plants for the third time, I wrapped the stems loosely with a little, two inch high, collar of writing paper about where I thought those dark grey

enemies would attack them. Although this would be too much trouble in a large garden it baffled the worms that time.

The potato bugs were even more intent upon ruining three egg plants and two wonderberry plants someone had given me, than upon eating up the kindred potato plants.

We felt ourselves quite well informed upon this old trouble and gaily dosed the plants with Paris Green. Reasoning that if some is good more would be better we thoroughly sprinkled them with a solution of one large table spoonful to two gallons of water. Some neighbor, passing that day, remarked in a very superior way upon the vivid decoration of the patch. I immediately put on my thinking cap and concluded it was time to get out the garden hose. It helped some. I didn't have many potato bugs and I didn't have many potatoes.

The green aphis did not trouble us, perhaps because there were so many of those nice lady bugs in the garden. The cabbage troubles I do not yet know how to control. We had a fair crop from that family but not what we should have had.

The tomatoes were too thrifty for pests. They were tied up to stout stakes so as to allow crowding and the ground was often hoed about them. The Child's Diamond tomato grew to great size, many weighing as much as a pound, and one, one pound and six ounces. The value of the garden crop was not high as none of the hardy things were bearing fruit, but I kept a daily account of all that was gathered for the house, either for summer or winter use, and at the market prices it amounted to a little less than thirty-five dollars. I saved seed, also, from everything as far as possible.

The expense of the plowing, the fall spading, the fertilizing and the seeds was nearly fifteen dollars.

Possibly this does not look like a very good business proposition to men, as we probably did not pay the taxes, the interest on the investment and expense of the garden fence in the one summer. But a woman's time has small money value and if she can do all that is expected of her in the house and with a little help on the heaviest work, take care of a garden, no matter how small, she can make it pay.

City people are afraid of the tools that are needed. A hoe or a rake is a dangerous thing only fit for a hired man and a spading fork means wreckage. Used in moderation, a short

time each day, with care at first, they are perfectly safe tools for women and their use will greatly improve their health, add to their comfort and reduce the price of living.

Mr. Soverhill: How many pies did you make from the Wonder Berry?

Mrs. Richardson: I did not think very much of the Wonder Berry at the beginning and when I got through I thought less of it.

PLANTING AN ORCHARD.

The A B C of Starting an Orchard.

Mr. Coe: We have not made any arrangement as to how this subject shall be divided, but it seems to me that the best thing to be considered is of course the site and the preparation of the land. I want to say first, however, that all people who consider themselves horticulturists are not fitted to be orchardists. A horticulturist must have a lot of energy, he must have a lot of perseverance, he must have a lot of enthusiasm, and an orchardist must go a little further than these things, he must have a lot of imagination. No man can go into any business and make a success of the business without he has imagination. He must be able to look forward to the time when that business shall be completed and be put on a paying basis. So then, the orchardist must be not only a horticulturist, but he must be a little more; he must not only have all the requisites for a horticulturist, but he must have in addition to that a lot of vivid imagination.

About the site for an orchard, there seems to be quite a difference of opinion, and yet the orchardists themselves are pretty well agreed that we should not plant one a south slope, that we should have a good soil, in other words, we should have a limestone soil, or a clay, that we must have our orchards so situated that they will have good air and soil drainage. I am

not so particular whether this orchard is planted on a hill side or on a slope. I would just as soon have an orchard on level land, provided always that it is upland; so that we have good air drainage. I would object very seriously, however, to having a sharp, or even a very moderate south slope, because of the fact that trees on the south slope in the spring get the warm air and the sunshine and they start to grow, or the sap starts a little bit on the southwest side of the tree, and a sudden freezing at night bursts the sap cells and then we have the loosened bark. A safer plan to have an orchard preferably on a north slope, or east or west slope, or on elevated level land. The preparation of the soil I consider quite an important item. If our soil is such that we can plow deeply, the deeper the better it suits me, because we want to have our soil in condition that it can take up a lot of water and will hold this water, and the deeper we have this soil, before we get to the hard soil below, the more it will hold, therefore we have a greater supply of water in reserve, so that our trees, when summer time comes and dry weather, as it almost always comes during some part of the season here in Wisconsin, we will be able to draw upon the moisture that is in the soil. Then there is another factor in having deeply prepared soil. We all of us know, I suppose, that soil washes, and if we have our orchard on a hillside, it washes under two conditions more particularly. One is when we have an excessively hard rainfall so that the soil cannot take up the water as fast as it comes and then it runs off and we have the washing. Another one is when we have a rainfall, it may be long continued, but when the soil gets full of water, gets thoroughly saturated then, of course, it must begin to run off, and when it begins to run off, then we have the washing of the soil. The deeper the soil we have, the more water it will take and hold, and the less liability we have of washing. So that it seems to me that we want the soil deeply plowed and very thoroughly worked. I would like to have it plowed in the fall, leaving it rough, and in the spring, just as soon as the ground is dry enough to begin to cultivate, cultivate the surface, harrow it so as to break up the crust that naturally comes on top of the land, to hold the moisture that we already have there, and this should be done several times, and when the time comes for the planting of the trees, then of course our soil is in good

condition, it is in good tilth and it is holding moisture that has come with the winter snows and the spring rains and our trees are enabled to get the full benefit of the water that is in the soil. Soil that is handled in this way is of course much warmer than soil that has not been so handled.

Mr. Bingham: I should like to say a word in regard to the selection of a site for an orchard. The selection of a site seems to depend a great deal upon the location; that is, the locality in our state in which that orchard is going to be planted. For instance, if we plant an orchard in Crawford county, I would not necessarily put any on high land on the top of a ridge, that is, I would not take a south slope in that location, not an abrupt south slope, but in Door county, where the general land elevation is about equal, I would plant on a south or north or east or west slope, practically no difference, because we have a good circulation of air and it is about the same temperature on all slopes, not an abrupt slope perhaps, but any slope that we have in that locality. As Mr. Coe says, we want air drainage; that is the principal thing in the selection of a site, air drainage, enough altitude for a good air drainage, then the slope does not matter so much, if it is not too abrupt.

BEST SIZE AND AGE OF TREES, APPLE AND CHERRY.

Mr. Bingham: It has been our experience in planting to use a well grown tree, what I mean by that is a tree that has grown thrifty from the start. We like a tree that has grown to the planting size as soon as possible. If a tree can be grown to a planting size in one year, we would like a one-year tree. If the average practice is two years to grow a good tree on good nursery soil and not over large, a two-year old tree is all right. In regard to a cherry, especially, I think there is practically little difference in one and two-year old trees. One point in regard to one-year cherry trees, the top starts generally at about a foot to fifteen or eighteen inches and we have a little different problem brought before the planter than in a two-year tree, and that is in regard to the forming of the top. We find that if the top starts low, we have a chance to remove some of those bottom limbs, which are almost always vigorous. The average planter does not know that the bottom limbs take too much of the growth of the tree and they will circle around the tree so

that they cut off entirely the circulation of sap. We like to remove the bottom limbs alternately, so that we get a circulation. The pruning of the roots is of importance. With trees dug in the fall and buried in the ground all winter, I would not touch the roots in the spring. If the nurseryman has dug those with the tree digger, the wounds are not very bad, I would leave them the way the nurseryman has dug them, burying them in the trench, taking them out in the spring and planting without any root trimming. If we get trees dug in the spring, I would prune the roots.

In regard to the care of the orchard; perhaps the best tools to use in the orchard are the spring-tooth harrow and a little gang plow. If our orchard is plowed in the spring when our trees are planted, we do not plow the ground any more that season. In the case of our soil we sometimes have Canada thistles and we turn those under; if in any stage the weeds bother, we put in a gang plow and turn the weeds under, giving us a good chance to cultivate again without the harrow. Cultivation otherwise than that depends largely upon the man that has the orchard planted. If he wants to put in a cultivated crop, it is all right for the orchard if the land is rich enough to produce several crops until the trees are several years old. He can grow a crop of beans and perhaps a few rows of corn. Corn is not good on account of the shade it furnishes. We found our foliage mildewed in a heavy crop of corn, where if we had left an entire row out of the corn, we would have had perhaps better success. Those crops can be rotated. Sometimes we use spring peas. The moisture that we have depends largely upon the crop that we grow in the orchard, we want to give it thorough enough cultivation so that it will hold the moisture. We do not want to put anything close enough to the trees to use the moisture the trees should have. Therefore with peas we leave about four feet on each side, then running a cultivator over that land, each side of the trees a little oftener than we would if we had the orchard all open for cultivation. That gives us plenty of moisture for the first year's planting, ordinarily. Now, this line of peas should be spread straight enough so that the space would be uniform.

Mr. Kellogg: How long would you recommend the cropping of an orchard that way?

Mr. Bingham: That depends upon the condition of the land. If my land were level enough so that it did not wash any, and I had only a small acreage, I would crop that land for about four or five years. Say the first years we plant five rows of potatoes in an orchard, in which the trees are twenty feet apart, and then we will plant a row of beans along the tree rows. That will necessitate hand work in the tree row. If you cultivate the ground, you might as well have the row there and pay for the labor in caring for the pea crop. The second year we can plant five rows of beans, we can plant closer together than potatoes. The next year, if we planted potatoes again, we would plant only four rows between the trees, because we need to have more room for the trees. The next year we would have only three rows. It is doubtful if it pays to have the three rows, although we have employed those rows in some of our home orchards. We find that the strawberries are detrimental. When you fruit them it checks your orchard trees as it takes out more moisture than the orchard can spare.

Mr. M. S. Kellogg: Mr. Bingham spoke of trees being buried outside as being preferable to trees that have been in storage. Do you believe that the spring-dug trees standing in the nursery rows are preferable to stored trees.

Mr. Bingham: I could not say positively. I will say this, that I have received trees badly injured that were dug and stored. If they are grown in a climate that does not injure them in the winter, we are not so apt to get them on our farm in an injured condition. That is in the control of the nurseryman handling that stock in his packing house. If he has in the packing house practically no evaporation, he can handle trees all right, but sometimes they are injured. We do not know anything about how they are handled; we know they come to our place in an injured condition.

Prof. Moore: I should like to ask what objection Mr. Bingham has to an open-centered tree for Wisconsin?

Mr. Bingham: The only experience that we had along that line that led us to adopt the other method was that in an orchard of five acres, where the leader was cut out after the trees had been planted for about four years, and the man has had a great deal of trouble with the breaking down of trees. The use of wire became necessary in order to hold them up. That trouble was not experienced with orchards where the leader

was left in. Now, that might have been done too late in the life of the tree. The leader of the cherry, in fact, is entirely lost after they are planted out.

Prof. Moore: I refer to the apple, of course; the cherry is a better centered tree.

Mr. Bingham: We find the same thing true in an apple orchard in our place, that we lose that leader in a few years after planting, and we leave it on simply to run the side branches a little higher than we would if we cut it out.

Prof. Moore: It seems to me that in our climate, and with the fact that we need every bit of sunshine we can get in the top of the tree, and if we grow what is known as a close-centered tree, it has a tendency to close up the top. I can see why the gentleman you referred to had difficulty in cutting out the central leader after four years. The time to cut it is when it is planted, or when it is in the nursery. When you cut it out at the end of four years you leave a hole in the tree. In filling up the frame work of the tree, those branches should be cut out at the time the tree is set, if not, you will have difficulty ever after, particularly if it has lived more than two years. Now, if you cut out that central leader and branch your trees just the same as you have in the apple, take out the central leaders, you make your trees more open, you get what is known as an open center, and you would not have any more difficulty with your trees breaking down than you will if you leave in that central leader.

Mr. Palmer: In my experience in planting, when I began I used to cut back as severely as that, and each year I cut back less, and each year I found that where I left the limbs I could get a better shaped tree, and I do not see why they do not live just as well, if not a little better. I have been wondering whether we were in the right track in cutting off the entire top of the tree because we cut the roots off. I would like to ask the Professor where the growth starts, at which end of the tree? The root or the top, which starts first?

Prof. Moore: The top starts first, because you have stored food in your plant. Take the fruit crop which you get next year, for the development of those buds the food is already in the plant tissue, just the same as there is enough food in those trees for the working of the tree to start at once after the tree

Apple trees twelve years old, set one rod apart each way. They are just beginning to crowd and it is already difficult to drive through with a power sprayer or to handle the spraying poles properly among the trees. The same condition would prevail at twenty feet apart with the orchard sixteen years old. The proper spraying and management of such orchards becomes more and more difficult with each added year after they have reached the stage illustrated.—A. R. Kohler.

is set. Now, you remove from that three-fourths of the root system, leave all the top, it is like a man going on a one-third ration, just exactly, so we have got to cut down the top in order to equalize the roots and the top.

A Member: I would like to ask what the accepted practice is in regard to the distance that standard apples and cherries should be planted apart.

Mr. Bingham: I think from the opinions that have been expressed here that 25 feet for apples in Wisconsin is about right and for cherry we are planting 20 feet square. We find that is plenty of room for at least 13 to 14 years.

A Member: You do not say anything about fertilization. I would like to ask whether before setting out the trees you would give a good coat of manure and plow that under, and then the following spring set out the trees?

Mr. Bingham: I would not delay the planting because my land was poor. I believe all soils have enough fertility to produce fairly good wood growth the first year. I would plant my trees, putting in a cover crop, and getting what fertility I could after the trees are planted. A gentleman had a farm that he got hold of that was rather poor, and he said, "Now, shall I delay my planting one year and put in a crop of oats, seed that land down and cut a crop of hay?" I said, "I don't believe I would, because the trees will get a good growth the first year, get your trees out and fertilize afterwards, and you can keep them growing right along." If you are growing potatoes I would supply enough fertility to make a good crop of tubers.

A Member: In a dry season, would you plant potatoes?

Mr. Bingham: If you keep a good dust mulch you can grow a good crop of potatoes in your orchard. In planting cherry trees, fall planted trees taken from the nursery row, buried in a trench at our place, taken up in the spring, we made 3463 out of 3475 live. We planted 100 spring handled stock, and we lost 5 out of 100, and we cultivated that orchard with a potato crop and beans along the rows.

THE IMPRPOVEMENT OF RURAL SCHOOL GROUNDS.

By Mr. W. E. LARSEN.

I wish that this society might have a portion of its time, if that were possible, set aside every year to discuss the school problem, because this society can do a great deal, and it can do more than it realizes in this respect. We want to keep this in mind, that one of the big things that we are working for is the making of happy and beautiful homes, that is really what we are working for, is it not? Now, do you realize what part the school plays in this matter? Remember that the boys and girls who are going to the schools are going to be the home makers of the future. We are trying to instill into the minds of these children ideals that will make them have beautiful homes. They spend six hours of the day in the school room, and it makes a vast difference whether that school room, that school house has an elevating influence, an esthetic influence, or whether things are bare.

There are a few things we want to keep in mind. First, that some of our school grounds are not fit for decoration; they are too small. Do not try to plant things if the children have not enough ground to play on. We must have playgrounds first of all. And so in many localities the first thing that ought to be done is to get a larger school ground. Then, do not try to plant trees or shrubs or vines if the cattle are running on the school ground. We must have a fence of some kind around it in case conditions demand. Then another thing, many of our schoolhouses are situated in such places that it is not really worth doing much, in other words, the school site is the most worthless place in the whole community. Where we cannot raise anything else, we put the schoolhouse, not always, but there are such places. We must have conditions such that we can fix things up. Then another thing, we ought to have some definite plan in improving school grounds. We ought to put brains into this work as well as into all other work. We ought to look forward ten to fifteen years, how these things are going to be after that. You have got to have the imagination that has been spoken of, you have got to see in your mind's eye

how that thing is going to look after those trees and shrubs are growing. I think that you as a body of men and women perhaps have better ideas as to how things ought to be than most other people, because you have had experience in planting trees, you are specialists, and so you can be of value in a community in doing this kind of work.

There are a few principles that ought to be kept in mind in planting school grounds. You want to get as close to Nature as possible, and Nature does not set things out in squares or in fives, and then you have got to study the surroundings. Landscape gardening is an art; it is different from orchard planting, and so in planting trees and shrubs in the school grounds you want to get as close to nature as possible, and the same thing applies to planting in the yard, you do not want the plants in line.

Much can be done to improve the looks of the school grounds by fixing up the outbuildings and planting vines. Another thing that has to be counted on before we go very much further, and that is, what is going to happen to these things during the summer time. It is all right to get together on Arbor Day and be enthusiastic, but what are you going to plant? By summer time, when school is not in session, who is going to look after those things? Now, that has got to be planned on. I am not going to suggest how to go at that, but some provision must be made so that those trees be looked after during the summer. Then in the fall again somebody ought to be on the schoolgrounds and fix them up. The grounds ought to be mowed and things cleaned up.

I want to call your atention to two things from a teacher's standpoint why we ought to have good schoolgrounds, beautiful schoolgrounds. There are several reasons, but I will mention two. First because of the esthetic value that comes from having them, that is, if you have things beautiful you are instilling into the minds of the children during those years ideals of the beautiful. They are going to have more beautiful homes in the future, if they have beautiful surroundings in school.

There is another reason. Those surroundings in the school have themselves an educational value. If you have school grounds, for instance, on which you will have say a dozen different varieties of trees and schrubs, the children get acquainted with those things, and the more we get acquainted with in life the

better educated we are. It is not enough that we learn books in school, we ought to learn things, and if we can put on the school ground real things and get the children acquainted with them, we are adding to the educational facilities by so doing.

I want to say a word in regard to school gardens. That is a subject that is brought forward a great deal. As a general proposition I do not advocate school gardens. I will tell you why; it is pretty hard to make a success of it, the conditions are not such that we can make a success of it at the present time The school gardens can be made a great thing, but in the first place we lack teachers who can do the work, and in so many places we have not the educational interest back of it in the community, but I do suggest this,—I believe that it would be a good thing for the children to have a home garden. If each one were encouraged to have a little garden of his own at home, a small bed, and raise something for the purpose of selling the products, that is a splendid idea and that is something that is practical, but of course that lies largely with the home, although the teacher can do a great deal in stimulating an interest in that direction. I want to tell an experience that will illustrate in a great measure what can be done, if you will get the right kind of a teacher.

Up in Sauk County there is a young fellow who has an unusual amount of ambition, who took hold of a school at $35 a month, that is about what we pay for teachers. He started to build himself up professionally, and he went in and did excellent work, he was an excellent teacher, and he got those children interested in the school grounds, began to fix up the the ditch in front of the school; the children brought implements to school and they were working during the recess and noon hours fixing things up. They caught the inspiration that he had for cleaning up the yard, cut down the brush, that is of course the first thing to be done, and they got that school in fine shape. They sodded it down where it was necessary, got things growing and everybody was interested. Last year when they came to hire a new teacher they offered him $50 a month, he did not have to go around and ask for the school, they had found out that they had somebody that was worth more than $35 a month. He is now teaching there for $50 a month and he goes on with the good work. Now, then, the effect is that every time a parent goes by that school he is proud of it, he feels a pride in that

school, not only that, but every time a parent goes by that school he gets suggestions for improving his own home. We have no idea of the influence we have in our community if we live a beautiful life, if we surround ourselves with beautiful things. Much can be done in every community wherever the conditions are such that anything can be done, and you, being in this work, can do much by giving your ideas and suggestions, and especially if you are on the school board, and if you have men on the school board who will do nothing in your district, go to the school meeting next year and vote them out and get those in who will do something. We have got to get men and women into this work who believe in the school, who believe in the influence of the beautiful.

That is about all I have to say. I would like to have a few give a little testimony here. As you know that the Horticultural Society has taken charge of a few schools throughout the state, and I would like to get a little testimony here as to what has been done in your community, if anything has been done. I am here to get suggestions and ideas, just as much as to give, because I am meeting schoolboards every day, practically, and they are asking questions, and if I can tell them of things that have been done, I am making myself very much more useful. One of these schools is located in Door county, and I would like to ask Mr. Cranefield to tell us about it.

The Secretary: The hour is rather late to enter into any extended discussion of this work. I outlined it briefly in my annual report which I read to you yesterday morning. There are seven schools located in different parts of the state, one each in the counties of Sauk, Grant, Door, Manitowoc, Dane, Fond du Lac and Waukesha. The work is progressing very slowly, it is an immense field, it will take us ten years before we will make any great impression upon the school grounds of the state. That is no reason for discouragement, and I feel absolutely certain that if we continue along the lines suggested by Prof. Larsen, that we will win out in time. But it takes time, slow and careful work is necessary; it is quite possible that we have scarcely begun on the right lines, but if we find we have not we will back up and begin over. We are not afraid or ashamed to admit where we are wrong. It is not as if an individual were working, it is not as though a schoolboard were working, it is the State Horticultural Society that is back of it with its prestige

and experience gained through fifty years, and I know we will be able to accomplish a great deal in time. I do not care to go into details at this time as to the work, I hope to be able to inform you through the pages of Wisconsin Horticulture in regard to the work more in detail.

The President: I think Mr. Cranefield has allowed himself to dwell on one side and not on the other, and I wish that he would tell what he has told some of us about other districts who have taken up that question and are acting independent of any action of the society any more than to look to the society for information and inspiration.

The Secretary: I would be pleased to do that if I had the data here. I said, I believe it is rather a slow process, I will stick to that. But I will say, although it apparently contradicts that statement, that the spirit is at work, it is moving in the state, and I feel certain that if we were to make any general announcement throughout the state that we would furnish help to all school districts that ask for help in this line, we would be overwhelmed with applications, it would simply take another office force to take care of it. We cannot do that. I might mention that I have just completed a little plan for a school district which has applied for help, way up in Sawyer county in the Thornapple region. We are all more or less familiar with that region. They have a schoolhouse located 14 miles away from a railroad, and ask for aid in improving their school grounds, and we have made some suggestions and sent some plans. We had an application from a school district just over the line of Dane county, in Rock county, last spring, a consolidated school which has purchased, not four rods, or a quarter of an acre, but *four acres* of land for playgrounds for its children and placed on that a $15,000 school building, and when it was done they called on us for aid to help improve their school grounds and we have given them such aid as we have been able to do with our limited office force. We have applications from all over the state, in spite of the fact that we have never made any general offer to furnish them help, so that I am certain the spirit is moving.

I am also reasonably certain, as I consider the work more fully, that we need to revise our original plan. The crying need of the rural schools of Wisconsin is not so much the planting of shade trees and flowering shrubs and roses and vines,

which after all more or less encumber the limited space which is allowed for the children,—it is more extensive playgrounds, it is space where the children can go out and run and play that we need more than we do really the decoration of the school grounds. I dare to say, and without fear of successful contradiction, that on the average the school children of Madison, where real estate is worth anywhere from $25 to $1,000 a front foot, have more extensive playgrounds per pupil than the average rural school of Wisconsin. According to my observation, the rural schoolgrounds will average considerably less than one-half acre in extent. It is disgraceful, it is a reproach to the people of the state of Wisconsin. It is not necessary for me to go further into that, or say more. Prof. Larsen said it better than I could hope to say it.

A Member: One question I would like to ask Prof. Larsen is this,—what would he consider a model schoolground, I mean now, how much land? What do you consider, under ordinary circumstances, a model size?

Mr. Larsen: Well, there is no specific amount. The recommendation of the state department is that the school ground ought to be at least an acre, and there are a great many school districts in the state, I am glad to say, during the past two or three years especially, have been adding to their school grounds.

The President: In our own district we have now more than two acres, and we want still more. We have plenty of room for decoration, but not quite enough for playground.

Mr. Larsen: I should think an acre ought to be the least. Of course if you can get more you should do it, because the land is increasing in value all the time, the time will come when the next generation will want more; very likely you can buy it cheaper now than any other time, and the schools are going to improve in the future. We are going to do some great things during the next twenty-five years, there is no question about it. I want to call attention to one thing right here, we might as well face it now as well as any other time, the time is coming when some of these smaller schools will have to be abandoned. The governor in his message today made mention of the fact that there are 97 schools in the state of Wisconsin with an enrollment of five children or less, and there are nearly 400 that have an enrollment of less than ten. Now, of course, we love these little schoolhouses, but we all love our children

more, and in some of the thinly settled districts of the state, where real estate has a good price and where people can afford to give their children a good education, the time is coming when that sort of thing must be done away with, and we have got to have consolidation of some kind. Now, we are not preaching consolidation promiscuously, saying, consolidate here and there and everywhere. I know enough about the state of Wisconsin to know that that is entirely impractical and unwise, but there are places where we ought to close up our schools and make provisions to send our children to some other place where we can afford to have a good teacher, because you cannot get the teacher who will be a good teacher who would be satisfied to stay with half a dozen children, and so in places of that kind we ought to consider not so much the fixing up of the grounds that we have, but the best interests of the pupils along educational lines.

SOIL MOISTURE AND PLANT FEEDING.

By PROF. F. H. KING.

The higher value of a crop per acre the more important become intensive cultural methods and the more essential it is that every factor of growth be made to exert its maximum influence on the crop.

The greater the acreage cost of maturing and marketing the crop the greater should be the attention paid to every factor which influences yield in quality and quantity.

The more capital there is permanently invested in appliances, and the more labor and other expenses are necessary to secure and market a crop, the more important it becomes that all soil conditions be maintained continuously at the best, and that a good crop shall be positively assured.

Horticulturists as a class are engaged with crops having a high acreage value, which require relatively large acre costs; a large permanent investment and a large current expense. To them, therefore, the best possible growth conditions must be peculiarly advantageous and poor growth conditions correspondingly unfortunate.

Soil moisture in abundance, continuously maintained, is an indispensable factor in the growth of any crop. It constitutes from 70 to 90 per cent of the actively growing part of every plant. Through the action of light in the green of leaf, water, entering from the soil, and carbon dioxide entering from the air, react to produce the largest part of all the substances of plants. No plant food in the soil is available to the crop until it is dissolved in the soil moisture, and through its solvent action and its movement through the plant, water conveys all plant food to the tissues and distributes it to the growing parts. It is not strange, therefore, that the right amount of water in the soil is so important a factor in the production of large yields.

But important and large as is the part water plays in crop production, it is powerless to produce results if other essential factors are absent or are not sufficiently abundant. When phosphorus, potassium, nitrogen or any other essential plant food element is deficient in the soil, an abundance of soil moisture will make the crop the largest possible under such conditions, but not as large as it could have been had other plant foods been abundant. On the other hand, it matters not how plentiful other plant food substances may be in the soil, the crop must be limited by the amount of available water. When all plant food substances are continuously abundant the size of the crop is limited by the number of plants and their ability to feed and grow.

In our ten-year measurements of the amount of water used by crops it was found that, in average round numbers, about 450 pounds of water must be taken from the soil and most of it passed through the crop for each pound of dry substance produced above ground. With good soil conditions and an abundance of plant food it was possible to secure yields from ordinary crops of six tons of dry substance per acre. Six tons of dry substance means 24 tons of sugar beets, with tops; it means 7 tons of hay containing 15 per cent moisture; 92 bushels of wheat with straw, and 756 bushels of potatoes, with vines, per acre. These are large yields but nevertheless possible and practical under intensive cultural methods when there is an abundance of plant food and soil moisture maintained. But the right amount of moisture means about 4 inches of effective

rainfall for each ton of dry substance produced, or 24 inches during the growing season. We get less than this and it is not distributed so as to be most effective.

In China and Japan, where they must raise large crops every year or starve, they have been compelled to irrigate although they have a larger summer rainfall than we. More than half of the cultivated lands of Japan are irrigated every year, but they also fertilize high, applying, on the average, from 3 to 5 tons of manure in some form, per acre, every year.

We do not sufficiently appreciate in our practice that to double the crop on the ground we must at the same time double the crop feeding. This means that the soil must turn over to the crop double the amount of nitrogen, phosphorus and potassium, and that double the amount of soil moisture must be taken up and passed through the crop. Abundant harvests occur only where there is abundant moisture and abundant food at the time when the crop does its most rapid feeding and most rapid growing. If either soil moisture or accessible plant food or both be deficient at the critical period a reduced harvest is inevitable. The Chinese and Japanese, always working small areas, watch these critical periods with the greatest care and whatever may be deficient they make a desperate effort to supply at just the right time.

Then where large yields are expected it is very important to understand that less water is required for a crop, in proportion to the yield, when the soil is abundantly rich. We found that when in abundantly rich soils, corn, oats and potatoes used an average of 355 pounds of water for each pound of dry product, on the same soils, after they had become impoverished by repeated cropping, the same crops used an average of 625 pounds of water for each pound of dry produce.

It is also true that a continuous abundance of soil moisture will permit a soil poor in other plant food to produce the largest possible yields for such conditions, and from this it follows that where there is an especially rich soil an abundance of soil moisture is extremely desirable, and that where the soil is poor it is doubly important that the soil moisture should be kept at the best amount.

Where all plant food substances are in great abundance in the soil yields are almost exactly in proportion to the amount of moisture which can be supplied to the soil without making

it too wet. Thus, we found, in our trials, that corn gave a yield of 11,000 pounds of dry substance; oats 8,000, and potatoes 7,000 pounds per acre when about two inches of water more than that contained in the surface four feet of soil at planting time, when it contained the best amount for growth, was given; but under identically the same soil conditions except that the soil moisture was kept constantly at the quantity for best growth, the corn produced 16,000 pounds per acre, instead of 11,000; the oats produced 18,000 pounds, instead of 8,000; and the potatoes produced 12,000 instead of 7,000. But the amount of water used per each pound of dry substance produced was very nearly the same in both cases.

With a combination of high fertilization and complete control of soil moisture it is practicable for market gardeners to increase their yields per acre by planting closer on the ground than is the usual practice, and this has long been regularly done in China and Japan. We found potatoes for the early market planted in rows one foot apart and with the hills in the row less than this distance. String beans are similarly planted, and cucumbers are grown in rows 28 inches apart with a plant every 8 to 12 inches in the row, the vines being trained on trellises. But these practices would be entirely impossible without high fertilization and a complete control of soil moisture.

In our trials with cabbage, only moderately fertilized, where the plants were set 30 inches apart each way, the yield per acre of dressed heads was 15.3 tons; but where planted 30 inches by 15 inches, the yield was 23.3 tons per acre of marketable heads, and the total green weight of the crop in the two cases exceeded 39 and 59 tons respectively.

There is still another great possibility of increasing the annual returns in market gardening where there is a complete control of soil moisture, and this is in the growing of multiple crops, a practice also long and generally observed in China and Japan.

We found, in the province of Nara, Japan, the farmers following a rotation practice covering five or six years in which they grow four or five consecutive crops of rice, yielding 59 bushels per acre, worth $90. After harvesting the rice the ground is fitted and planted with barley in November, always in rows and usually in hills in the row. Early the next spring soy beans are planted between the barley rows. When the barley is harvested its usual yield is 55 bushels per acre, worth $36.

The soy beans are cut green as a fertilizer for the following rice crop, the usual yield being 5 and 6 tons per acre. After the fourth or fifth year of this rotation the ground is planted to melons or some other garden vegetable, from which they realize $160 per acre. They are thus realizing from a general farm practice a yearly earning of between $126 and $160 per acre, but this would be impossible without their practice of high fertilization and irrigation, notwithstanding they have a larger summer rainfall than occurs in the eastern United States.

These lines of advance in agricultural practice must become more and more important in the United States as the country grows older and more populous, and hence it is very important that our nation, in laying plans for the development and conservation of our water resources, should include agricultural interests in the policy, with a view to securing perfect land drainage and supplemental irrigation in the eastern part of the United States where the questions will come to be of far greater importance to the nation as a whole than they ever can be in the west where water for irrigation is so limited.

When we shall have learned and acquired the habit of maintaining in our soils all of the plant food a maximum stand of the crop on the ground can utilize, then water, if only supplied in the form of direct rainfall, will always be the limiting factor of yield and we shall never be able to reap, year by year, the largest harvests until we arrange to supplement the rainfall at critical periods.

There is, however, great room for improvement in the methods of soil management aiming to better conserve and utilize the rainfall we do get. Here is where growers must begin and must continue where water to supplement the rainfall is not available. Let us consider the orchard feeding problem. It is by no means a simple matter to plan the practice which shall prove best for a given orchard. Suppose it is an apple orchard brought to the age where it should produce 400 to 500 bushels of apples per acre each year. What will be its probable needs for water? Four hundred or five hundred bushels of apples would contain 4,440 to 5,500 pounds of dry substance and there would probably be produced at least an equal weight of leaf and twig, making in all 4.44 to 5.55 tons of dry product, which would require not less than 18 to 22 inches of rainfall to mature it, at

the rate of 450 pounds of water per pound of dry substance, or at the rate of 4 inches of rainfall per ton.

We receive at Madison, between May 1st and October 1st, an average of nearly 18 inches, so that during about one-half the years there may be sufficient rain to produce 400 bushels of apples per acre, provided there is no loss of water by drainage, no unnecessary loss by surface evaporation from the soil, and provided the soil carries an abundance of other plant food easily within reach of the roots of the trees.

What are the comparative merits and efficiency of (1) clean cultivation alone; (2) clean cultivation and mineral fertilizers; (3) clean cultivation with animal manure; (4) cultivation and cover crop plowed under; (5) sod with grass cut and left where it grew; and (6) sod with grass cut and used as a mulch around the trees, on the physical condition of the soil; on the maintenance of plant food, and on available soil moisture?

In our field studies in four states we found, for each of 8 soil types, that the amount of moisture at the end of the growing season, under clean tillage, was less than the equivalent of half an inch of rainfall greater than it was under a crop of corn growing on one side, and under a crop of potatoes growing on the other. The soil had received the same cultivation in the three conditions, a three-inch mulch being developed after every rain until the corn and potatoes were laid by, and often enough to keep the land clean, continuing the cultivation on the fallow ground until near the end of August. We also found that the evaporation of moisture from uncultivated, continuously moist soil was but 1.7 inches less, during 100 days, than it was from the same area of soil bearing a crop of corn which yielded at the average rate of 13,881 pounds of dry substance per acre.

These results may seem to contradict the general teaching regarding the efficiency of earth mulches and the value of cultivation to conserve soil moisture. They do not, however, and they have a very important bearing upon the practices of orchard management which have been specified. So soon as soil becomes very dry it is extremely effective as a mulch but so long as it remains moist it conducts water rapidly and the evaporation from it may be much faster than from a free water surface. The year of the experiments cited was one of even distribution of rainfall in the four states, which amounted to between 18 and 22 inches for the growing season, so that although the fields were

repeatedly cultivated to restore the mulch, and after each rain, the mulch effect was destroyed often enough to permit the total loss of water by evaporation to be nearly as great as it was where the crops were growing. The crops dried the surface soil, so much more than the fallow ground did, that under the crops the mulch was more quickly restored and more effective than that on the fallow ground.

From these facts it follows that growing of a crop in the orchard does not deplete the soil of its moisture so much more than the losses from naked cultivation would, during those years when the rainfall is good and well distributed, as might at first be expected. But in regions of small rainfall, and during seasons of drought in humid climates, and especially when the intervals between rains are long, the growing of a crop in the orchard must have a very pronounced effect upon the moisture left available to the trees, because the crop must take not less than 2 to 4 inches of rain for each ton of dry produce per acre. The average amount of water carried in the surface four feet of the soils we have cited was only about 13 inches, and less than half of this can be used by the crop, and still leave the moisture content sufficient for rapid growth.

If, however, the orchard is in sod and the grass is cut three or four times during the season and left where it falls, there occurs a week to ten days between each cutting when the soil is under a very effective mulch and when the evaporation from the crop is relatively small, so that we need not be surprised to find a critical test of the question to show that this type of orchard management, may really conserve quite as much or even more moisture, in humid climates, than does naked tillage, and there are other very great advantages associated with this method. Whenever rains come, even though they be heavy, and where the surface may be far from level, the rain is compelled to enter the soil where it falls, causing it to be uniformly wet and no washing or injury to texture can result, as may be the case with naked tillage. Besides this, the water is likely to enter the soil more deeply and the cut grass provides an effective mulch the moment the rain ceases, except in so far as the growing crop uses moisture.

But the loss of moisture through the crop cannot be counted entirely a loss to the orchard for the reason that it is helping

the grass collect from as deep in the soil as its roots grow, soluble plant food, bringing it up where a large part of it will ultimately be returned to the surface soil, placing it where the most active feeding roots of the trees are located. We have found the sap of most plants, in their succulent stage of growth, extremely rich in all of the essential soluble plant food materials, and that this is very readily and quickly washed out. All are familiar with the great injury done to hay by a drenching rain, which washes out its soluble organic products and with them nitrates, sulphates, and carbonates of lime, potash and magnesia, together with phosphates. With the repeated cuttings, therefore, of the cover crop, whatever they may be, the leaching of the rain must return to the soil a part of the food which the crop has gathered, and this is turned over to the tree roots in the most available form and place. Even the nitrogen, potash and phosphorus which have become fixed for the time being begin at once to be liberated and gradually turned back into the soil, so that the grass cover, repeatedly cut and left where it falls, exercises a continuous pumping process, bringing plant food into the surface 6 inches from depths as great as four feet, placing it in preeminently the best place to serve as food so long as the soil is sufficinetly moist for strong feeding.

The experiments of Professors Green and Ballou, of the Ohio Experiment Station, along these lines, are extremely illuminating, fundamental and important, and particularly so are the results they obtained from the sod mulch treatment where the grass, when cut, was placed about the trees year after year and permitted to leach and rot there. By this treatment the grass gathered food from all over the orchard and from a depth of 3 to four feet, and this was concentrated in the soil near the surface and immediately about the trunks, widening the area as the tops and roots spread. It was found that the fine fibrous roots of the apple trees even developed strongly above the ground, forming a dense mat at the bottom of the mulch itself, where it was crumbling into mould and being transformed into humus, and where the leaching from every rain brought down added food. It was found also that in the surface 6 inches, and below to a depth of a foot, the root development was markedly stronger than it was under the cultivation and cover crop treatment. Undoubtedly the much larger root development under the mulch was the result of the habit of a plant to develop its

roots most strongly where there is the best feeding, and it is quite probable that in this case it was plant food substances other than soil moisture which determined the root concentration. Whether this concentration of the mulch about the trees is the best practice may be open to question. It is the general practice in China and Japan to fertilize chiefly under the tree tops, the Japanese rule being to apply fertilizers to a circle equal to two-thirds that covered by the top. The tea orchards, after the bushes become large, and especially on hillsides, are kept very heavily mulched with straw or litter of some kind, and we saw it a full foot in depth, covering all the ground. In China, too, mulberry orchards are fertilized most strongly directly under the tops. We saw cases where the soil had been entirely removed to a depth of 3 or 4 inches over a circle not quite equal to that covered by the top, and this covered with a layer of silkworm droppings together with the bits of leaves not eaten and the moulted skins, thus returning to the soil all except the silk which had been removed, and this covered by replacing the soil. Indeed, in their general practice of "plant feeding" these people nearly always apply the food very close to the base of the stems rather than uniformly over the soil surface.

In case of clean tillage, if this is followed year after year, it must impoverish the soil of its organic matter and nitrogen; there would not be a large saving of moisture in humid climates except during long dry spells; bacterial action would be greatly reduced, so that relatively small amounts of phosphorus and potassium carried naturally in the soil could be rendered soluble and available to the trees. The texture of the soil would deteriorate and unless the surface was level there would be serious washing.

If mineral fertilizers were used to keep up the plant food there would still be a rapid loss of organic matter and the impairment of soil texture might be even more rapid and very serious on clayey soils if the nitrogen were supplied in the form of Chili-saltpeter, for the reason that the sodium of the nitrate becomes converted into the carbonate when the plant removes the nitric acid, and the carbonate is the "black alkali" of the west, which everywhere has the tendency to dissolve humus and puddle the soil. In this impaired condition a higher per cent of the soil moisture becomes unavailable to the crop, soil aeration is less

Gays Mills, Trial Orchard, Sept., 1910. Oats cover crop. Trees planted May, 1908.
Photo October, 1910.

perfect, rains penetrate the ground less readily, and there is greater danger of injury by washing.

Where an abundance or organic manure is used, with naked cultivation, and where the orchard is level, much better results will be secured and quite likely a higher available water content could be maintained if sufficient care were exercised in the cultivation.

Where the cover crop is used and this is turned under either late in the fall or early in the spring, and especially if the cover-crop is some legume, which under the conditions develops nodules strongly on its roots, nitrogen would be gathered from the air and organic matter in the soil would, through its decay, liberate the phosphorus and potassium present in the soil, and would render any rock phosphate applied as a fertilizer soluble and available to the orchard. In this treatment it should be remembered that thorough, frequent cultivation, especially in the spring when the soil is moist and until the new crop of fibrous feeding roots from the trees has developed into the surface soil, does much more than conserve soil moisture. Indeed, one of its main advantages is that of developing plant food through its stimulation of stronger bacterial action. The mulch also performs an important function in preventing the plant food from rising into the surface where the soil becomes dry and where it is beyond the reach of the roots.

Whenever the straw or litter mulch is practicable in market gardening and small fruit growing or in orcharding it has many desirable effects to recommend it as a rational treatment. It is a good method of fertilizing, adding both organic matter and ash ingredients, which gradually leach into the soil with the greatest uniformity of distribution. It conserves moisture most effectively, both by reducing evaporation and inducing even, deep penetration of the rainfall; it avoids soil washing and soil puddling and it helps to control weeds.

Thorough deep drainage and deep strong granular structure of the soil permitting deep complete aeration and easy effective drainage are indispensable conditions for permitting soil moisture to render its greatest service both in feeding the crop above ground and in feeding the crop of soil bacteria in the ground, which play so important a part in preparing plant food for the crop above ground, whatever that may be. To produce and maintain this structure there must be ample underdrainage and

the soil must be kept supplied with an abundance of organic matter and an abundance of lime carbonate, both of which help to maintain strong granular structure, as well as to contribute plant food, first by strongly favoring the solution of the insoluble potassium and phosphorus compounds in the soil, and by direct addition of plant food themselves.

The late plowing in of stable manure in the fall, leaving the surface rough and loose, and then the earliest thorough, and repeated stirring of the soil in the spring, is the best possible treatment to conserve winter rain and snow, to save moisture which comes early in the spring, and to enrich the soil with immediately available plant food such as will stimulate quick strong growth and deep rooting, and so condition the crop as to enable it to make the most possible out of the available soil moisture and other plant foods and so give the largest practicable returns.

Mr. Street: I would like to ask what has been the experience in those orchards with the roots just under this mulch, when there comes an extra hard winter later on, will not these roots be injured?

Prof. King: Prof. Green has made a very careful study of that question, learning what the actual distribution of the root is under the mulching and under the naked tillage, and the cover crop. He cut out a cubic foot of soil at different places in the orchard and then sliced off the surface two inches, then the next four inches, then the last six inches and put them on a screen and pumped water on those soils and washed the soil away and photographed the roots left on the screen. He found there were most roots in the surface two inches, more roots in the next four inches and least roots in the bottom six inches of the foot. The larger roots were in the bottom six inches of the soil, but the small, fibrous roots were up in the four inches and in the surface two inches. Where the mulch lay thick on the ground so that it decayed and kept the ground continuously moist, the fine fibrous roots came up into the mulch in by far the largest amount. What the facts are in regard to the life of those delicate feeding roots, I do not know. But I fancy

their life is very much the same as the life of the leaves; that is, they serve for one year and then new roots are formed as new leaves are formed. If that is the fact, it is not a matter of so great importance just where such roots happen to be at the end of the season.

We doubt the wisdom of continuing the concentratiou of the mulch long close about the tree, but to let the roots range through all the soil. When a tree gets to be large, if the roots are in too small a volume it can get neither sufficient moisture nor food, they do not travel rapidly in the soil and the roots must go out ultimately to larger areas.

Mr. Kellogg: I would like to ask the Professor how long after the application of finely ground phosphate rock will the effect be noticed in the growth of trees or other woody substance? Will it take one or two years?

Prof King: The response of the rock phosphate depends almost entirely on the amount of organic matter there is in the soil, and the amount of moisture there is present. If the organic matter decays rapidly and there are good moisture conditions, the acids that are liberated, the nitric acid which is formed in nitrification, and the carbonic acid which is formed in the decayed organic matter, both combine to act upon this phosphate and to render more or less of it soluble. Of ocurse the finer it is ground, the more surface is presented and the more rapidly it is dissolved.

CONCENTRATED LIME-SULPHUR SOLUTION AS A SUMMER FUNGICIDE.

W. W. CLARK.

The value of the self-boiled lime-sulphur solution as a summer fungicide has been ably presented to you in the preceding sessions of this meeting. It will nevertheless occur to some, that, advantageous as its use may be in point of effectiveness, it requires about as much time and labor and possibly more skill. in preparation and application, as does the Bordeaux mixture.

A spray solution which is as effective as these two sprays, anl

yet which can be prepared, stored and handled in a concentrated form, and prepared for use merely by diluting with water, would be welcomed by the commercial fruit grower, as well as by the amateur. Such a preparation seems to have been found in the concentrated lime-sulphur solution, prepared by boiling with artificial heat.

This spray was first used as a summer fungicide by Professor Cordley of the Oregon Experiment station in 1907. It is my purpose to outline the present practice and opinion regarding its use as based on experimental evidence.

Bulletin 99 of the Pa. State College Experiment Station describes the preparation of solution as follows:

For fifty gallons of concentrate, use the following: 50 lbs. stone lime (testing over 90 per cent CaO. and less than 3% magnesia) 100 lbs. sulphur (either flour, flowers or "powdered commercial," 99.5 per cent pure, water to make up to 50 gallons, total product.

Put 10 gallons of water in kettle and start fire. Place lime in kettle. When slaking is well started add the dry sulphur and mix thoroughly, adding water enough to maintain a thin paste, which requires about five gallons. After the slaking and mixing are completed, add water to make up to about fifty gallons. Bring to a boil and stir until the sulphury scum practically disappears. Add about ten gallons more of water and boil down to fifty gallons. Keep material well stirred during the entire process.

Boiling should be continued only until the sulphur granules are evidently dissolved. This requires fifty or sixty minutes of actual vigorous boiling usually, and boiling should always be vigorous. Too much or too little boiling is objectionable.

The finished product may be immediately poured or strained into a barrel or tank for storage. When properly made the sediment left in the strainer is insignificant and may be thrown away.

When properly handled, such lime-sulphur solutions apparently can be preserved indefinitely. Continued exposure to the air results in the formation of a thick crust. Covering the surface with paraffin oil or any other heavy oil before the concentrate cools will prevent this. Storage in tight closed vessels, entirely full, is satifactory.

The question of the effective strength of dilute solution for

spraying is one upon which there is naturally considerable variation. A strength of one gallon of concentrate to twenty-five of water is recommended by the U. S. Bulletin on lime-sulphur. One to forty has been used by the Cornell station with success. Since, however, the strength of the concentrate will vary according to the exact amount of water used, purity of lime. etc., it is recommended that dilution be based upon the specific gravity of the concentrate as determined by a hydrometer. The exact strength of the spray may then be determined very easily by a simple arithmetical calculation from furnished tables.

Since the first trail of this spray in 1907, experiments to determine its effectiveness as a summer fungicide have been carried on by a number of observers. I will cite their conclusions briefly.

On potatoes and truck crops, two years' experiments by the Bureau of Plant Industry at Washington have apparently resulted in favor of the Bordeaux mixture where the two were compared. Mr. Orton, in charge of the investigations, states that since such crops are not particularly subject to spray injury by the Bordeaux, they see no reason at present for abandoning it.

Two years of experiments on fruit by the same bureau lead Mr. Scott to recommend Lime sulphur as a substitute for Bordeaux for the control of apple scab, leaf-spot, cedar rust and some other minor troubles. It controlled these diseases fully as well as Bordeaux and left the fruit in much better condition, according to a letter writteen the last of November, 1910. Some slight scorching of the foliage was observed with one gallon of concentrate to 33 of water. 1 to 40 gave good results with the cherry.

A letter from the experiment station at Geneva, N. Y. says, "There has been a large amount of spraying done in this state the past season with the lime sulphur. and it is the opinion of the orchardists and experts that it is likely to supersede Bordeaux for spraying apples." Injury to fruit and burning of foliage was apparently less than with Bordeaux.

Prof. A. B. Cordley of Oregon has used the spray for four summers, as mentioned before. He says, writing about a month ago, that lime sulphur has been found to control scab better in the Willamette valley than does Bordeaux. It also

caused no injury whatever to fruit, whereas it was almost impossible to use Bordeaux under their conditions without causing serious russetting. In the Hood River valley results were as good in control of scab. Several days of extremely hot weather immediately following one application resulted in some injury to trees and fruit. After the hot weather, sun-scald appeared on the south and west sides of treated trees. Severe russetting also occured as the season advanced and the fruit began to ripen, upon the side of the fruit exposed to the sunlight. This fruit was however, usually graded as "choice," indicating that the damage was not extremely serious.

Two years of experiments by the Cornell, N. Y., experiment station have indicated the following conclusions.

1. Lime sulphur plus arsenate of lead is equally as effective against apple scab as is Bordeaux mixture plus arsenate of lead.

2. Lime sulphur plus arsenate of lead is less dangerous than Bordeaux plus arsenate. both as to fruit and foliage injury.

3. Lime sulphur causes little or no russetting of fruit. Apparently there was less russetting on sprayed tress than on unsprayed tress beside them. There is much natural russetting in New York.

Other results from this station will be quoted later.

At present the exact nature of the fungicidal action of lime sulphur is in doubt. It is held by many investigators that the higher compounds of calcium and sulphur have the most value in this respect, probably owing to their decomposition and action of the resulting free sulphur. Chemical analysis has shown that the greater portion of the combined sulphur in solution is in the form of tetrasulphide and pentasulphide of calcium. To these the golden brown or amber color of the solution is due. Calcium thiosulphate and calcium sulphite and sulphate are present in smaller amounts, the last two in the sediment, their presence being undesirable since they indicate reduction or oxidation of the compounds higher in sulphur and the liberation of free sulphur.

Upon drying on the trees, the chemical composition of the culphur compounds begins to change; the sulphides are gradually oxidized to thiosulphate, to sulphite and eventually entirely to calcium sulphate and free sulphur. The sulphate is inactive and has no value as a fungicide. The soluble com-

pounds are removed to a greater or less extent by rain, the duration of their effect being thus somewhat dependent upon weather conditions. It is variously estimated at three or four weeks and four or five months.

In the sediment are found impurities from the lime, lumps of sulphur, free sulphur, and calcium sulphate and sulphite. Magnesium oxide may be present, if the lime used contained this compound. The Corvell experiment station is of the opinion that the sediment has very little fungicidal value, except in the case of magnesium oxide, which *is* valuable. It is therefore best disposed of by straining or settling from the clear solution.

Since the highest content of combined sulphur in solution is assured by the greatest possible proportion of calcium pentasulphide in solution, it is important to determine what practices produce the sulphides in largest amount in making the concentrate and what effect various practices have on them afterward.

Investigation shows that a proportion of one pound of lime to two pounds of sulphur gives most favorable results. The formula most often recommended for treating scale insects is 2 lbs. of lime, 15 lbs. of sulphur and 40 gallons of water, an excess of lime of 175 per cent. This may be justified in this particluar case, however, by the loosening effect of lime upon the scale coverings. The effect of an excess of lime in concentrate to be stored is to cause the formation of orange-red crystals of sulphides, upon standing. This weakens the solution, although the crystals may be dissolved by heating. Excess lime also results in the reduction of some of the higher sulphur compounds to insoluble sulphites and sulphate. Lime with considerable magnesium in it may be used, but apparently with a waste of sulphur. Magnesium oxide attacks the calcium sulphides with resultant liberation of sulphur. There is considerable conflict in results of investigations of this question. At least it is not claimed by anyone that the presence of magnesium is particularly beneficial.

Boiling much less than fifty minutes, or anything but vigorous boiling results in a weak solution. Boiling longer than fifty or sixty minutes has been found to actually lessen the amount of sulphur in combination with the lime by oxidation of the higher sulphur compounds.

The naturally dark color of the lime sulphur spray is some-

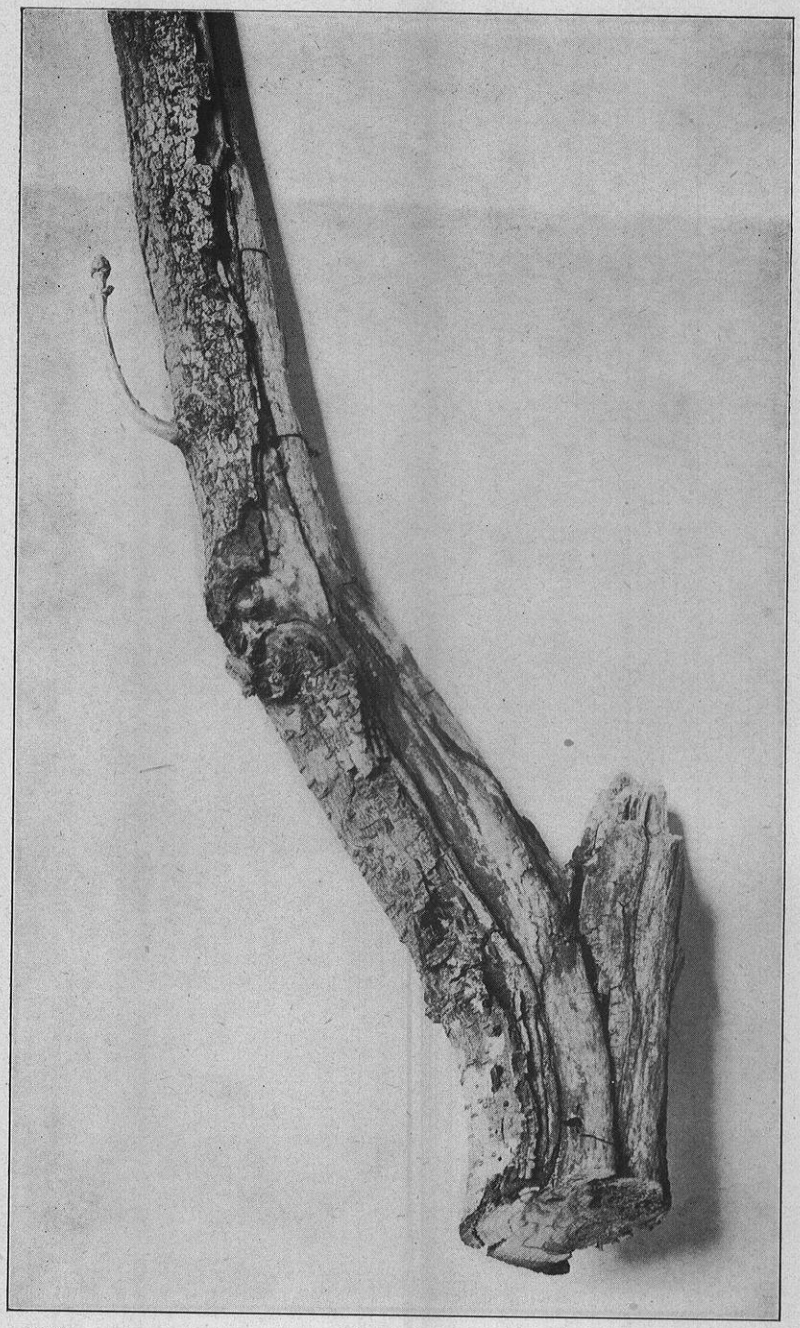
times objected to because of difficulty in assuring complete covering of the trees. From four to six pounds of lime is sometimes added to a barrel of spray mixture, to serve as a marker. The Pennsylvania State College Exp. Sta. says, "The aldition of extra lime as a marker is objectionable mechanically and apparently also chemically. .....Its addition seems to break down the higher sulphur compounds, and is especially bad where much magnesia is present in the lime."

Prof. Whetzel of the Cornell station says on the contrary, "Our experiments indicate that the addition of lime to lime sulphur, as a marker or for any other reason, using it at the rate of 4 lbs. to 50 gallons, does not materially affect the efficiency of the lime sulphur as a fungicide or its burning qualities to the foliage." Of course spray solution with lime added must not be allowed to stand for any length of time before applying because of danger of crystallization.

The addition of arsenical poisons to lime sulphur for the control of the codling moth has also raised the question as to whether the breaking up of the higher sulphur compounds reduced the value of the spray as a fungicide. The Ontario experiment station made quantitative chemical tests and reports that lead arsenate and calcium arsenite remove an insignificant amount of sulphur from solution, while Paris green has an appreciable action. The Cornell station finds that "With our present knowledge we do not regard it as safe to use any other insecticide with lime sulphure except the arsenate of lead." To our great surprise they also report that "The addition of lead arsenate to lime sulphur increases its efficiency as a fungicide at least 50 per cent. and at the same time reduces its tendency to burn the foliage." We shall await further confirmation of this finding with interest.

Bulletin 99 of the Pa. station makes the statement: "The use of paris green in the lime sulphur solution we believe to be undesirable. It is unsafe, unstable and uneconomical." Arsenite of lime is recommended.

Prof. Cordley of the Oregon station, quoted before, asserts that injury to trees or weakening of the lime sulphur spray by the use of lead arsenate in combination with it, occurs only when acid arsenates are used. He recommends the use of the neutral or ortho arsenates, of which he names for commercial brands used in that state, viz., "Star," "Grasselli's," "Beans's"



North. South.

:ald of horse chestnut tree. This same sort of injury occurs on various fruit and ›rnamental trees especially on the south and southwest sides of the trunk.

Body Blight or Canker.

1. Upper left, started from the large pruning wound has spread down and up. 2. Upper right, started from a blighting twig of which the dead stub shows at center of cankered spot. 3. Lower left, started from crotch seam. 4. Lower right, old case of crotch canker, tree nearly girdled.

and "Sherwin-Williams." The acid arsenates are not to be condemned without further experimental evidence against them, however.

This completes the brief survey of the more important recent developments in the use of concentrated lime sulphur as a summer spray. The general opinion is distinctly favorable to its use on apples, plums, pears and cherries. For peaches extreme care must be used to avoid burning the foliage. During the next few weeks or months much of value will doubtless be published on the use of this spray but sufficient work seems to have been done to definitely establish its value.

APPLE TREE CANKER.

Professor L. R. JONES, Madison.

Your secretary has asked me to open the discussion of some phase of orchard diseases. As I have renewed acquaintance with the orchard conditions in Wisconsin during the last year I have come to realize that you are making gratifying progress in the solution of some of your orchard disease problems. But a few years ago and the discussions along these lines dealt chiefly with the diseases of fruit, the scabs and rots, and how to prevent them. You now know well their nature and how to control them by spraying. Then leaf maladies claimed attention and there is now little need before such an audience as this of emphasizing the importance of healthy foliage for the production of a strong crop. Perhaps no one has shown more clearly than did Professor Goff how the nature of the bud and fruit of the next season are dependent upon the leafage of the last summer.

Now that you understand the nature and importance of fruit and foliage diseases and the methods of controlling them by spraying you are following the natural line of progress by turning attention to the diseases of the stems or trunks of your trees, as evidenced by the recent publications dealing with body blight and canker issued by your secretary. These maladies are as a

rule less obvious, slower in their development, and the damage done is not so immediately evident. In the end, however, the results are even more disastrous. The effect of the fruit disease is largely confined to the one crop; that of the foliage to two seasons; but injury to the tree trunk is likely to result in maiming and weakening for life if not in the early death of the tree itself.

But, as already suggested, the progress of disease in the branches or trunk of the tree is likely to be slow and the cause or causes obscure. My personal recollection of Wisconsin orchard conditions reaches back some thirty-five years. In the neighborhood with which I was then familiar were numerous fairly large and thrifty young orchards. "Winter Killing" and "Canker" began to trouble, however, and many of those orchards have now entirely disappeared. Others have continued either because of better location or hardier varieties, following the natural law of the "survival of the fittest," or else because of more careful attention to cultural methods, top grafting, and replanting with hardier varieties. The occurrence and cause of "winter killing" and "canker" were then, and still are, among the most important fundamental problems in Wisconsin orchard management. To these questions we have therefore been directing some attention the past season.

Before discussing the results let us consider briefly the structure and functions of the apple stem. As you well know, the stem consists of four distinct regions or zones. In the interior is the brown heart wood, surrounding this the light colored sap wood, at the outside is the bark and between the bark and the sap-wood is the growing layer or cambium. What are the purposes or functions of each in the life processes of the tree? The heart wood is dead. This has ceased to take any active part in the life or growth of the tree. It simply aids in a mechanical way by giving strength for the support of the living parts, and incidentally serves as a store-house for some reserve water or sap. If this is rotted away the trunk is weakened, but the life processes are not necessarily impaired. The sap wood, on the other hand, is the living wood tissue. Through this practically all of the upward movement of the sap occurs, which means the ascent from root to branch and leaf of the water and food materials absorbed from the soil. Anything that affects this sap wood therefore checks the supply of soil food and water.

Even more important are the tissues outside this, the cambium and inner bark. The cambium is the zone of growth. It adds to the layers of living wood and increases the thickness of the bark year by year. In case of wounds, it is the most active layer in the healing process resulting in callus formation. Such cambium growth is necessarily dependent upon abundant supplies both of water and of elaborated food. The water, as already explained, is brought through the sap wood from below. The starches, sugars, and proteids, which are the essential foods, come from the foliage above, and their descent is through the living inner bark. Hence we see that injury to this soft inner bark means immediate interference with the normal growth and healing processes of the stem. The brown outer bark or corky layer, which is also dead, therefore serves an important function as the natural protection to this living interior tissue. The protection thus afforded is two fold in its nature; first, this corky layer is water proof and so holds the moisture and prevents the soft inner tissues from the drying out which would be fatal to them; second, it is germ proof and prevents the various external parasites from attacking and destroying these inner tissues. Any injury to or disturbance of this dead protective corky layer is therefore dangerous. Some years ago travelling "tree doctors" of the "quack" type went through the region in New England where I was then living, and persuaded many orchardists to permit them to treat their trees to protect them from getting "bark bound" and "blighting." Their methods consisted in general of boring holes into the sap wood and filling these with salt or other chemicals, and scraping or slitting the bark. Of course, it is evident that every one of these operations is positively injurious to the living tissues, and I trust that no imposition of this sort will be tolerated in Wisconsin.

Studies in recent years by plant pathologists in the various orchard sections of the United States have shown that there are several types of apple canker differing as to specific cause. With the cooperation of one of our students, Mr. H. D. White, we have been this last summer examining various Wisconsin orchards to learn the extent of the occurrence of apple cankers, what types are present, and the probable causes of these. As a result we have found that canker of one or another kind is common and serious in the orchards of the state. In most cases, but not all, the canker starts from some point where the corky bark

was broken through. This bark rupture may have resulted from whiffle-tree bruises, tree climbing, or other accident; from hail stone bruises,, the breaking of limbs by wind and ice-storms; from crotch splitting; from pruning; from borers or other insects; from frost cracks or from sun scald. Any one of these might in extreme cases be a serious thing in itself, but as a rule the branch or trunk will recover from such injuries without danger to the life of the tree, providing there is no parasitic invasion. As a matter of fact, however, two parasites are very common in Wisconsin orchards which invade such injured places. Of these the one is bacterial, *Bacillus amylovorous,* and the other fungus, *Sphaeropsis malorum.*

The first, the bacterial parasite *B. amylovorous,* is the cause of the common fire blight and twig blight of apples and pears and is also capable of blighting plums and some other related fruits. This is the more destructive of the two and is the cause of the most serious blighting and cankering of Wisconsin apples, especially that in younger trees. It may appear as body blight or canker involving only small more or less circular patches or spreading irregularly over quite large areas of the bark. It is recognized by the slight discoloration of the bark, which later dies, and becomes depressed or sunken and darker colored as it dries out. The surface, at first, is not broken or otherwise changed except in color, but as the dying proceeds cracks appear, especially at the outer borders of the blighted area. In some cases these blighting spots enlarge year by year but as a rule their enlargement continues only during one summer. If one cuts into the bark on such areas, it is found to be dead nearly or quite to the cambium, the dead portion being quite sharply delimited from the healthy. Such blighted or cankered areas commonly appear, as already stated, where the bark has been broken, either through bruising or at pruning wounds. They are also frequent at the crotches of the trees causing "crotch canker," where they start from the crotch seams. Occasionally they originate from frost cracks, in some cases extending on both sides of such a crack throughout its length. Some of the most destructive cankers observed occur on the south side of the tree, oftenest tending to the southwest side and near the ground. In such cases the original injury to the bark wich gave the germs a point of entry was unquestionably sun scald. This is a common injury to various shade and ornamental trees, e. g.,

horse chestnut, as well as to fruit trees. It is naturally worse on younger trees while the bark is still thin and tender. After the rough corky layer is well developed the danger is lessened. For this reason, the partial shading of the south side of young fruit trees is especially to be commended. A case came to our attention recently, however, where tar paper wrapped about the base of young trees, primarily as a rabbit guard, and allowed to remain the year around, had increased the injury. This was partly due to the caustic nature of the tar, but was worst on the south side, indicating that the sun's heat had accentuated the trouble. In all of the cases thus far discussed the blight germs gained entrance through wounds. Many cases like this occur, however, (specimen exhibited) in which a dead bud or fruit spur stands at the center of the blighted area. In such the trouble started as flower, fruit or twig blight and spread down the twig to the parent branch.

The fungus parasite, *Sphaeropis malorum*, is the same which causes the black rot of fruit and also some leaf spots of the apple. Its relation to the black rot as well as the dark color of the cankered area justify the name Black Canker for this disease. The worst injuries in Wisconsin from this black canker fungus are when it appears on the branches. It gains entrance to these through wounds or fruit spurs in much the same ways as have just been described for the bacterial blight. Moreover, it may appear on the areas which were evidently killed by the bacterial blight thus causing a complication of disorders. It is slower in its progress than the bacterial blight and much less aggressive as a parasite. It is, however, worse in one respect, viz., that the fungus lives over winter and the cankered area enlarges year after year. Where it gains entry at a point originally blighted by the bacteria it may therefore carry the cankering to a more serious point than would the bacteria alone. The black canker is to be distinguished from the bacterial canker by two characters. In the first place the surface of the bark on the spots is soon thickly covered with minute black pustules, whereas the bacterial blight never causes such eruptions. The second difference is that the slow invasion of the bark by the fungus and its continued growth stimulate the underlying living cells to increased growth so that the cankered part of a branch becomes slightly swollen. This is more pronounced if the canker encircles the limb as it not infrequently does, when the cankered

area becomes conspicuous from its larger diameter and more roughened, darker colored bark. This latter type of canker is especially liable to occur on partially shaded branches of the interior of poorly pruned old trees.

In connection with the preceding discussion numerous specimens and a series of lantern slides were exhibited illustrating the points discussed. In conclusion the speaker summed up the practical recommendations as follows:

1. Protect young trees against sun scald by straw or other shades on the south side.

2. Avoid so far as practicable all bruising and wounding of the bark of apple trees.

3. Where wounds are made, as in pruning, disinfect the freshly cut surface, brushing it over with a solution of corrosive sublimate or formalin[1] and also as soon as this is dry cover with white lead paint.

4. Keep the orchard free from Fire Blight by persistent pruning out of all blighting twigs. This should be done with especial thoroughness in the autumn so as to have no cases of "hold over" blight wintering in the orchard. It is a wise precaution to burn all such prunings promptly.

5. Branches showing black canker should also be pruned out and burned.

6. The surfaces of the trees should be disinfected in late winter or early spring, before the foliage appears, by a thorough spray. For this copper sulphate alone may be used (1 lb. sulphate in 15 gals. water) but strong bordeaux mixture or lime-sulphur solution is preferable.

7. Where the body canker or crotch canker has killed the bark so as to form an open wound the dead and diseased bark should be cut away clean to the healthy bark, and the surface disinfected and painted as advised for wounds in pruning.[2]

The President. We will take a few minutes for discussion of this important subject.

Mr. Soverhill: Isn't it a fact that we should be very careful in the use of our tools when we are pruning our orchards that we do not transfer this poison from one tree to another?

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[1] A solution of 1 oz. of corrosive sublimate in 2 gals. of water or of 1 part of formalin in 50 parts of water.

[2] See discussion of the beneficial effects of this treatment in Wis. Hort. Soc. Bul., by F. C. Cranefield.

Professor Jones: Yes, that is an important point. Especially when we are pruning out blighting limbs we may easily carry the germs on tools from diseased to healthy tissues. We should not only aim to cut well below the infected tissue, but should carry along a can of disinfecting solution so that we may cleanse them as needed either by dipping or wiping the surface. For this purpose use either formalin, 1 part to 50 of water, or corrosive sublimate, 1 oz. in 2 gals. of water.

The President: We are assured that further investigations will be carried on by the department of plant pathology of the experiment station. You have an invitation to cooperate with Professor Jones in this, at least to the extent of observing and asking questions, or by sending in samples which may be helpful in calling attention to things you may not understand, or which may be of possible help to the Professor.

THE POSSIBILITIES OF THE ONE-EIGHTH ACRE GARDEN OR OF 75 FEET SQUARE.

IRVING C. SMITH.

It is a very difficult problem to say what the possibilities of such a garden are.

The fact is we know very little about that. We know what we have done and can see that there are still long lines of improvement yet to be attained. We will, therefore, in this talk, try to keep within what we have accomplished in various places, and bring all together into the small space of our square garden. At the same time we ask you to keep in mind the fact that for every 100 miles of latitude there is about one week difference in the season, other things being equal. So if you are located in a short season or a long season latitude, make proper allowance.

A model kitchen garden should contain about all the varieties of vegetables in common use in that locality, and also the common small fruit,

As we must know what is to be planted to be able to give the best preparation we will plan first.

We will begin by setting a row of raspberries on one side at three feet from the edge, two varieties red. Six feet distant set a row of about four hills early pieplant, eight currant bushes, red and white, four gooseberry bushes, and finish with black cap raspberries.

Next to the pieplant is a good place for the asparagus bed, first rows, three feet apart and twenty-five feet long. Finish the asparagus strip with four rows of strawberries.

Next we will have the small seeds. This section should occupy about six feet, and be cut out by a walk of one and one-half feet on each side, and a cross walk in the middle. These walks are needed to get around and for drainage.

On this section, plant two rows of extra early carrots next the path on one end, and two rows of onions on the other half. Then one row of larger carrots the whole length. We want the carrots handy for the children, and enough so they may eat all they want and still have plenty left for the kitchen. Then we want the onions on the edge, because they would get too much shade if between the carrots and beets.

One row of beets, one row of turnips and one row of parsnips will finish this section.

Across the walk is a convenient place for a half row of first early peas and a half row of late peas, to occupy about three feet; while a row of cucumbers and melons follow and need about six feet.

Here we want another walk of one and one-half feet. Tomatoes next this walk, with a few peppers and egg plant will use one row of four feet. Three rows of early potatoes occupy eight feet. By leaving the potato rows a few feet short we will have room for early celery, at the end of each potato row.

On a seven-foot strip we will have a row of squash and pumpkins; then to finish the remaining twelve and one-half feet plant four rows of corn.

Now we seem to have our garden full, with lots of things still to make room for. Let us look back again. The early set onions, early radish and lettuce may be grown between the rows of asparagus, for the first two or three years. Early cabbages, cauliflower, spinach, wax beans, and dwarf peas go between the newly set strawberry plants. A row of Lima beans go nicely

Bacterial or Fungus Canker Commonly Start at Some wound.

1. Upper left. Whiffle-tree injury, early stages of canker bordering. 2. Upper right, Frost crack, early stages of canker. 3 and 4. Lower figures. Canker starting from sun scald on south side of tree.

Apple Tree killed by the black rot fungus which gained entrance at the pruning wounds and girdled the tree.

between the raspberry and currant bushes. Parsley, sage, dill, etc., as also cabbage and lettuce plants, and kohlrabbi will do well along the edge of the currant row.

For second crops, follow early peas with late cabbages or celery. For a succession of radish and lettuce, the borders and space between bushes answer. Late spinach, turnips and rutabagas will follow early potatoes.

While the writer has never planted mushrooms under the shade of the pie plant leaves, he has found very fine large ones growing there, so we might reasonably say they will grow there if planted.

Now we know just where each variety is to grow, there is no excuse for not preparing for that particular sort of crop. If we are to come anywhere near the possibilities of our garden, we must not forget small details in preparation or after care.

First, the ground must be well manured and plowed. If it is inclined to be wet we must open good, clean drainage ways in all walks and at outside edges. Remember that when we have gotten our ground thoroughly well prepared the battle is half won.

For the bushes and asparagus coarse manure is preferable. Pieplant is a gross feeder and revels in coarse cow manure where the corn stalks have been thrown out with other litter. Asparagus roots run deep and endure a long time. There is little danger of getting the soil too rich. Plow in lots of heavy manure and then it is well to put coarse manure in the bottom of the furrows before setting the plants. Do not fear of getting ground too rich, only don't have roots come into direct contact with green manure when set, as such conditions will kill almost any tender plant.

For the small seed section old manure is to be preferred. Be sure to use extra care to get a good fine seed bed, so the young plants get a good start.

The cabbage and cauliflower would be pushed if hen manure is mixed with equal parts of dry soil or sawdust and a small handful put where each plant is to grow, then mix with the soil by two or three strokes with a common potato hook. Melons and cucumbers are also helped by hill manuring in addition to the manure which was plowed in over the whole garden. If you are as far north as central Wisconsin, it will pay you to use glass covered boxes over the hills of melons and cucumbers. This

gives the plants an early start, protects from the cold winds and storms of the early growing season and also give considerable protection against the ubiquitous striped squash bug. The squash and pumpkin need not be put in quite so early, but will respond readily to hill manuring. It helps if the hills are raised a little above the level, gives deeper soil, gets more warmth from the sun and prevents too great drenching in time of heavy rain.

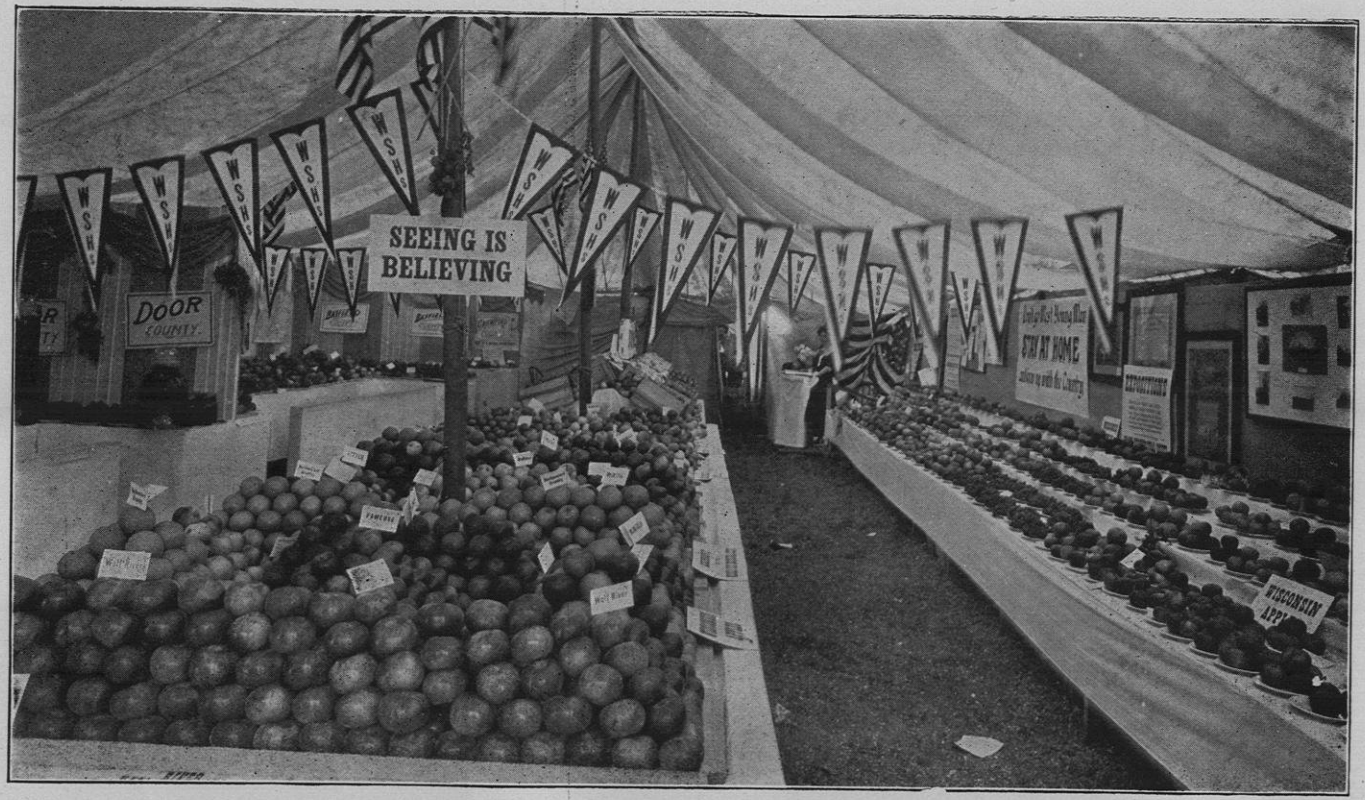
Tomatoes and egg plant need not be very heavily manured, and the peppers will fruit much better if on a rather light or weak soil. If too rich they are likely to go to bush and foliage with but little fruit. On the other hand, with celery we want a vegetative growth, so it will give big rewards for a sprinkle of hen manure along the row.

It is not enough that we prepare well and plant well; we must cultivate well. To attain high results we must keep the soil in the best condition all the time. Cultivate the heavy crops with the horse cultivator and the finer ones with the wheel hoe. Weed by hand where necessary, and remember that every weed you allow to grow takes from the soil what should go to your crops. The time to kill weeds is before they are up or just as they come up. Don't wait for weeds; cultivate and hoe, keep at it.

Brush or trellis the peas. Trellis the tomatoes. Set plants two feet and trim to two stems. Cut tips when about four feet high. Clip ends of squash and melon vines when well grown, to throw the growth into the fruits. Pull up cabbage stumps soon as heads are cut, the strawberry plants need the moisture and cultivation. Keep some crop growing on every available space as long as weather will permit.

Regarding varieties we can only say, choose the best for the purpose. We have allowed two or more for most things. Buy the best regardless of cost.

In the time allowed we can give only a very brief outline, but if you follow out somewhat as outlined, varying to suit taste or conditions; you will get a great deal more from your 75 feet square garden than you thought possible to produce on the given space.



Portion of Society Exhibit at State Fair, Milwaukee, September, 1911.

ANNUAL REPORT

OF THE

Wisconsin State Horticultural Society

For the Year 1912

VOL. XLII

PART I.

F. CRANEFIELD, Editor.

MADISON, WIS.

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1912

LETTER OF TRANSMITTAL

MADISON, WIS., MARCH 1, 1912.

To His Excellency, FRANCIS E. MCGOVERN,

Governor of Wisconsin.

DEAR SIR:—I have the honor to transmit to you herewith the Forty-second Annual Report of the Wisconsin State Horticultural Society.

Respectfully,

FREDERIC CRANEFIELD,

Secretary.

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OFFICERS AND COMMITTEES, 1912

OFFICERS.

D. E. Bingham, President.....Sturgeon Bay
C. L. Richardson, Vice President.....Stanley
L. G. Kellogg, Treasurer.....Ripon
F. Cranefield, Secretary .....Madison

EXECUTIVE COMMITTEE.

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C. L. Richardson .....*Ex-Officio*
L. G. Kellogg.....*Ex-Officio*
F. Cranefield .....*Ex-Officio*
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2nd Dist., G. W. Reigle.....Madison
3rd Dist., Wm. Toole .....Baraboo
4th Dist., W. C. Sieker .....Milwaukee
5th Dist., H. C. Melcher..... Oconomowoc
6th Dist., E. Gonzenbach.....Sheboygan
7th Dist., F. Muehlenkamp.....Sparta
8th Dist., N. A. Rasmussen.....Oshkosh
9th Dist., A. W. Lawrence, Jr.....Sturgeon Bay
10th Dist., Irving Smith.....Ashland
11th Dist., O. Flanders.....Bayfield

BOARD OF MANAGERS.

D. E. Bingham L. G. Kellogg F. Cranefield

COMMITTEE ON TRIAL ORCHARDS.

N. A. Rasmussen, term expires.....Jan. 1915
A. W. Lawrence, term expires.....Jan. 1914
J. S. Palmer, term expires.....Jan. 1913

LOCATION OF TRIAL AND DEMONSTRATION ORCHARDS.

Wausau, Marathon County, 10 acres.....Established 1897
Medford, Taylor County, 3 acres.....Established 1903
Poplar, Douglas County, 7 acres.....Established 1904
Maple, Douglas County, 3 acres.....Established 1906
Barron, Barron County, 5 acres.....Established 1906
Manitowoc, Manitowoc County, 5 acres.....Established 1907
Gays Mills, Crawford County, 6 acres, (1 A Grapes).Established 1907
Sturgeon Bay, Door County, 5 acres.....Established 1908
Whitehall, Trempealeau County, 5 acres.....Established 1908
Lake Geneva, Walworth County, 5 acres.....Established 1908
Sparta, Monroe County, 1 acre (Grape Station)....Established 1908

The Improvement of Rural School Grounds.

Dist. No. 6. Town of Baraboo, Sauk Co.
Dist. No. 5. Town of South Lancaster, Grant Co.
Dist. No. 10. Town of Manitowoc Rapids, Manitowoc Co.
Dist. No. 3. Town of Sevastopol, Door Co.
Dist. No. 2. Town of Fond du Lac, Fond du Lac Co.
Dist. No. 1. Town of Genesee, Waukesha Co.

LIST OF FRUITS RECOMMENDED FOR CULTURE IN WISCONSIN

The behavior of varieties of fruits is influenced very largely by environment. The conditions of soil, exposure and latitude over such an extensive area as the state of Wisconsin vary greatly and no list can be given that will prove satisfactory in all localities. The following provisional lists were prepared by the Trial Orchard Committee. Hardiness of plant and fruit bud has been the leading thought in the selection of varieties.

APPLES (General List).

Alexander, Astrachan (Red), Autumn Strawberry, Dudley, Fall Orange, Fameuse (Snow), Golden Russett, Hibernal, Lowland Raspberry, Longfield, Lubsk Queen, McIntosh, Malinda, McMahan, Newell, Northwestern Greening, Oldenburg (Duchess), Patten Greening, Perry Russett, Plumb Cider, Scott, Tetofski, Talman (Sweet), Utter, Wealthy, Westfield (Seek-no-Further), Windsor, Wolf River, Yellow Transparent.

APPLES (Lake Shore List).

In addition to the above many other varieties including the following may be successfully grown in the extreme southern part of the state and in the counties bordering on Lake Michigan, **Baldwin, Eureka, Fallawater, Gano, King, Northern Spy, Pewaukee, Willow Twig, York Imperial, Bellflower.**

APPLES (Comercial Orchard List).

It is generally conceded that a commercial orchard should consist of but few varieties; the following are suggested: **Dudley, Fameuse, Longfield, McMahan, McIntosh, Northwestern Greening, Oldenburg, Scott, Utter, Wealthy, Yellow Transparent.**

APPLES (Five Varieties for Farm Orchard).

Northwestern Greening, Oldenburg (Duchess), Talman (Sweet), Wealthy, Yellow Transparent.

APPLES (For Trial).

These are all promising varieties but have not been extensively grown in any part of the state: **Gem City, Hanko, Lily, Wendorff, Zettle Bellflower.**

CRABS.

Brier Sweet, Hyslop, Lyman, Martha, Sweet Russett, Transcendent, Whitney.

PLUMS.

Of the classes commonly cultivated, viz.: **European, Japanese** and **Native** or **American**, the last named is the most reliable.

NATIVE PLUMS.

De Soto, Forest Garden, Hammer, Hawkeye, Ocheeda, Quaker, Rockford, Surprise, Wyant.

EUROPEAN PLUMS.

(Not recommended except along Lake Shore). **Lombard, Green Gage, Moore's Arctic.**

JAPAN PLUMS.

(Not recommended except along Lake Shore). **Abundance, Burbank.**

CHERRIES.

Early Richmond, Montmorency.

GRAPES.

Brighton, Campbell's Early, Concord, Delaware, Diamond, Green Mountain, Moore's Early, Niagara, Worden.

BLACKBERRIES.

Briton (Ancient), Eldorado, Snyder.

STRAWBERRIES.

Varieties starred have imperfect flowers and must not be planted alone.

Bederwood, *Crescent, Clyde, Dunlap, Enhance, Gandy, Glen Mary, *Haverland, Lovett, *Sample, Splendid, *Warfield.

TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

Dunlap, *Warfield.

RASPBERRIES.

Black: **Conrath, Cumberland, Gregg, Older.**
Red: **Cuthbert, Loudon, Marlboro.**
Purple: **Columbian.**

CURRANTS.

Red: **Red Cross, Red Dutch, Long Bunch Holland, Victoria, Perfection.**
White: **White Grape.**
Black: **Lee's Prolific, Naples.**

GOOSEBERRIES.

Downing.

PEARS.

On account of the prevalence of blight and winter killing, pears are not generally recommended for Wisconsin. Good crops are occasionally produced under favorable conditions, especially in the southeastern part of the state. The following list includes both early and late varieties.

Anjou, Bartlett, Clairgeau, Clapp Favorite, Early Bergamot, Flemish Beauty, Idaho, Kieffer, Laurence, Louise, Seckel, Sheldon, Vermont Beauty.

TREES AND SHRUBS RECOMMENDED

EVERGREENS.

For screens and windbreaks—Norway Spruce, White Spruce, White Pine, Austrian Pine, Scotch Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae, Red Cedar.

For lawns—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Red Cedar, White Spruce, Colorado Blue Spruce, Austrian Pine, Scotch Pine.

For small lawns—Arbor Vitae, Savin Juniper, Mugho Pine.

DECIDUOUS TREES.

The more desirable ones are starred, and a further selection of five is indicated by double stars.

**American Elm, Box Elder, Black Cherry, Carolina Poplar, **Green Ash, *Hackberry, Honey Locust, Larch, **Linden, **Norway Maple, *Scarlet Maple, **Silver Maple, *Sugar Maple, Scarlet Oak, *White Oak, White Ash.

DECIDUOUS ORNAMENTAL TREES.

This class includes smaller deciduous trees of more value for ornament than for shade or defense.

Crab (native), also Bechtel's double flowering crab, Cut-leaved Weeping Birch, Tartarian Maple, Ginnala Maple, Kentucky Coffee Tree, Mountain Ash, Weeping Willow, Russian Mulberry.

LIST OF SHRUBS RECOMMENDED.*

Common Name.	Scientific Name.
Thunberg's Barberry	Berberis Thunbergii
Common Barberry	Berberis vulgaris
Purple-leaved Barberry	Barberis vulgaris var. atropurpurea
Purple Filbert	Corylus maxima var. purpurea
Weigela (rose)	Diervilla florida
Weigela (white)	Diervilla candida
Weigela (Eva Rathke)	Diervilla hybrida
Desbois Weigela	Diervilla hybridia var. Desboisii
Silver Berry	Eleagnus argenta
Strawberry Tree	Euonymus Europaeus
Althea	Hibiscus Syriacus
Sea Buckthorn	Hippophae rhamnoides
Garden Hydrangea	Hydrangea paniculata gr.
Ruprecht's Honeysuckle	Lonicera Ruprechtiana
Tartarian Honeysuckle	Lonicera Tartarica
Tea's Weeping Mulberry	Morus Alba var.
Mock Orange	Philadelphus coronarius
Golden Mock Orange	Philadelphus coronarius var. aurea
Mock Orange, large fl	Philadelphus inodorus
Shrubby Cinque Foil	Pontentilla fruticosa
Russian Almond	Prunus nana
Rhodotypos	Rhodotypos kerrioides
Smoke Bush	Rhus Cotinus
Missouri Flowering Currant	Ribes aureum
Rose Acacia	Robinia hispida
Japanese Rose	Rosa rugosa
Golden Elder	Sambucus nigra var. aurea
Buffalo Berry	Shepherdia argentea
Bumalda Spiraea	Spiraea Bumalda
Anthony Waterer Spiraea	Spiraea Bumalda var.
Billard's Spiraea	Spiraea Billardii
Douglas' Spiraea	Spiraea Douglassi
Japanese Spiraea	Spiraea Japonica
Meadow Sweet Spiraea	Spiraea salicifolia
Van Houten's Spiraea	Spiraea Van Houtte
Persian Lilac	Syringa Persica
Chinese Lilac	Syringa villosa
Common Lilac	Syringa vulgaris
Amur. Tamarix	Tamarix Pallassi Desv. (Tamarix Amurense Hort.)
Snowball	Viburnum Opulus vr. sterile

* From bulletin 108, Wisconsin Experiment Station, by F. Cranefield.

ROSES.

Hardy garden—Harrison Yellow, Persian Yellow, Madame Plantier.

Twelve varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquettes des Blanches, Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

Moss roses—Perpetual White, Salet, Paul Fontine, Henry Martin.

Climbers—Prairie Queen, Russell's Cottage, Seven Sisters, Gem of the Prairies, Crimson Rambler, Dorothy Perkins.

Five hybrid perpetual roses for the garden: Gen. Jacqueminot, Magna Charta, Margaret Dixon, Mrs. John Laing, Paul Neyron.

COMPARATIVE HEIGHT AT MATURITY OF DIFFERENT SHRUBS

The height at maturity of the different species must be considered when planting in groups or borders. This will depend so much upon their environment that it is difficult to give the height in feet that any species may be expected to attain. When different kinds are planted under like conditions it may be assumed that relative heights will be maintained. The following may serve as a partial guide in planting:

Tall—10 to 15 Feet.

Barberry (Common)
Lilac, Common
Lilac, Japanese
Golden Elder
Lilac Jossika's
Honeysuckle, Fly
Mock Orange
Honeysuckle, Slender
Sea Buckthorn
Honeysuckle, Tartarian
Siberian pea tree (tall)
Honeysuckle, Tartarian white

Medium—6 to 10 Feet.

Barberry, purple
Crandall Currant
Silver Berry
Honeysuckle, Blue
Strawberry Tree
Japanese Rose
Spiraea, Billard's
Lilac, Chinese
Lilac, Persian
Spiraea, Douglas
Purple Filbert
Spiraea, Three-lobed
Rose Acacia
Spiraea, Van Houten's
Russian Almond
Weeping Mulberry
Siberian Pea tree (dwarf)
Wiegelas

Dwarf—2 to 6 Feet.

Althea	Honeysuckle, Albert's
Spiraea, Anthony Waterer	Spiraea, Japense
Barberry, Thunberg's	Hydrangea
Spiraea, Ash-leaved (Sorbaria)	Spiraea, Meadow Sweet
Cinque Foil	Rhodotypos
Spiraea, Bumalda	Spiraea, Plum-leaved

A LIST OF NATIVE SHRUBS DESIRABLE FOR PLANTING ON HOME GROUNDS.

Common Name.	Scientific Name.
Bearberry	Arctostaphylos Uva-ursi
New Jersey Tea	Ceanothus Americanus
Button Bush	Cephalanthus occidentalis
Prince's Pine	Cimaphila umbellata
Round-leaved Dogwood	Comptonia asplenifiora
Red Osier Dogwood	Cornus stolinifera
Leatherwood (Wickopy)	Dirca palustris
Trailing Arbutus	Epigaea repens
Wahoo	Euonymus atropurpureus
St. John's Wort	Hypericum pyramidatum
Winterberry (Holly)	Ilex verticillata
Trailing Juniper	Juniperus procumbens
Sweet Gale	Myrica Gale
Ninebark	Physocarpos' opulifolia
Buckthorn	Rhamnus catharticus
Staghorn Sumac	Rhus Typhina
Smooth Sumac	Rhus Glabra
Dwarf Sumac	Rhus copallina
Wild Red Currant	Ribes Rubrum
Wild Black Currant	Ribes floridum
Wild Rose (tall)	Rosa lucida
Wild Rose (dwarf)	Rosa blanda
Purple-flowered Raspberry	Rubus odoratus
White-Flowered Raspberry	Rubus Nutkanus
Common Elder	Sambucus Canadensis
Scarlet Elder	Sambucus pubens
Snowberry	Symphoricarpus racemosus
Coral Berry	Symphoricarpus vulgaris
Ground Hemlock	Taxus baccata
Sheepberry	Viburnum lentago

Black Haw.....Viburnum dentatum
————.....Viburnum acerifolium
Bush Cranberry.....Viburnum opulus
Prickly Ash.....Zantoxylum Americanum

SIX SHRUBS FOR HOME GROUNDS.

The following are all reliably hardy in any part of the State:

Common Lilac, Tartarian Honeysuckle, Rosa Rugosa, Mock Orange or Syringa, Van Houten's Spiraea, Common Barberry.

THREE HARDY PERENNIAL VINES.

Ampelopsis or American Ivy (native in southern Wisconsin). Wild Grape, Trumpet Honeysuckle.

SPRING FLOWERING BULBS.

Tulips, Single dwarf; Duc van Tholl pink, scarlet, white.

Tulip medium; red Artus, yellow Chrysolora pink Cottage Maid.

Hyacinth single: pink Charles Dickens, white Baroness von Thuyll, blue Baron von Thuyll.

Narcissus (daffodil), Von Lion.

Crocus: Mixed.

Tulips and other Holland bulbs must be planted in September or October and bloom early in spring.

BLACK LIST

A LIST OF SHRUBS ALL OF WHICH HAVE BEEN TESTED ON THE GROUNDS OF THE EXPERIMENT STATION AT MADISON AND FOUND UNSATISFACTORY.

Common Name.	Scientific Name.
Rhododendron	Azalea arborescens
Rhododendron	Azalea viscosa
Azalea	Azalea nudiflora
Azalea	Azalea mollis
Sweet-scented shrub	Calycanthus floridus
Blue Spiraea	Caryopteris Mastacanthus
White Fringe	Chionanthus Virginica
Sweet Pepperbush	Clethra alnifolia
Bladder Senna	Colutea arborescens
Flowering Dogwood	Cornus florida
Japanese Quince	Cydonia Japonica
Daphne	Daphne Cneorum
Daphne	Daphne Mezereum
Slender Deutzia	Deutzia gracilis
Goumi	Eleagnus longipes
Pearl Bush	Exochorda grandiflora
Golden Bell	Forsythia suspensa
Snowdrop tree	Halesia tetraptera
Virginia Willow	Itea Virginica
Kerria	Kerria Japonica
Common privet	Ligustrum vulgare
Paulownia	Paulownia imperialis
Purple leaved Plum	Prunus cerasifera var. (Prunus pissardi Hort.)
Flowering Almond	Prunus Japonica
Flowering plum (double)	Prunus triloba
Arguta Spiraea	Spiraea Arguta
Thunberg's Spiraea	Spiraea Thunbergii

The plants of certain of the above named varieties made a good growth each year but have not blossomed unless given thorough

winter protection. In this class are Bladder Senna, Flowering Almond, Flowering Plum and Golden Bell.

The Japanese Quince is hardy of bush but has not borne flowers except when given winter protection. The Goumi will only bear fruit when protected in winter. The double-flowered Almond will blossom freely if given thorough winter protection, otherwise it will kill back severely. The double-flowered Plum grows well and after a mild winter will bear flowers in advance of the leaves; unreliable, however, four years out of five if unprotected.

The others of this list have either died outright or else barely survived.

POISONS USED TO DESTROY INSECTS IN ORCHARDS AND GARDENS

PARIS GREEN.

A well known poison used to destroy biting insects, as the apple worm, tent caterpillar, potato beetle, etc.

Formula.

Paris Green.....1 to 2 lbs.
Fresh (unslaked) lime.....1 lb.
Water .....200 gals.

One-half pound of pure Paris Green to 50 gallons of water is sufficient to destroy codling moth and other insects in the orchard and fruit plantation if properly applied.

Add ½ lb. of Paris Green to every barrel of Bordeaux mixture and make a complete spray.

ARSENATE OF LEAD.

(A Poison for Biting Insects.)

This poison is better than Paris Green for the following reasons:

(1) It remains longer in suspension.

(2) It adheres better to the foliage; one thorough application being sufficient for the entire season.

(3) It may be used in any reasonable quantity without danger of injury to the foliage.

Use at the rate of 2 to 3 lbs. to 50 gals. of water or Bordeaux.

Add 2½ lbs. of Arsenate of Lead to every barrel of Bordeaux mixture and make a complete spray.

WHITE HELLEBORE.

(For Biting Insects.)

Used to destroy currant and cabbage worms and on fruits and vegetables where more poisonous substances cannot be used with safety.

Formula.

Powdered white hellebore..... 1 oz.
Water ..... 2 to 3 gals.

It may also be used in the powder form mixed with flour, gypsum, soot, etc.

BORDEAUX MIXTURE.

The Universal Fungicide. Not a cure but a preventive of fungous diseases.

Formula.

Copper sulphate..... .....4 lbs.
Fresh (unslaked) lime.....5 lbs.
Water .....50 gals.

Dissolve the copper sulphate in 25 gals. of water in one barrel or cask.

Slake the lime so as to make a paste which dilute to 25 gals. in another barrel.

The lime water should be strained to remove coarse particles which clog the nozzles in spraying.

Pour these two solutions together into a third barrel and the resultant mixture is Bordeaux.

Add 2 to 3 lbs. of Arsenate of Lead to every barrel and make a complete spray.

Caution: Use only wood, copper, earthware or glass vessels in making Bordeaux.

Stock Solution for Bordeaux.

The above formula and directions may be followed when only small quantities are used. When ten barrels or more are used at one application always employ stock solutions.

For example: Dissolve 100 lbs. sulphate in 50 gals. water.
Slake 100 lbs. of lime and dilute to 50 gals.
Then use the following formula:

Water ..... (approximately) 45 gals.
Sulphate Solution..... 2 gals.
Lime Solution.....2½ gals.

LIME SULPHUR COMPOUND.

Used to destroy San Jose Scale, Oyster Shell Bark Louse and other insects; also used as a substitute for Bordeaux Mixture.

Commercial Lime Sulphur.

Lime sulphur in commercial form is generally more desirable than the homemade product, particularly that made in Wisconsin since our lime does not generally contain a high percentage of Calcium. In fact commercial lime sulphur can be purchased for very little more than the cost of the ingredients which are used in the homemade wash. Prof. J. G. Sanders.

Homemade.

(From Bulletin 16, W. S. H. S.)

Formula.

Fresh (unslaked) lime.....15 lbs.
Flowers of Sulphur.....15 lbs.
Water .....50 gallons.

Directions for preparation. In a kettle of at least forty gallons capacity heat twelve gallons of water. In a separate vessel mix fifteen pounds of sulphur with water enough to make a thin paste. Pour the paste into the heated water and when the mixture is near the boiling point add fifteen pounds of lime. After the lime has completely slaked, boil for one hour, stirring to prevent caking on the sides of the kettle. Then strain into the spray tank (or barrel) and add sufficient water to make fifty gallons of the mixture.

Lime-sulphur wash diluted as above is used only on dormant plants. Where large quantities are used a steam cooking plant is almost a necessity.

SELF-BOILED LIME AND SULPHUR.

(Bulletin 213, N. J. Agr. Exp. Sta., Sept., 1908).

"In this combination only the heat of the slaking lime is relied upon to unite it with the sulphur, and the formula is:

Lime, best quality..... 40 pounds.
Sulphur—flowers ..... 20 pounds.
Water ..... 50 gallons.

Place the lime in a barrel and dust in the sulphur with it, so that the two may be well mingled. Add boiling water enough to start a brisk slaking, and cover with a heavy blanket to confine the heat. Add hot water as needed to keep up the slaking and stir occasionally to aid the combination. Keep this up until the lime is fully reduced and mixed with the sulphur. Then let the combination stand covered for an hour to maintain its heat; afterward dilute with warm water to the desired strength and spray at once.

It should be remembered, in making all these mixtures, that enough heat is needed to melt the sulphur and bring it into combination with the slaking lime it matters little whether the heat comes from a fire or from slaking lime or from caustic soda. For the mixtures made without fire, the water used in slaking should be boiling hot. If cold water is used the heat of the slaking lime is used up in heating the water, and not enough remains to combine the sulphur. It is only the sulphur in combination with the lime that acts as a scale-killer. The uncombined sulphur helps nothing and the surplus lime is a positive drawback, since it makes the wash too thick to penetrate well." (See also p. 129.)

SPRAY:

WHAT?	WHY?	HOW?	WHEN?			REMARKS
			1ST SPRAYING	2D SPRAYING	3D SPRAYING	
Apple	Scab	Bordeaux Mixture	Just before Blossoms Open	Just after Blossoms Drop	10 days after 2d Spraying.	
	Codling Moth	Arsenate of Lead combined with Bordeaux	Just after Blossoms Drop	10 days later	Last week of July or 1st week of August for 2d brood	1st and 2d Spraying same as 2d and 3d for scab: merely add arsenate of lead to Bordeaux
	Oyster Shell Scale	Lime-Sulphur	March or early April but before growth starts			Do not use Lime-sulphur on growing plants
Cherry and Plum	Mildew and Shot-hole fungus	Bordeaux Mixture 3—4—50	When leaves are about ½ grown	10 to 12 days later	10 to 12 days later	
Currant and Gooseberry.	Mildew, blight and Currant worm	Bordeaux and Arsenate of Lead	When leaves are fully developed	2 to 3 weeks later		
Grapes	Mildew and Anthracnose	Bordeaux	Before leaf buds open	2 to 3 weeks later	3rd, 4th and 5th applications at intervals of 2 weeks, if required	
Strawberry	Leaf-spot or blight and leaf eating insects	Bordeaux and Arsenate of Lead	When first leaves appear	After blossoms fall		
Raspberry and Blackberry	Anthracnose and fungous diseases	Bordeaux	As above	2 weeks later		Spray new growth after fruit harvest

AN OUTLINE OF THE WORK OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

The Wisconsin State Horticultural Society conducts field work at sixteen different points as indicated on the map.

The work was begun in 1897 at Wausau for the purpose of testing the hardiness and adaptability of the different varieties of tree fruits in the northern or "cut-over" regions of the state.

These orchards comprise 55 acres and 5445 trees in addition to two acres of grapes.

The orchards at Wausau, Medford, Barron, Poplar and Maple are "Trial" Orchards, being for the purpose above indicated; the Sparta vineyard is also in this class.

The remaining orchards are located in sections where tree fruits are known to thrive and are designed as 'Model' or demonstration orchards to show the best methods of culture, best varieties for market, etc.

An account is opened with each of the "Model" orchards with the confident expectation that a decided margin or profit will be shown at the end of 10 or 12 years. The orchards should then yield profitable crops for 20 years longer with but moderate expense for maintenance.

In these two ways the Society hopes to demonstrate the possibilities of fruit growing in Wisconsin.

The Society has recently undertaken the task of improving the grounds of the 7,000 rural schools of the state. (See 1912 Arbor Day Annual.) A comprehensive plan has been adopted and the first steps taken.

ADDITIONAL AIMS AND PURPOSES OF THE WISCONSIN STATE HORTICULTURAL SOCIETY.

Organized in 1865, being the legitimate successor of the Western Fruit Growers' Association, which was organized in 1853.

Chartered by the State of Wisconsin in 1871.

Purely an educational institution.

Its purpose the advancement of every branch of horticulture throughout the state.

Aims to accomplish this through publications, individual help and Conventions (two yearly).

Issues an annual report (250 pages) containing articles by experts on orchard culture, small fruit and vegetable gardening and the decoration of home grounds. Sent free to members.

Issues a monthly magazine Wisconsin Horticulture which is sent free to members.

WE ANSWER QUESTIONS.

Individual help is furnished through the Secretary, who obtains from reliable sources information on any horticultural topic. No charges for such services.

Receives an annual appropriation from the state for the support of the field work and other activities.

Extends an urgent invitation, a promise of help and the hand of fellowship to all who want to learn about the growing of fruit, flowers or vegetables; to all who love the beautiful in nature a hearty welcome is assured.

Cordially invites every person in Wisconsin who wants to know something about fruit, flowers or vegetables to become a member as such persons are needed to help along the splendid work in which the Society is engaged.

D. E. BINGHAM,
President W. S. H. S.,
Sturgeon Bay.

FREDERIC CRANEFIELD,
Secretary W. S. H. S.,
Madison.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

SUMMER MEETING

Oshkosh, Wis., August 16, 1911.

AFTERNOON SESSION.

The meeting was called to order by President D. E. Bingham at 2 P. M.

The president introduced Mayor Banderob of Oshkosh, who spoke as follows:

ADDRESS OF WELCOME.

Ladies and Gentlemen of the Horticultural Society of the State: I am glad to meet you. The people of Oshkosh feel honored to have you once more in our midst, and in behalf of my fellow citizens, I bid you welcome.

The occupation of horticulture is of great importance to all. Horticulture and agriculture are of more benefit to mankind than any other thing. Your toil produces the food which is indeed the staff of life, supporting the toiling, struggling humanity who this very morning are requiring their daily bread, all looking to the horticulture and agriculture of the country for that daily bread, and the food of the animals depending upon them, a demand as great as their own. It is the daily duty of the tillers of the soil to satisfy this gigantic

appetite, to fill the mouths of these hungry millions, for if by any mishap the supply were cut off for a few days, the life of the country, human and brute, would be extinct. How nobly this great duty of yours has been and is performed! The horticultural supply of all kinds of vegetable food is abundant, and our tables will be well supplied with all kinds of berries. The agricultural products, according to reports, I understand, are about as follows: The wheat crop this year is 30,000,000 bushels; corn, 500,000,000; oats, 300,000,000; potatoes, 90,000,000; barley, 23,000,000; buckwheat, 3,000,000; hay, 12,000,000 tons; which indicate men and animals will not have to go hungry. I hope the young men of this and future generations will go out and take up land and supply people with more of the good things of this life. That is where we have made a mistake; there are too many people in the cities. If I had to do it over again, my life would be that of a farmer all my lifetime. You have the best occupation on the face of the earth.

In conclusion, I wish to congratulate the members of the Horticultural Society. Yours is a most happy, healthy and independent life. I wish to tender you my most fervent and best wishes, and hopes for your increasing prosperity and usefulness.

RESPONSE ON BEHALF OF THE SOCIETY.

BY MR. WILLIAM TOOLE.

Mr. Mayor and People of Oshkosh: We are all glad of this occasion which brought us together and has given us an opportunity to receive a welcome from the people of Oshkosh as represented by their worthy mayor. We are glad to feel that the people of Oshkosh who received the members of this Society here before, liked us so well they asked us to come again.

As you are all aware, it is our custom to have our winter meetings for our more heavy work at Madison, in the summer going over the state, where we can do two things; do the most good to the people, and receive the most benefit from the people. We do not come here altogether as missionaries to you

people of Oshkosh, thinking that we will teach you so much horticulture, but that we will also receive from you information which will be carried on to other places. We like to come to places where we can see what is being done in the way of home adornment, and as we look back over the years to the pioneer work that we did in the line of horticulture, not only promoting what is esthetic in horticultural life, but also in promoting fruit growing and all other branches of horticulture, we realize that the world has become richer. The farmers have passed the heavy work of clearing their farms and can give more attention to the brighter part of life, and we feel greatly encouraged that year by year our society becomes more and more important in the activities which lead to life's betterment, and we are glad to think that our power for good is increasing, as well as the appreciation of what we can do. From what I have seen of your city and from what our brother members tell me of the city of Oshkosh, it is eminently a city of homes, and we can see with but little glancing around us that the people love beautiful surroundings and are doing much that is worthy of example. Therefore, I am glad to feel that we will go away from here, as we left Oconomowoc a year ago, feeling sure that we will be glad to come again.

We thank you, Mr. Mayor, and the people of Oshkosh, for the cordial welcome that we have received, and we are glad of this opportunity that we have to meet with you, and I hope when we go away that you will be glad that we have been here with you.

AMATEUR FLORAL DECORATIONS.

BY MR. WM. TOOLE, BARABOO, WIS.

To the true lover of flowers there is joy in sharing with others the pleasure to be derived from their beauty.

In the garden, in their natural form is to be found the greatest beauty of flowers, but fortunately they may be separated from where they grew and retain much of their beauty so that we may share with others the delight of their contemplation, in our homes, or elsewhere. Gathered in loose sprays or with

more formal arrangements of what we call boquets is the most useful manner of assembling flowers to show their beauty in a decorative way, or to enhance the enjoyment of some occasion.

The present tendency to group together separate kinds and even separate shades of color of one kind of flower is commendable and yet we desire change and variety, and we sometimes choose to have varying tones of color in our groups. Then it becomes necessary to consider harmony of colors. Most generally, though not always, we find that there is no decided shock to our sense of the fitness of association when grouping together the various colors of any one variety of flowers. Those who have made a scientific study of color harmony can tell us all about color complements and dissect the rainbow to illustrate their ideas. We need not burden our minds with set rules, nor must we be able to define the various distinctions between lavender, mauve, ecru, with the varying shades of lilac, bluish purple, and heliotrope, or the finer distinction of red, from pink and rose through carmine, magenta, solferino, cerise, crimson and scarlet, to know if we have placed together shades which seem to clash, like false notes in music. The one who cannot discern fitness of association in colors after careful comparison, will not be helped much by committing to memory set rules on color harmony.

It is accepted as orthodox in floral arrangement that we may make free use of white or green among other shades of color for contrast or an effect of finish, and yet it is often necessary to consider how the green shall be placed next our flowers. Pansies and many other flowers may nestle among foliage without loss of good effect, but try your asters,zinnias, dahlias, and many other varieties in various ways and it will be seen that the beauty of the flowers is most effective when kept above the foliage as Nature has provided.

It is generally the case that the foliage of any particular kind of flower is the most suitable accompaniment, but it is not always convenient to provide such, and the additional green is often unnecessary when the flowers are in vases. If the flowers are carried in the hand, or arranged in a spray, as at funerals, then of course some finish below the flowers is necessary in addition to the tying on of ribbon.

The professional florist makes provision for a supply of green foliage for use as occasion requires, either with boquets or designs. The strictly amateur flower grower is not likely to have a supply of smilax, the ornamental varieties of asparagus, or suitable ferns, therefore, use must be made of whatever material is to be had. For use as supplementary green, divided foliage is desirable. We may as a makeshift at times make use of the leaves of schizanthus, cosmos, aquilegias, rose geraniums, mountain fringe, and some of our native ferns with more suitable material if it is to be had. Immature foliage wilts easily, therefore that which is full grown should be used if detached from its branches. It should be placed in water in a cool place for several hours before being used in a bouquet or design. The one who is generous with flowers will be rewarded with more, because gathering of flowers prevents seed-bearing, thus inducing the plant to produce more. For house or other indoor decoration, perhaps no flowers are more satisfactory than the gladioli. They are so lasting through renewal, by succession of flowers until the last bud has expanded. Much satisfaction can be had from the gladiolus by growing a number of each shade in several choice kinds. Many kinds of flowers as for instance the snapdragon have to a considerable extent the quality of renewal through development of succeeding buds. Nearly all of our hardy perennials are suitable for cut flowers. and many of them will give a succession if the first flowers are used and the plants are kept well cultivated. The early varieties of cosmos are being improved and give very desirable flowers which are almost as durable as asters. Of course, all persons like the late cosmos when they chance to blossom before freezing. Perhaps it would really be the province of another paper to enumerate the leading varieties of flowers which are suitable for boquets. Sometimes it is desirable to make the most possible out of very few flowers, as for instance, a cluster of geraniums with rose geranium leaves or other greens. A goblet and saucedish give opportunity for a combination of flowers with the longer stemmed varieties above and short stemmed flowers like pansies, balsam, or alyssum in the flat dish below. When arranging flowers in platters or shallow dishes it is not always convenient to provide sand or moss as a supporting material. A few leaves and stems of plants—it may be clover

even—serve to keep the flowers above the water. A piece of wire netting can often be used to advantage as a support to the flowers in these flat arrangements. There is often occasion where the side boquet with its front view of flowers is most suitable. For such boquets it is well to use a flat frame for a backing to which the flowers may be held in place; with floral designs the professional florist has a great advantage over the amateur in possession of available material. And yet I have known of ladies who have shown wonderful ingenuity in combining moss and wire and twine as a base for beautiful creations in floral work. There are times when friendship leads us to desire to make some formal arrangement of flowers and with sphagnum moss, fine wire, tin-foil and toothpicks in hand it is possible to make pleasing combinations from material which could not be used in an ordinary boquet. Recently there was a funeral and the hot August weather found the greenhouse in the nearby city scant of flowers excepting a few early asters. Pansies, double petunias, sweet alyssum and a few early cosmos were arranged by a friend and something of beauty was produced which was a solace to the bereaved ones. There are times when pansies make such a generous growth of foliage that one may feel free to cut the spray from the plants. These, if arranged in flat bunches of five or six sprays to a bunch can be assembled together on the surface of a casket or table in the form of wreath, star, cross or other design. The same idea may be carried out with some other flowers.

In arranging baskets of flowers, do not have the flowers packed too solidly together, nor yet standing out singly as if stuck in sand. In baskets or designs do not forget that the green should be subordinate to the flowers and that some shades of pink flowers look better if kept away from than if bedded in green. The handle should be secondary to the basket and no matter what fashion may permit, the use of ribbon can be overdone, yet if used with taste ribbon gives a finish which is very satisfying to the eye. It is the fashion of some of the papers these days to rail at the custom of presenting flowers at funerals as a waste of money and materials, but I am glad to think that we may always have such opportunity to express our sympathy and regard in times of bereavement.

LILIES.

BY MR. A. J. SMITH, LAKE GENEVA.

This subject of bulbous plants is far-reaching and interesting, not only to the practical gardener but also to the amateur, as a great many of these varieties of bulbs are of very easy culture.

The family of Lilliums comprise some of the most beautiful flowers. We have in cultivation Lillium Auratum, the grandest of all the lilies. It is called the gold-banded lily of Japan —so named because it has a gold band running through the center of each petal. The power of its fragrance is marvellous. There are several types of the Auratum, such as Auratum Pictum and Vittum Rubrum, but I think the old Var which was discovered in Japan many years ago by Mr. Gold Veitch is preferable, because it is a stronger grower, you get larger spikes of bloom.

These bulbs should be planted as soon as you receive them in November. They should be planted in good rich soil, covering the bulb ten inches. They will flower the following July and August.

There are many of the Japan lily bulbs that do not arrive here until the ground is frozen and if you intend planting these bulbs in the fall, it is a good plan to prepare your beds and cover them with leaves or litter to keep the frost out.

Lillium Lancifolium or Speciosum varieties are great favorites by all that know them. Lancifolium Album pure white Roseum, light color spotted Rose, Lancifolium Melpomene, rich crimson. This variety is a stronger grower and has larger flowers than the other Speciosums. I like it better both inside and out than Roseum. These varieties, like Auratum, are natives of Japan, and should be planted as soon as the bulbs are received. Plant them in good rich soil, covering ten inches. Lillium Longiflorum Muliflorum, trumpet shaped flower, pure white, very fragrant, should be planted in October to flower the summer following. Lillium Candidum, the old English Lent Lily, the best bulbs of this variety, are grown in the north of France. Everyone knows this old garden lily with its long

racemes of pure white flowers, and its delightful fragrance, which cannot be surpassed by any other variety. Under proper conditions, these large spikes will average from six to eighteen blooms. I showed some spikes of bloom last spring of Candidum with seventeen flowers, nor were these from new bulbs; it was the second year flowering with me. This variety, like most lilies, should be planted ten inches below the surface; they get a natural protection during winter and summer. In winter they are shut in air-tight by the frozen crust, and in summer they do not dry out so soon. They need a good, rich soil; it is a good plan to fork in some well decayed cow manure in the spring as soon as the frost is out of the ground. Lillium Tigrinum and Lillium Tigrinum flore plena, both the single and double, known as the Tiger Lily. This old variety is a great acquisition in perennial borders or dotted amongst shrubbery. This variety is a strong grower and easily cultivated and makes a very showy effect with its large spikes of orange colored blossoms spotted black. This variety should not be forgotten at planting time.

Lillium Henyrii is a native of northern China; hardy, and resembling the speciosum type. On good soil it will grow six feet and produce five to eight flowers on a spike. The color is apricot yellow spotted brown. Lillium Hansonii is another variety that should not be overlooked, especially for its early blooming. It grows about three feet, with golden yellow flowers, and blooms in June. Lillium Brownii is another species which is not grown as much as it deserves, or as it used to be. Of course, there are good reasons why Brownii has to take a back seat, because of the increased production of Lillium Longiflorum and Giganteum. The odorless Brownii can not compete with these varieties. Although Brownii is a beautiful flower and as large as Giganteum, trumpet shaped, color pure white inside, and the outside purplish brown, easy to grow and perfectly hardy, the native lilies are the best for producing natural effects, also the family of the Japanese elegans type, for planting amongst shrubbery, or in the natural wild gardens, varieties such as Lillium Superbum, Canadense and Philadelphicum. These grow well in a moist soil and partial shade, and in such aspect as these I don't know any flowers that are more satisfactory.

I wish to say a word for cold storage lily bulbs. This is practically a new feature, that is to say, it has not become general, but is fast becoming so. The high prices of these bulbs has kept them from being distributed more generally. The most useful amongst these retarded bulbs is Lillium Speciosum and Giganteum for winter blooming. These bulbs require more careful treatment than the same variety grown in the summer. They have not the vitality; they do not make so much root. I find they want to be confined to the smallest pot possible in accordance with the size of your bulb. I use nothing larger than a five inch pot, and a good many in four inch pots. It takes a little over five months to flower the Speciosums after planting the bulb, that is to say, you may plant the bulb in the middle of July and have them in bloom at Christmas. The Giganteums are somewhat stronger and quicker to bring into bloom; it takes about three months from planting the bulb to flowering. If you want a succession of cut flowers during the winter, it is a good plan to use the same methods as you do with Lily of the Valley; plant for succession, one month apart, starting the first batch August 1. This will keep you all the winter in Lillium Giganteum.

Lillium Harrisii, the Bermuda lily; these newly imported bulbs will follow your Giganteums, beginning January 1. This beautiful lily is not so large in its individual bloom as Longiflorum, but when well grown produces more flowers on a spike. Harrisii can be brought into flower in a shorter time than Longiflorum, which makes it more valuable for that reason; the medium size bulbs are best for early forcing. It does certainly seem wonderful when we stop to think, what nature has done in producing a natural succession of different varieties to follow one another until their season is past; and then again the ingenuity of man in retarding some of these varieties in cold storage, to be produced in all their glory out of their natural season.

Mr. Toole: I should like to ask the speaker if the two lilies, Lillium Candidum and Lillium Longiflorum are sufficiently hardy so that an amateur may take them in hand and plant them successfully, keeping them year after year, without renewing the bulbs each year?

Mr. Longland: You had better get some every year. They will last about three years in good shape; if you put in a few

every year, of course, you will have enough to keep on with right along.

Mr. Toole: Have any of you had experience with hyacinths? How do you get them properly started for winter bloom?

Mr Longland: You need a good compost soil, with a little sand and sometimes a little moss to the top; use a 5 inch pot. Put them in the cellar to start.

ROSES.

BY MR. A. MARTINI, LAKE GENEVA.

Let me in a brief way touch on some of the most essential points: Soil, location, varieties, protection, pruning. As in the cultivation of other plants the questions of soil and location enter first into our minds. The former must be well drained to begin with, for roses will not stand wet feet for one thing. Avoid very sandy or mucky ground—a soil rather heavy will give best results. Try to prepare your new rose beds in the fall for spring planting. Dig deep and pulverize soil well, incorporate a liberal supply of barnyard manure and course ground bone with the soil, using about 1/6 part of the former and 25 pounds of the latter to 1 yard of soil. Full sun exposure is the best. Now as to what to plant: without going to extremes in the classification of roses, we must nevertheless make a distinction for general understanding and will divide into hybrids: Hybrid-Teas, Ramblers, Moss, Rugosa and Everblooming roses.

The hybrids are among the hardiest of strong, robust growth that produce one good crop of flowers early in June and some varieties will bloom sparingly during the rest of the season. There are very many, in fact hundreds of varieties, but one good white, two shades of pink, two shades of red, and one dark red should be found in every garden. Frau Karl Drushky, Baroness Rothschild, Wm. John Laing, Ulrich Brunner, John Hopper and Prince Camille de Rohan, can be well recommended under the colors mentioned. Many more there are, of equal worth it is true, but I would suggest to plant few varieties only and have a large amount of the few whatever

they may be, for if used as cut flowers you will make a finer display and show better taste in arranging by using a mass of one color only, be it roses, or with few exceptions (pansies, salpiglassis, leahiose, etc.) any other flower. In planting young roses, grafted stock is considered best, being hardier and stronger growing. Plant deep, the grafted part should be at least two inches *under* ground and not, as in fruit trees, *above* ground. Two feet apart each way is a good distance and—the best time to plant is April if your ground is in workable condition. Get dormant plants and prune back to 4 or 5 eyes, do not expose the roots to the drying winds or you'll give to the nursery man the blame that belongs to *yourself* when in a few months you only gather a bundle of *dry sticks* instead of the beautiful flowers. So much for Hybrids. In regard to the *Tea Roses* or Hybrid Teas more properly speaking, I wish to say that they should be planted more generally, being almost continuous bloomers from June until hard frost, they will handsomely reward you for special care given them. *Pink Maman Cachet, white Cachet* the fiery crimson, *Gruss an Teplitz,* white *Kaiserin Augusta Victoria,* and the shell pink *Killarney,* are among the best of this class. The fruit grower sacrifices quantity for quality by thinning his fruit, so does the gardener obtain quality by *disbudding,* he sacrifices several buds to obtain one or two choice flowers to the stem, and long stems are his aim as well as choice flowers. These Hybrids and Hybrid Teas we must protect during winter. After the ground is frozen to stay so, peg the canes down as close as you can get them and cover with dry leaves or stable litter about one foot in *solid* thickness, and do not remove this covering, no matter how nice and warm the month of *March* might be, do not uncover until about the first week in April and then it is best to uncover gradually to get the wood used to light and heat by degrees. Should some of your plants look black trim well down to the ground. They will most surely sprout from below ground. The others must be pruned to about 6 to 10 inches from the ground. As a rule the Hybrids are pruned sharper than the Teas.

Give your rose beds a light spading, working good manure and some bone meal into the soil and if the weather be favorable like this year you'll enjoy a wealth of bloom by the end of May and early in June. If you have discovered a new way to

attain results then pass it along to your neighbor; get him or her interested that they also may learn to enjoy the beauties of Nature. On the other hand, if you have failed do not become discouraged; try again. Do not cover nor uncover too early. Do not overdo fertilizing or neglect watering, and last but not least, look out for insects. And right here remember spraying; *spraying* for prevention more than for cure. The rose-leaf slug, a small green caterpillar that works on the underside of the leaves will soon skeletonize your rose foliage from the bottom up so it will ever be an eyesore all through the season. Use arsenate of lead—a 1/50 solution—and cover the whole plant. This is very effective for this pest as well as for green fly. Apply in as fine a spray as possible, and while the foliage will be discolored slightly it will prove of no harm to the plants. It will however burn partly opened flowers, therefore the necessity and benefit of *early* application. The rose beetle, a leather colored insect of the size of a "ladybird" and of very hard body, who disfigures permanently any rosebud that he starts to chew on, must be handpicked.

Your rose garden is not complete without one or more Ramblers for these make a beautiful sight when in bloom, whether single or double. They are well adapted for covering arches or trellises, or can be trained into fantastic shapes. Those that are perfectly hardy are the Crimson Rambler, Prairie Queen (light red change to deep pink), Dorothy Perkins (shell pink, extra large clusters), and Lady Gay (soft pink turning lighter). These are all double flowering. Some of the best single flowering ones are "Hiawatha" and "Newport Fairy" —large clusters of light pink and dark pink flowers with a white center. They should be covered during winter and only very light pruning given in the spring if the old canes were left on the plant. A better way is to cut out all of the old canes after the flowering period and leave four or five of the strongest new ones to take their place and no further pruning will be necessary.

Many types of roses are also well adapted for the landscape gardener and beautiful effects can be produced by massive plantings of Rugosa roses—those very hardy roses of Japan—that bloom all summer and are equally attractive in winter with their bright berries. And so we could go on mentioning

type after type not forgetting our own native varieties, as Rose Setigera that is equally well adapted for planting in masses in large shrubberies, and so are the old favorites—the moss roses—that must, however, be pruned rather hard every spring to give best results. There is the *Rosa Lermosa* or monthly rose, the *Clothilde Soupert,* and the *Baby Rambler,* that are so well adapted for planting narrow borders, and knowing that the list is far from complete to suit everyone's taste will close, wishing success to the planter of roses, assuring you that all the varieties mentioned are among the best that can be grown.

DISCUSSION.

Mr. Niles: We have been trying the Fairfield, but have not tried it long enough to say whether it is hardy or not.

A Member: How about the Rosa Rugosa?

Mr. Coe: The Rugosas are hardy enough so that they need practically no protection. By the way, they are among the finest roses we have, the foliage is fine, the flower, too, is fine, and in the early part of the winter the shrub is covered with a bright red berry. They can be pruned back to give them any shape you want. The name of it means rough-leaf rose, sometimes it is called the Japan rose. There are a number of hybrids here that are almost equally successful. They have one or two large double red flowers and they blossom all summer, just the same as the single one. They make a beautiful hedge.

A Member: I should like to ask the gentleman how far apart to plant them for hedges?

Mr. Coe: Plant them about two feet apart; they will come together and make a solid hedge in about two years.

Mrs. Howlett: Is there not more necessity for covering and uncovering here than in Lake Geneva? I think there is considerable difference in the cold between this locality and Lake Geneva.

Mr. Coe: Well, Oshkosh is not very far from Lake Geneva. Just one word of precaution about covering roses. Never cover them until it gets cold weather; never cover them so they will get wet. The main thing in covering roses is to keep

them dry. Covering with leaves is good practice, but put a little marsh hay over the leaves, so that they will shed the water. If they keep wet they are likely to rot. You can keep tea roses over winter by keeping them dry.

Mrs. Howlett: Would not the mice get into the covering of leaves and marsh hay?

Mr. Coe: Cover them late, cover them after the mice have made their nests elsewhere.

Mr Toole. Would you advise taking them down before?

Mr. Coe: Yes, that is all right; take them down, but do not cover them until the ground is frozen. Cover them two feet with dry leaves, then put some dirt over them and marsh hay.

Mrs. Howlett: I think Mr. Eben Rexford's directions for covering rose bushes are better than anything else I have ever used. He said, take sods about 8 inches broad, I don't remember just the dimensions, but probably a foot and a half long, and have them cut loose from the ground ready for covering the rose bushes just before it freezes up. Then bend them over, lay these sods onto the bush; it will not smother the bushes and it keeps them warm enough so that they do not freeze. I have used it and found it an excellent plan, and the mice do not get into it as they did into hay when I covered them with that.

A Member: Do you cover the roses up with the sod?

Mrs. Howlett: No, bend the bush over and hold it down with the sod, and then perhaps put a light covering of dirt over the bush. The mice will not work in dirt as they will in litter.

Mr. Toole: I have had success in covering roses with garden soil. I would urge this precaution in bending the rose down: do not bend too abruptly as they may snap off. For that reason I often lay a shovelful of soil up against the bush, to prevent breaking in turning over. I have had roses that were in beautiful order above and below the bend, but killed right at the bend, because the soil had washed away and left them exposed at that point.

Mr. Niles: The old-fashioned June roses are among the most satisfactory, as they are good bloomers and perfectly hardy, but they bloom only during June.

FLOWERS FOR THE FARMER.

BY MRS. MARCIA HOWLETT.

When buying a farm ninety-nine out of a hundred purchasers would select, all other things being equal, the farm that was adorned with trees, shrubs and flowers. Why? Because apart from any sentimental reason, they instinctively recognize the increased money value of the one over the other.

One has more respect for himself and his calling if his home grounds are well kept and beautiful. The Good Book says "To him that hath shall be given," and he commands more respect from others also, for well kept grounds proclaim thrift and prosperity to every passer-by, and all right minded people wish to be considered thriving and prosperous.

We need not set lessons or expensive books to teach us how to adorn our homes, the great book of nature is wide open for all to read, and it is filled with many beautiful illustrations of the artistic blending of trees, shrubs and profusion of bloom.

The Thorn Apple, Wild Crab, Wahoo, Haw, Elder and Wild Rose are native blooming trees and shrubs that would enrich any landscape. The Sumac, Scarlet Maple and Virginia Creeper, with their gorgeous autumn coloring are as beautiful as flowers.

Our native climbers, Bitter-sweet, Wild Cucumber, Honey Suckle, Wild Grape, Wild Morning Glory and Clematis, if given a chance will cover all unsightly spots and harsh outlines, with a living, ever changing, swaying mantle of green, or twining their graceful vines and clinging tendrils into a leafy canopy of bud and bloom, they quickly transform a barren spot into a bower of beauty.

Hardy bulbs and Herbaceous Perennials, that will live year after year in a permanent border and furnish a succession of bloom from Spring to Fall, even with a little neglect, are Butter-cups, Tulips, Peony, Day Lilies, Lychnis, Columbines, Daisies, Hollyhocks, Digitalis, Larkspur, and Phlox.

Hardy shrubs that are easily cared for are Sweet Briar, Syringa, Snow Ball, Lilac, Spirea and hardy roses.

The easiest way to raise annuals for cutting is to place them in rows in the vegetable garden. Except for a little hand weeding in the row, all cultivating may be done with a horse if care is taken not to bury the tiny seedlings. The following varieties have proved good: Pansy, Pinks, Cosmos, Verbena, Poppy, Zinnia, Sweet Peas and Phlox. All of these are as easily raised as lettuce or onions.

Why then is there such a dearth of flowers around many of our farm homes? H. H. in a poem entitled "Poppies in the Wheat" gives one answer to this. In this poem she tells of the poppies in the wheat, and to her fancy they seem like tiny men, bearing torches along the shore of the heaving billow of grain, and she adds:

"The farmer does not know that they are there.
He walks with heavy feet,
Counting the bread and wine by Autumn's gain.
But I smile to think that years remain
Perhaps, to me, when bread be sweet
No more, and red wine warm my blood in vain,
I shall be glad, remembering how the fleet
Lithe poppies ran like torchmen through the wheat."

I cannot think this is wholly true of the farmer, for Nature gives to all, in varying degrees, a love of flowers. Mayhap in our eager chase of the dollars we lose the joy and enthusiasm with which, in childhood's days we hailed the first spring blossom, or pass, unseeing, by the hedge of wild roses in bloom in our eager haste to perform the money-getting duties of the farm, and our love of flowers becomes—not lost—but dwarfed and atrophied.

I am sure it would do us all good to look at our homes with seeing eyes, as we pass along the highway. Look at it, as a stranger might, admiring its beauties, criticizing its defects. Too often, from long familiarity we pass it by with unseeing eyes, not knowing that the burdocks and wild parsnip, or other plants out of place are giving our homes an unkempt, down at the heel look, and occupying space that would better be filled with blooming shrubs and flowers.

At some time in our lives, we all cherish a desire for a home with beautiful surroundings, and the plans that are made in

our bright-hued day-dreams are surpassingly fair. But spring-time, the time when our enthusiasm reaches its height, is a busy time on the farm; for corn planting crowds the sowing of grain, and cultivating follows closely for weeds will not wait, and our beautiful ideal never materializes, but is put off from year to year, it may be at first with a sigh for the hope deferred, until finally we cease to think of or desire it, giving our whole time and energy to the crop that yields the largest and quickest money return, ignoring and putting out of our lives, the finer things that are worth more than gold. If we cannot do just as we would like to do, all at once, let us not go to the other extreme and do nothing. Patient continuance in the work, here a little, there a little, rather than occasional enthusiastic spurts, will work wonders in transforming our surroundings, and bring us each year nearer the beautiful ideal we all cherish in the innermost recesses of our hearts.

The wealth of the farm and our lives consists not in the money value of our possessions, but rather in those things that increase our pleasure and comfort and add to our usefulness. The love for and companionship of flowers, refines our tastes, cultivates a love of the beautiful, and surely, though silently, uplifts our better nature.

He labors well who builds a home, and doubly well if he adorn that home with the flowers Nature so lavishly bestowes upon us, making it a joy to the inmates—beautiful to the eye—fragrant with bloom—a fitting abode for a—FARMER.

A Member. I think the speaker's remarks are very true in regard to the many beautiful things that we have growing all over the country. From the interurban I noticed many beautiful wild flowers, bitter-sweet and the goldenrod, so many things that we might have for decoration, and we never think of planting them in our garden.

A Lady: In regard to the goldenrod, some people cannot endure it, think it gives them hay fever. Does any one know anything about that? If it is a nuisance, we do not want it.

Mrs. Howlett: If any one is troubled with hay fever, they can admire the goldenrod at a distance.

Mr. Toole: I should like to know if any one has found the foxglove very hardy.

Mrs. Howlett: For a number of years we have had it with

no protection except the leaves that naturally drifted over it, and it has proved hardy.

Mr Coe: I believe in trees, shrubs and flowers for another reason, I believe in them because all of us are better because we have them. I believe they have an effect upon our homes and upon ourselves. All of us, consciously or unconsciously, live up to or live down to our environment. If our surroundings are pleasant, comfortable and beautiful, we strive always to live up to these surroundings. I believe that. I think I can make some of you see it. Did you ever see a company of little girls get into their mothers' skirts? They are pretty big women, are they not? Did you ever see a company of boys play soldier? The boy that happens to be general of the company? He walks so stiff, you could not bend his back; if he meets a team the team has to get out of his way. All these surroundings and all these conditions have their effect upon us, and we can make our homes so beautiful that we are likely to be better men and women for it.

CANNING.

MRS. IRVING SMITH, ASHLAND. PAPER READ BY MR. SMITH.

HOME CANNING OF FRUITS.

In this paper we are going to discuss canning as it may be done by any woman in her own kitchen with ordinary cooking utensils. I prefer the porcelain-lined, granite or aluminum pans for cooking fruit, as one is less liable to burn or scorch the contents. Use glass jars for holding the fruit. There are many new kinds of jars on the market but the most widely used is the Mason jar as most of us have a supply of them on hand. New rubbers must be had each season, old rubbers stretch and the air is liable to get in.

Placing the new rubbers in warm water, in which a little soda has been dissolved, will put them in good shape to use.

Do not use covers that are bent out of shape or in which the porcelain is cracked or broken. It is best to replace all defective covers each season and save loss of fruit.

In the old days fruit and vegetables were prepared for winter use by preserving and drying. At the present time, canning is an almost universal way of keeping for winter use some of the fruit of which we have such an abundance in summer. The syrup for preserving fruits is much heavier than that used for canning. Bacteria do not grow rapidly in any syrup and cannot penetrate one with a large amount of sugar. Bacteria causes fruit to spoil—molds act in the same way. Consequently, bacteria which are in the fruit or jars must be destroyed and the air which contains them be excluded. When a liquid containing fruit boils, bacteria are destroyed; then if the fruit be put in jars that have been sterilized and the air completely excluded the contents will keep indefinitely. I have kept fruit two or three years and found it in perfect condition when opened.

To prepare the jars for holding fruit immerse in boiling water—see that the water covers the jars completely, inside and out, all at one time, so that they heat through evenly. Boil the covers thoroughly.

Choose fruit which is ripe, but not over-ripe. Always select the finest fruit for canning to get best results. Use the tender stalks of pieplant—cut in small pieces without peeling, as it is of a more delicate flavor and pleasing color than when peeled. Place in kettle with enough water to keep from burning, add sugar if you wish, or it may be canned without and sweetened when used. Boil until tender and put into sterilized jars; fill to overflowing, that all air may be excluded. Press fruit in jar gently with sterilized silver knife to further dispel air bubbles, then fill again to top. Take covers from boiling water and place quickly on the jars and screw tightly. After covers have been fastened turn jars upside down and place on table. In this way any leakage will be discovered. In about ten minutes try covers and tighten if possible, for as the glass cools it contracts. Set jars aside to cool and before removing to store room test covers once more to make perfectly sure that they are air-tight.

For canning apples—pare, quarter and put in cold water to prevent discoloration. Make a syrup, about a quart of sugar

to three pints of water. Bring to a boil; drain apples from water and place in syrup. Boil fifteen minutes or more depending upon character of the apple. When ready for canning the apple should be translucent but firm. However, some apples do not hold their shape when cooked, the Duchess in particular, makes a sauce of a snowy consistency.

Pears and peaches may be canned in the same way as apples—of course the amount of sugar used varies according to the kind of fruit. Many prefer steaming peaches and pears in the cans as they are less liable to lose shape and color. Strawberries, raspberries, blackberries, blueberries and plums are very fine cooked in the cans. Wash the jars carefully—clean the fruit thoroughly—place it in the jars until full, shake down carefully and fill again. Have ready a syrup made of granulated sugar and water or put sugar in jars with fruit and fill with hot water, being careful not to crack jars. My rule for using sugar is half a pound to a quart of strawberries or blackberries; quarter of a pound to each quart of raspberries or blueberries; three-fourths of a pound for a quart of currants or plums. When jars are filled remove covers from boiling water and place on jars. Put jars in a steamer or on a wooden rack in an ordinary wash boiler or kettle. Fill boiler up to the neck of the jars with water the same temperature as the jars. The small fruits need but ten minutes boiling, the larger from twenty minutes to half an hour. Remove jars from steamer or boiler, take off the covers and throw into a pan of boiling water. Press fruit gently to remove air, fill to overflowing with boiling syrup or water, quickly replace covers and screw on tightly. Test as in canning fruit boiled in a kettle, by placing jars upside down and when cool, tighten, if possible, once more.

In conclusion, I would say that successful canning of fruit is not such a hard task as many would think. Good sound fruit, kept at the boiling point until sealed, clean jars and utensils are the secret of success.

Mrs. Howlett: Have you good success in canning string beans and asparagus?

Mr. Smith: We have tried vegetables in Mason jars and very generally failed. We are trying this year the Hancock jar and we think we will succeed, because the air is cooked in and

the can is automatically tightened, so that there is no chance for explosion.

Mrs. Howlett: Do you recommend aluminum dishes to cook the fruit in?

Mr. Smith: We like them very much, but in cooking things with sharp acid, aluminum will sometimes give trouble.

Mr. Toole: I am glad Mr. Smith laid such strong emphasis on keeping germs from having a chance to get at the fruit. When this idea of canning was first brought forward, the proposition was simply to keep the air away and that was sufficient, merely to keep the bacteria away. Some years ago I read that you could put up fruit in an ordinary jar and instead of sealing it tight, cover with cotton batting. I tried the plan and it was a perfect success. The cotton batting strained the air and kept out the bacteria. We notice in opening up different kinds of fruit, there are different kinds of bacteria, sometimes mould, sometimes something else. Personally I do not like the Mason jar, and if you will at any time when you conclude to throw away the cover, crack the porcelain and look to see what is between the porcelain and the cover, you will know my reason for not liking them.

Mrs. Howlett: Has Mrs. Smith good results by putting sugar in the fruit and afterwards putting it in the can?

Mr. Smith: She has adopted that quite commonly, canning raspberries, putting the fruit in the can and in the middle, near the top of the can, put it in dry, shut it up, then put in hot water. I asked her why she did it; she said it was not quite so much work and it was equally as good. The sugar dissolves in there; there is no difference when the fruit comes out.

MY PRIZE CORN.

By J. Mills Smith, Ashland.

(Ten Years Old)

One night we saw a piece in the paper that the Superintendent of the Experiment Farm was going to give a prize to the corn raised the best by boys from ten to sixteen years old. So papa spoke to Mr. Delwhich about it. Then I went down

town to his office and got the corn to plant. We got one quart of corn. It was Wisconsin No. 8. I planted it on a rainy day. I tried to plant it with a corn planter but it wouldn't work and so I had to plant it with a hoe. I planted my corn on this year's plowed sod, plowed 9 inches deep. Manured well before it was plowed. Planted in hills 3x3 and three to five grains in a hill. The first time I hoed it I was so tired. The first corn came up in five days. When the corn came up it looked very nice and healthy. Then it kept on growing very fast. I hoed it every time the weeds came up. After a little while the corn began to show tassels and it wasn't long before there were a lot of tassels. Fourth of July we had a hard rain and it made my corn tip over, and so I had to straighten it up. Papa's boy cultivated it with the spike tooth cultivator. Then he cultivated it with a common potato cultivator, then he cultivated it with the potato hillers on the cultivator. The silk is growing very fast and prospects of a good crop. The ears are growing big and there are many ears coming and the stalks are very high. The corn has grown very fast since the tassels came out. The ears are growing fast and are beginning to lop over. The largest and highest of the corn is now about 9 feet high.

EVENING SESSION.

The meeting was called to order by the President, and opened with musical selections.

CONSERVATION OF BIRD LIFE.

BY DR. KUTCHIN.

Very briefly, ornithology is to be divided into four great divisions, the systematic, the philosophic, the economic, and sentimental or spiritual. I much prefer the latter term. With regard to systematic ornithology, which is at the very threshold of our study, I want to give you a few hints how to begin. Birds are classified by external resemblances, the feet, the tail, the bill, the wing, in families, and in species and sub-species

by similarity of color. In the study of birds, the majority of people beginning with the systematic study never get beyond the mere identification or species, and this amounts to very little indeed. To be sure, you want to know the common birds, but what is infinitely more important is to love them and to get in close relation with them and understand their importance in the scheme of Nature. The killing of birds for scientific purposes is an outrage. There are men who have license to rob nests and steal birds and do it in the name of science. Why have I no pictures here? Because it is impossible to learn ornithology from pictures; the difference between a slide made of the dead specimen and close contact with a living specimen is all the difference in the world. You might just about as well try to study child life by a study of rag dolls stuffed with sawdust.

When you want to study a bird, make yourself so much a part of Nature that the bird will come and investigate. And, mind you, the bird has seen you long before you saw it. What wonderful power of vision they have, what wonderful sense of hearing! Did you ever see a robin going across the lawn? Suddenly he will dart eight or ten feet and with the greatest precision in the world locate an angle worm and pull it out. How did it know the angle worm was there? Simply by the wonderful power of hearing. It heard that dumb thing moving in the ground.

The best time to study birds is in the fall, after most of the birds have gone away, then you will not be able to confuse them. And then remember, to classify them does not amount to very much, but to get close to them and to understand them and to know their habits, then you will become a real bird lover and all birddom is drawing near to you and you are drawing near to it. There are people who think birds are such an insignificant part of creation that it is beneath the dignity of grown persons to devote much time to their investigations. I want to tell you that the birds are the most wonderful part, like the flowers, nothing so beautiful and nothing so wonderful in creation as the possibility of bird life. When we were children, how common it was to call each other silly loons. Well, now, we all suppose a loon is a very silly thing. Just tell us what he does. Here is a loon, by-the-way, that we call the Northern Diver that measures about one cubic foot and

weighs about 15 pounds, and it has the power of submerging itself in water just with its bill out and remaining absolutely motionless, disturbing just 2½ pounds of water. How does he do it? Wonderful! Birds were undoubtedly developed from a reptilian ancestry.

You think you know all about migration. Why do birds migrate? You say because this cold weather drives them south; they migrate, they want food. Certainly, yes. And these birds are perfectly helpless in the darkness, just as helpless as chickens. Ah, we scarcely know that the young birds in the far north, hatched six weeks ago, are migrating possibly tonight in this darkness. Plenty of food. Driven by cold? They might pick out a latitude where it is frequently 10 below zero. They hurl themselves through space at an incredible rate of speed, 300 miles an hour, it seems almost incredible.

Now the economic value of the birds is impossible to exaggerate. Do you know the destructive possibilities of insect life to vegetation? Do you know that the San Jose scale is costing horticulture $10,000,000 annually? Do you realize that the codling moth and the apple worm are costing this country $16,000,000? Do you know that the cotton boll weevil is costing this country $25,000,000 annually, and the Hessian Fly $50,000,000,—a billion dollars annually lost through insect life, and we are destroying our friends the birds, the natural check upon that pernicious evil. See that bird going up that tree, examining every particle of the bole. There is a bird standing on its head eating his breakfast, or dinner, just as well as if he were standing the other way up. No boy could do that, eat breakfast standing on his head, yet the nut hatch likes to do it. Then see those birds examining every leaf on both sides; here are the birds on the ground after the insects and the weeds, and there is a fly catcher above the trees, a perfect police system going on on your farms, yet we are standing with folded hands and not crying for a federal law that will protect bird life. Down in Texas within the last two years in one season they have marketed 10,000 dozen robins; you can go into New Orleans and buy them by the barrel.

It is estimated that weeds cost us one dollar an acre. What a ridiculous estimate! It pretty nearly divides the cost of the value of the crop in some cases. Would you like to have an acre of onions or flowers taken care of for a dollar? Just sup-

pose that it costs only a dollar, but it is treble that, how greatly it might be lessened by our friends, the birds. They made a bird census in the state of Iowa and ascertained the number of tree sparrows in that state. A bird is a great eater. In the stomach of a chickadee have been found as high as 3,000 larvae gathered from the bark of your trees. A quail was killed near Wheeling, West Virginia, a few years ago on Christmas day—of course the day may have had something to do with its appetite—in its craw were a little over 10,000 pigweed seeds. A mourning dove has been killed with 3,500 chicken grass seeds in its crop.

In regard to this census in the state of Iowa, they arrived at some most startling figures. A tree sparrow eats one-quarter ounce of weed seed a day; multiply that by the number in the state and from October to April they carry out of that state, absolutely destroy so that it will never grow again, being thoroughly and completely digested, 875 tons of weed seed. Load that on farm wagons and they will reach pretty nearly half way over to Omro. It is immensely discouraging that birds are being slaughtered everywhere around us.

I am glad there is to be an inspection of nursery stock in this state. I wonder if you all know that a firm in New York state has for forty years blocked legislation, and America has been the dumping ground for pretty nearly all the world, and countries that have prohibitive legislation and will not allow us to send in to them, are sending their infected stock to us. I am glad that we are to have some protection in Wisconsin, but think of the other states. Do you know that New England is paying about a million a year fighting the browntail and gypsy moth? Do you know the government is paying about $300,000 every year to try to protect the highway so that carriages and automobiles will not carry the larvae of those disaster working insects into other territory? Three hundred thouand dollars, and the aggregate business of these men who have blocked prohibitive legislation does not amount to over $350,000.

Now, the despised blue jay. I once saw a boy kill a blue jay and asked him, "What did you do that for?" He said, "My father told me to kill blue jays, that they suck eggs and drive other birds away." As a matter of fact, the Biological Survey took that matter up, and the United States Government examined the stomachs of 292 of all those killed during the

breeding season in almost every state and territory, and in the stomachs of two they found shells, and they could not tell whether they were shells of birds' eggs, or shells cast into the garbage can.

What is the jay doing? He is doing more than anything else in checking the ravages of the browntail moth and gypsy moth. I wonder if there is a man here who, if he saw a bird in his cherry tree, would run for his gun. For every cherry that that bird ate it destroyed insects that gave you 100 cherries, plus its song, which is an almighty sight sweeter than your cherries. J. Stanley Hall, of Clark University, has in his hands a thousand dollars to be paid to the man, woman or child who will locate a single pair of passenger pigeons either in this country or in Canada. Just send him the location, he will identify them, and he has cash in hand to pay you for the information. This means that we have been destroying bird life in all its beauty and sweetness.

Tennyson knew birds. Here is a fragment,—the "Eagle."

"He clasps the crag with hooked hands
Close to the sun in lonely lands,
Ring'd with the azure world he stands
The wrinkled sea beneath him crawls;
He watches from the mountain walls;
And like a thunderbolt he falls."

There is the eagle. You cannot add to that very much. Now, why does he fly above the water? He had on his far-sighted glasses and there was a fish in the water below him.

There is nothing so splendid in the world for children as to become nature lovers, nothing so fine for a man or woman anywhere. People say to me, "Are you not lonely in the winter over there at Green Lake?" I say to them: "I am never lonely except on State street in Chicago."

"To him who in the love of nature holds
Communion with her visible forms,
She speaks a various language."

"For his gayer hours she has a voice of gladness and a smile
And she glides into his darker musings with a mild and healing sympathy
That steals away their sharpness ere he is aware."

THURSDAY MORNING SESSION

LAWS OF 1911 AFFECTING MEMBERS.

C. L. RICHARDSON, STANLEY, WIS.

Every new law, so far as it is obeyed or is enforceable will, it is presumed, affect our members to a certain extent. Thus the taxation of incomes of single persons in excess of $800 per annum, and incomes of man and wife in excess of $1,200, will doubtless fall upon certain of our more wealthy members, but as the tax is $250 for incomes of $10,000 per year it is probable that not all our members will be oppressed thereby.

Chapter 556, revises sec. 1463 of the R. S. 1898, to repay to county fair associations 80 per cent of the premiums paid by them on agricultural and other exhibits. The former rate was 50 per cent. This change in the law opens the way for larger premiums for apples, plums and other fruits, and may well lead to the awarding of third premiums on fruits, a matter now disregarded in too many fairs.

By chapter 379 the display or storing of fruits, vegetables or other foods on the sidewalk is prohibited unless they are securely covered with glass, wood or metal cases, or enclosed in tight cases, boxes, bags or barrels, and raised two feet above the sidewalk. The provisions of this section do not apply to fruits or vegetables which are peeled or skinned before being used. The owner of any store violating this section shall be fined $10 to $50 or 60 days or both fine and imprisonment.

Chapter 583 provides for the creation of a new Commission on Public Affairs, consisting of the Governor, Secretary of State, the Chairmen of the Finance Committees of Senate and Assembly, and three other members. This commission is empowered to investigate every office, officer, department, board and institution, the conduct or operation of which involves the receipt, expenditure, or handling of any state funds or

property. As our society receives a state appropriation we come within the jurisdiction of this commission. Thirty days before the convening of the next legislature, the W. S. H. S. will be required to submit an estimate of its receipts and expenditures for each fiscal year of the ensuing biennial period. The Commission may inquire into the methods of conducting our affairs, prescribe and direct the forms of accounts and blanks to be used, and co-operate with us in developing the resources of the state, and making known the possibilities of Wisconsin.

The rabbit law has been amended so that there is no closed season for rabbits in the following counties: Crawford, Grant, Iowa, Kenosha, Lafayette, Sauk, Door, Bayfield, Chippewa, Douglas, Price, Rusk, Taylor, Racine, Burnett, Polk, Barron, St. Croix, Richland, Monroe, Winnebago, Langlade, Forest, Florence, Shawano, Jackson, Clark, Sawyer, Washburn, Ashland, Buffalo, Pepin, Oconto, Adams, Marquette, Fond du Lac, Oneida, Iron, Vilas and Vernon.

Chapter 325 adds a new section to the statutes making it a misdemeanor for any person to manufacture or compound within the state, or to import or receive or sell any adulterated or misbranded Paris green, arsenate of lead, or insecticide or fungicide, and it is made the duty of the director of the agricultural experiment station and the district attorney to enforce these provisions. A peculiar provision of the law exempts the dealer from punishment if he can establish a guaranty from the vendor that the same is not adulterated or misbranded. The four terms are legally defined: Paris green must contain at least 50 per cent of arsenious oxide, not over 3½ per cent arsenic in water soluble form, and shall not contain any substance which reduces or injuriously affects its quality or strength.

This same qualification applies to arsenate of lead, also it shall not contain over 50 per cent of water, nor less than 12½ per cent of arsenic oxide ($As_2 O_5$). Insecticides and fungicides are defined in like manner, and the term "misbranded" is defined as covering "any statement, design or device regarding such article or the ingredients thereof which shall be false or misleading in any particular" such as weight, place of manufacture, efficiency, and pests or diseases against which the same is pretended to be effective. The covering of

the package must state the amount of percentage of active ingredients, and the total amount of inert ingredients, to be named or not at the discretion of the manufacturer.

From the standpoint of the horticulturist, perhaps the most important law of the year is the revision of weights and measures embodied in chapter 566. The law is too long to be quoted in its entirety, so faultily constructed and contradictory in terms as to be difficult of definition. I do not believe all its provisions are enforceable. More attention is bestowed upon the salaries of the numerous officials created for its enforcement than upon a fair and accurate definition of standards, or a sincere effort to secure fair treatment for the purchaser while respecting the honest wishes of the members of this organization.

The dairy and food commissioner is made superintendent of weights and measures, with general supervision of all scales and measures throughout the state and power to inspect, test, correct, condemn and destroy the same. All cities of 5,000 or more inhabitants are required to appoint a city sealer, who shall test all local scales and measures at least once a year, and prosecute all violaters of the law.

Some changes have been made in the weights and quantities of certain products. Thus tomatoes are to be sold by weight, unless otherwise specially agreed in writing, 56 pounds constituting a bushel, 50 pounds for a bushel of hickory nuts, 35 pounds for a bushel of cranberries, etc., while "all dry commodities not otherwise specified in this act shall be bought or sold only by standard dry measures, standard weight or numerical count except where the parties otherwise agree in writing."

Section 1666 has been rectified to declare the custom and fact, that 2150.42 cubic inches shall constitute a *struck* bushel, but the law then goes on to provide that in measuring fruits and vegetables the half bushel or other smaller measure shall be heaped as high as may be without special effort or design. In other words, the law defines struck measure but does not define the quantity in a bushel *heap measure*, and then compels the farmer, fruit man and grocer to sell, at his peril, his fruits and vegetables by "heap measure." This section should be amended to some fair and consistent form.

The dry gallon of 282 cubic inches is abolished. The old apple barrel holding 100 dry quarts is abolished, the new provision reading:

"The standard barrel for apples or pears or other fruit, unless otherwise specifically defined, shall have an interior capacity of 7,056 cubic inches, and shall not be less than 26 inches between the heads inside; the diameter of the heads shall be 17⅛ inches including the beveled edge; the outside bilge or circumference shall be not less than 64 inches, the thickness of the staves being four-tenths of an inch; provided, however, that any barrel of a different form but of an interior capacity of 7,056 cubic inches shall be a legal barrel." This barrel appears to contain about 3 bushels and 1 peck.

It is interesting to compare the figures 26 by 17⅛ and 64 inches with the dimensions 25¼ by 16¼ and 58½ inches, these latter being the dimensions of the standard cranberry barrel.

While all persons will not agree as to the wisdom of these particular dimensions, it will be generally conceded that the defining of a standard barrel is a much needed step in the right direction.

The "bushel" crate whose contents were problematical has been defined: "A bushel crate of apples, pears, plums, peaches, and other fruit not secondarily contained in quart or other boxes within such crate, shall have an interior capacity of one bushel heap measure." I respectfully submit that this provision should be amended to have the crate contain one bushel struck measure.

"A bushel crate of cranberries or blueberries shall have an interior capacity of one bushel struck measure." This is a fair provision to both producer and consumer and does away with the former cranberry crate which was two or three quarts short measure.

The much discussed "berry-box law" reads as follows: "All sales of blackberries, blueberries, cranberries, gooseberries, raspberries, cherries, strawberries and similar berries in packages of less than one bushel shall be by the quart, pint or half pint dry measure, and all berry boxes sold, used or offered for sale within the state shall be of the interior capacity of not less than one quart, pint or half pint dry measure. Any person violating the provisions of this paragraph shall be pun-

ished by a fine of not less than five nor more than fifty dollars and by confiscation of the illegal boxes or packages and of the fruit therein contained." Provision is also made for all standard apple and cranberry barrels to be stamped with the letters "W. S. A." and "W. S. C." for apple and cranberry barrels respectively, and the manufacturer's name, and for fines for failure to so do.

"All contracts for the sale of apples, pears, cranberries, or other fruits by the barrel or crate, unless otherwise expressly stipulated, shall be constructed to mean barrels or crates of the capacity herein prescribed."

The law attempts as far as possible, to place similar restrictions upon fruit shipped into the state, by providing: "It shall be and is hereby declared unlawful for any person or persons to bring, transport, or convey into the state, or to sell, offer to sell, or otherwise dispose of for profit, any apples, pears, plums, blackberries, blueberries, cranberries, gooseberries, raspberries, strawberries, or other fruits, except the first sale within the state in the original packages, unless the crates, boxes, barrels, or packages wherein the same are contained shall be of the full interior capacity required for sale in the state to comply with all the provisions of this section as fully and completely as if the said packages had been packed, and the said fruit grown in Wisconsin. Any person violating the provisions of this paragraph shall be punished by a fine of not less than $25 nor more than $50 and by confiscation of the illegal packages and of the fruit therein contained."

Until January 1, 1912, nothing contained in this act shall prevent the use, sale and disposal of crates, boxes, barrels and packages not conforming to these standards.

An inspection of the law as it now stands would seem to indicate:

1. The law cannot prevent the sale of apples and other fruits in crates of one struck bushel interior measure—for there is no penalty for so doing. The triple penalty applies only to sales in *barrels.*

2. The law does not prevent sales of fruits in crates and barrels of less than the standard capacity, *by agreement of the parties.* Can sell by standard weight in scant bushel crates or barrels.

3. The law cannot prevent the sale *without the state* of any size of crate, box or barrel, containing fruit, nor can it apply to contracts of sale made within, for deliveries to be made without the state.

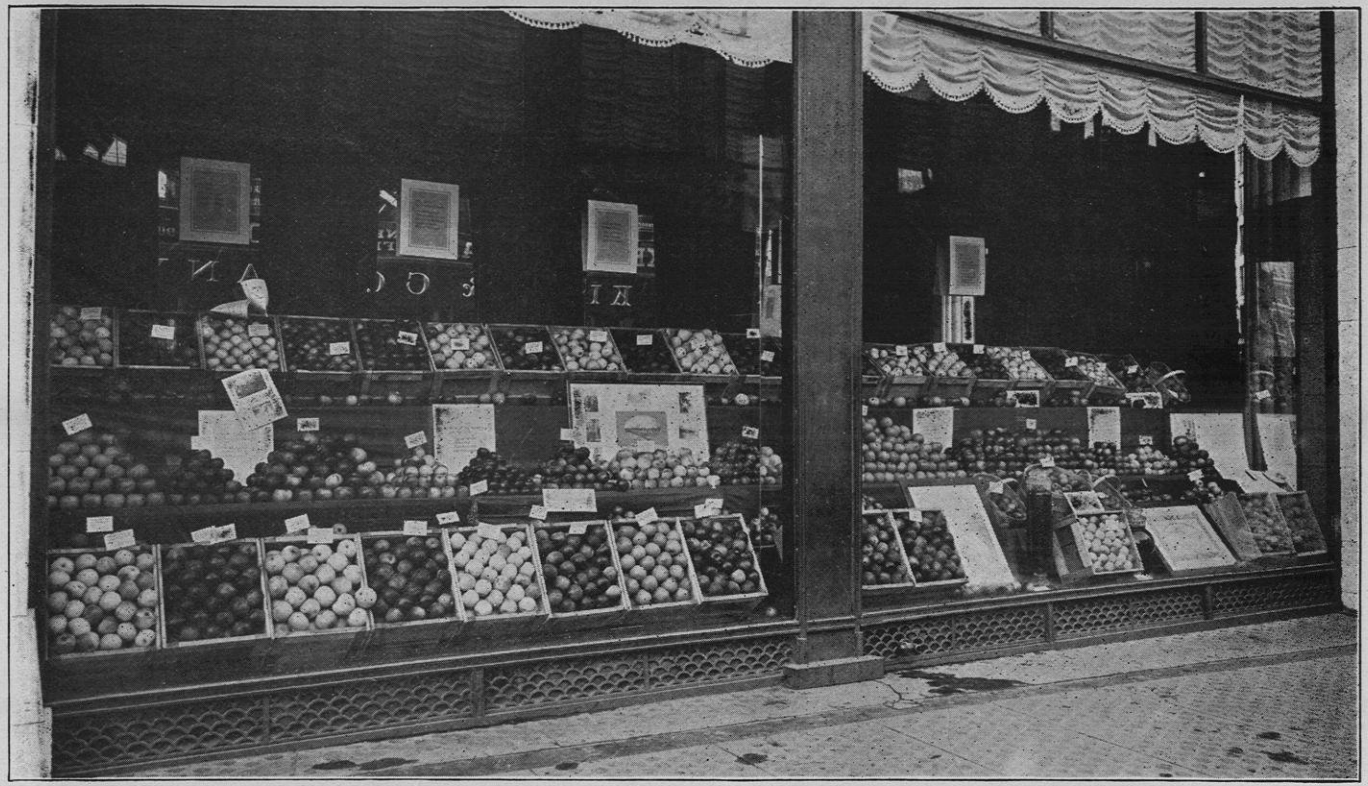
4. The only penalty for selling apples, etc., in scant barrels, is the penalty of three times the deficiency and court costs, in case action were begun.

5. Sales of strawberries, etc., must be by the quart. There is now no established custom that a full quart box shall be heaped. Section 1666 provides for the sales of fruits customarily *sold by heap measure,* while section 1668, subsection 10, is silent as to whether the quart shall be heaped or not. It is at least a question of doubt whether the grower can be compelled to heap up his quart box under the new law, especially as the law merely directs that the interior capacity of the box shall be one quart.

6. This law is designed to prevent the competition of scant quart crates from outside the state. It would seem that the provisions of section 1668—14 are constitutional and do not contravene the decisions of the interstate commerce decisions, in that they only apply to secondary sales within the state, and except from the law the first sale within the state in the original packages. The original package is the crate, the small box therein when sold is a secondary sale and not in the original package. This provision cannot be made to apply to apple and other fruit crates and barrels but the "W. S." sign on the barrel will be a guaranty of a standard barrel, and its absence will at least put the purchaser on his guard.

7. It would also appear legal to sell scant quart boxes and crates to customers without the state, free from any penalty therefor.

8. The quart is nowhere defined, but as it is a thirty-second part of a bushel, it would appear to contain a thirty-second part of 2150.42 cubic inches, or 67.2 plus cubic inches. Personally I believe very strongly that the change from the liquid to the dry quart in the sale of fruit was a mistake, and that the law should be amended. If it is not the answer of the horticulturist must be to increase proportionately the cost of the box or crate. A moment's calculation makes it clear that the dry and liquid quarts bear the relation of 6720, 5775 to each other. If a liquid quart case sold at $1.00 a dry quart case



Store window Exhibit of fruit previously shown at State Fair.

Grand Ave., Milwaukee Sept., 1911.

should cost $1.16½ and if the liquid quart case cost $1.50 the dry quart case should sell for $1.75. In other words, there must be the sharp rise of 16½ per cent next year in the price of strawberries, raspberries, etc., due to the larger box now demanded.

Prof. Moore: I should like to ask Mr. Richardson in regard to selling plums. We sell one-fifth bushel climax baskets; how is the law going to affect that?

Mr. Richardson: I should think in that case it will have to be ⅕ or ⅙ of 2150.42 cubic inches.

Prof. Moore: When you sell a basket of plums, you never make a statement as to the size of the basket, simply sell it as a basket of plums?

Mr. Richardson: Certainly.

Prof. Moore: I know people who are using ⅙ bushel baskets, and other people ⅕ bushel baskets, yet they are sold as so many baskets of plums.

Mr. Richardson: We will see if there is not a provision applying to that. There is no provision in regard to the plums being sold by the quart, so that I should think if they are quoted as containing a fractional part of a bushel, that they will actually have to contain that part of a bushel, simply let it go at that. There is a point that is not specifically provided for. This law is highly penal, it will be rigidly construed, just as they do the game law.

PLANT BREEDING.

C. B. WHITNALL, MILWAUKEE.

Although plants as well as animals have evolved by natural processes of reproduction which may be called breeding, we have come to associate with the term "plant breeding" the idea of some connivance of man, whereby he is to acquire some personal benefit. And just now, when civilization is actuated by near-sighted policies, what is considered his personal benefit, proves to be a general loss or waste. The results are not usually happy ones. It seems strange that man should take such pains in breeding for himself everything *but himself.*

Although supervised breeding appears to be actuated by a desire for winning dollars, and the poorer specimen of man being the support of modern civilization, his so-called freedom having destroyed his intrinsic value, no investments commercially are made in that direction.

If in place of exploitation of our fellows by various processes of graft some of us would acquire ownership of the others, the dollars involved would argue in favor of intelligent breeding.

Truck gardeners, fruit growers and florists are constantly on the lookout for new varieties which will please their customers without increasing his labor to produce.

Specialized labor has developed to a point where "the breeder" is maintained much the same as inventors of machinery, promoters of gold mines, fortune-telling, etc.

> "Ill fares the land, to hastening ill a prey,
> Where wealth accumulates and men decay."

Of course there is a love for truth that impels the broad-minded scientist to pursue every path of nature in quest of wisdom for the world. I have faith that he will rise, phoenix-like, above the degradation of modern commercialism. He is building the foundation on which we may all unite in economy and harmony some day. But in this day he is like the well meaning preacher of the gospel, supported from pew rentals paid by the gambler, usurer, keepers of disreputable places, etc.

Nature's processes are so extremely complicated we understand comparatively little of what we accomplish.

The production of life seems to be very much like the generation of electricity. We have discovered ways and generally know when we have it, but do not know what we have.

The successful plant breeder is a detective. He creates but little, but watches nature's developments and is quick to kidnap a child that will ingratiate itself with those who are able to "pay the piper." The more I observe, the less confidence I have in direct application of energy to make a change in product of conduct of plant or animal. And the more I am convinced that environment influences the destiny of every new life generated within its influence. However, I am not

quite as radical in this contention as the seed grower who discovered that the best crops of red clover were obtained from localities where old maids were numerous, because they kept many cats. The cats destroyed the field mouse which enabled the bumble bee to become numerous and make a thorough job of fertilization.

There is one feature of reproduction called "vegetative propagation" which I think should be considered first, although it is not really breeding.

We raise our potatoes from the tuber, not seed; most of our ornamental trees and greenhouse plants from cuttings. There is no crossing.

With plants propagated vegetatively, there are several kinds of variations to consider. There are fluctuations due wholly to environments, difference in food supply, moisture, etc.

Experiments and careful observations for many years have proven quite conclusively that fluctuating variations due to such influences do not change the plant from year to year. There seems to be no inheritance of changes induced by environmental influences. Where the descendants of an individual varied greatly in size, it was thought that by selecting continually from the largest and the smallest, two races could be developed.

Experiments have been carried on for a very long series of generations, one line consisting of the largest, the other line of the smallest, progeny. At the end of the experiment the two lines were brought under the same environmental conditions, and within a very short time the average size of the two types became identical.

Until some one can show that selection is effected within pure lines, it is only a statement of fact to say that all the experimental evidence we have is against this. The southern swamp cypress now used for greenhouse lumber with its peculiar club roots sent to the surface for air, we find is a Venetian, driven to the swamps, and when planted on a hillside, loses all its characteristics which had been induced by swamp environment, and goes right back to its original habits.

There is a feature of development, however, that will mislead a novice. The florist calls it "sporting."

About twenty years ago the Cath. Mermet Rose was introduced, a pink variety. That is to say, it looked pink when introduced, and became quite popular. Mr. John N. May was a leading rose grower then and had two houses devoted to this rose. They were growing particularly strong and it was noticed that May's Mermets were "sporty inclined." So a close watch was kept. One day came a side shoot bearing a white flower, more rugged and perfect in form than the pink, and more beautiful than any white variety in market at that time. He propagated from it naming it "The Bride." It is still a popular variety, but the C. Mermet has "run out." The fact of the matter is the Cath. Mermet was simply an undeveloped "bride," some of its qualities remained latent for a long time. It required Mr. May's skill to develop the child in accordance with its inheritance.

We have many undeveloped "Brides" among our children. Those who keep our Truant Officer and Juvenile Court busy and whom we permit to be punished because of our failure to maintain environmental influences that will properly develop and bring out the *latent* qualities.

Environmental influences which develop or bring out these latent characters, if removed, cause the character to become latent again. The Bride Rose may show pink again, and then disintegrate entirely. The next feature to consider is the self-fertilized species. The effect of selection in such species as wheat, barley, and oats, is essentially the same as by propagation vegetatively, although seed is formed, and we call it breeding.

ENVIRONMENT THE PRINCIPAL FACTOR.

There is no question about our individual development being controlled by environment more than all other factors.

But whatever environment produces, will vanish like your reflection in a mirror as soon as you disappear.

There can be no heredity of such influential effects by the individual so influenced.

Herein is the important function of the breeder, for such acquired characteristics can be fixed in or transmitted to its progeny.

Burbank says, "Environment is the architect of heredity" or heredity is the sum of all past environment. The results of

environmental influences can be fixed only by crossing with plants not too closely related.

It seems that these acquired characteristics are impressed or conformed to by the germ cells. It is *their* function to transmit the rearranged formula of construction of the progeny. There is no other way, and the reason I say to cross with plants not too closely related, is that the closer related parentage is the nearer you come to conditions of self-fertilized and vegetative propagation, already referred to which do not fix or hold on to improved character.

The skill of the breeder is in the selection of the parent to cross with the strain or variety he desires to improve, that will not combine other characters strong enough to dominate in the progeny as to vitiate the development or improvement sought.

The progress is dependent primarily on cultivation and improvement of the individual, which in turn is controlled largely by environmental influences. Then to fix improvement by cross-breeding, I have spoken frequently of environment. There is also what is called place effect that is interesting. I may raise tomatoes in a dozen different exposures in Milwaukee and call it an assortment of environments. But if I compare a crop in Milwaukee with one in Memphis, we would speak of place effect.

If a northern tomato is raised in the south, the first crop of fruit will be like it is in the north. But the second season's crop will be entirely different and remain thus different for generations. Then bring it north, the first crop will be as in the south, but the second season it will be back to its original northern character.

The process of crossing, of course, becomes complicated. I cannot go into detail for lack of ability on my part and time on yours. But I will give you just one of Gregor Mendel's discoveries which pertains to what he has called "The law of dominance."

A red primrose crossed with a white primrose yields purple primroses. But these purple hybrids will produce three kinds of progeny. About one-fourth will be white, about one-fourth will be red, and about one-half will be purple. These white and red will go on producing pure colors, but the purple will

continue to divide into white, red and purple. The purple always splits into the same proportions.

Mendel suggested that the cause of these peculiar phenomena is that the hybrid produces two kinds of ovums and two kinds of pollen. The one kind of ovum and one kind of pollen being exactly like those of one of the parents of the hybrid so far as the one character under consideration is concerned. The other kind being like those of the other parent. This theory has been fairly well sustained.

When we consider that environmental influences act the same on the individual as on plants, that our children are being shaped and tempered by these influences, it is quite apparent that the future of our civilization is dependent upon the environment of the rising generation. Statistics show that in our large cities there is a deterioration. It is the mission of the city planner to determine what these devitalizing effects are, and reconstruct our cities so as to be economical and healthy.

Although humanitarian impulses should be enough to insure the requisite improvements, it is interesting to note that the heartless (successful) business man is beginning to read a "hand writing on the wall." Germany is taking a lead in skilled labor today because by better city the health and skill of labor has improved, and although some of our capitalists say the expense is prohibitive,—Germany is also proving that it is economy. Over 1,500 cities and towns now have no tax levy at all. There are a great many thinking skillful Socialists in Germany.

Think it over Mr. Profit Hunter. See that a normal atmosphere, sunlight and clean water is administered to every soul. See that dust, noise, waste energy is avoided. See that natural recreation is universal and that community values go to the community. Then human breeding will balance plant breeding. We can never be normal until they function together.

THE NEED OF PLAYGROUNDS FOR THE CITY CHILD.

SIDNEY A. TELLER.

The first American child had the chance, right and opportunity to play. The young American Indians enjoyed unlimited playgrounds and supervised play. Physical development was an important factor in the education and training of the child. With the "civilization" of America, and the growth from rural village to cosmopolitan city, we have made great progress in all things, except proper provision for places for children to play.

Why should we have playgrounds and supervised play? Won't the streets, alleys, vacant lots and back yards do? All these things at their best are makeshifts, and lack the two greatest factors in the value of a playground, supervision and the social and civic emphasis to the play. Streets are not a safe place, neither to life or morality. Delinquency starts with degenerated street play. The "gang" is an expression of unsupervised street play, and the "gang" is known for the bad things it does. The street is bordered by saloons and other undesirable places for children to be around. The "vacant lot" is usually full of debris and filth, making it a poor place for children to play. Alleys are the places for garbage and wagons, but not for children to play. The back yard is too small for the social group—and the child who plays alone develops the spoilt child who does not know how to share playthings or learn the value of being part of a "team" or "side."

The large parks are usually too far away, especially for children. Children will not go over a half mile to play. The large parks are usually full of "keep off the grass" signs and are built to admire and not to use. The large parks may do for stiff, formal play on Sunday or when the parent can take the child, but for spontaneous, wholesome play, the child wants a playground equipped with playthings, play-opportunities and a play-leader as well as other play-fellows.

Play is a serious thing in the life and development of the child. Play is the fundamental right of the child. Play is the inalienable right of "life, liberty and the pursuit of hap-

piness'' for the child. The first civic expression of the child comes on the playground. The sand pile republic precedes the public school and the junior citizen of three or four years of age learns to build a city out of sand houses, with other children, on the sand pile. The playground becomes the outdoor school room, open and used after school hours and during the long school vacation. Under the guidance of a playleader, the old ''gang'' becomes a ''team,'' and the old impulse of the boy to do things is given a good and proper outlet. The degenerated street play and games take on a new aspect and we give back to childhood what the city has robbed the child of. Health and morality replace delinquency and disease, and ''fair play'' means ethical development.

The child of today is the citizen of tomorrow and the greatest investment we can make is in good citizenship. Land values are going up. We buy land today for factory and railroad before it rises in value. Why not plan your cities with reference to the child and see that sufficient playgrounds, the lungs and breathing spots of the city, are purchased *now* before the problems of congestion and transportation are too serious? A city is judged by the children it keeps and the principal thing in those children is the development of the play instinct.

Children cannot plead for themselves or plan for themselves. We, the adult citizens of the community, men and women, demand that the child be protected in its right to play. We ask conservation in child life—the greatest natural asset this country has. We ask for the welfare of the child, not more hospitals, juvenile courts and jails, but the great factor of prevention, playgrounds. Let a little child lead us and the problems will not seem so hard. There is no man so bad that he would not make a child happy—there is no city that is progressive that is not providing playgrounds. There are over five hundred cities in the United States that have playgrounds. Thousands of children in Wisconsin ask for ''fair play'' from their parents. Their plea is for playgrounds *now*. How can you assist them?

AFTER FOUR YEARS.

MR. IRVING SMITH, ASHLAND.

Mr. Smith: The Secretary asked me to talk a few minutes on what was most interesting to me in the gardening proposition. Four years ago the first of August I had moved from Green Bay to Ashland, Wisconsin and went to work as superintendent of the Industrial Department of the Northwestern College at Ashland. After working there for three years I resigned, and in my resignation I said I thought I could do more for Northland College and for the community in general in another line. So I bought about 30 acres of land, a farm, if you please to call it that; however, it abuts up against the high school on one side and the college on the other side, right in the city of Ashland, ten minutes' walk from the main business street. I told the mayor and some others that I was going to try to make a place that the city of Ashland would be proud of and that I could be proud of. I have been at it two years, this is the second year now.

The first seed planting I did in Ashland was about this time, perhaps a little earlier. I planted some lettuce, radishes and spinach, and was surprised at the rapidity of growth. In the following spring I made a rude hotbed, produced some lettuce and other things. The soil is sandy with quite a bit of clay mixed, and the first season I plowed up a heavy June grass sod, which was the first plowing the soil had ever had. We had very fine tomatoes, cabbage, egg plant, celery, cucumbers, in fact, a general line, just as a kitchen garden for the institution. We had tomatoes up to about Thanksgiving time, by throwing old straw over the vines just as they were in the field. At our county fair tomatoes on exhibition weighed two pounds each, Ponderosa tomatoes, I never saw finer ones at the State Fair. We have had musk melons every year since we have been there; they are not now as far along as they are here, but coming on nicely.

We have the most delightful climatic conditions in the summer time that I ever saw, and I have heard the same from quite a number of people. It is warm and yet it is cool, seldom oppres-

sive, almost invariably comfortable,—well, once in a while we throw a little wood in the furnace in the summertime, on a chilly, rainy morning, just to take the chill off the air. The rainfall in the four years we have been there has been very ample. Last year while in the southern part of the state there was almost no hay, in many sections we had a light crop of hay, but a long ways from a failure. When I left home my second cutting of alfalfa stood nearly waist high. That alfalfa was planted on the 6th day of July last year, and on the 12th day of September, 66 days after the seed was planted, I mowed an average of 18 inches. We will get another mowing. We go out into the woods where the timber has been cut, which in our immediate vicinity was hardwood and Norway pine largely, with some white pine mixed in, and there is now a growth of common poplar and two or three varieties of white birch, and red clover, white clover, alsike clover and timothy runs out the raspberry bushes. Red raspberries come in and they last for a few years, until what we call the common, tame grass runs them out. You can go through that young poplar and birch grove almost anywhere and find timothy and clover from two to three feet high all through that wood. There is pasture for thousands and thousands of cattle there within walking distance of Ashland which is unused because of the state law which requires that we fence against other people's cattle. Red clover seems to grow very easily. In that connection, you can sow your lawn any old time that you get it ready; here, if you sow your lawn in the summer time the chances are that you get no grass unless you keep the sprinkler busy. Rains come frequently enough and heavy enough so that grass comes readily; in fact, one of the most common weeds in your field is timothy. Of course we have most of the other common weeds, including two varieties of Canada thistles. I can give you some white ones if you want them for decorative purposes, they both do very well.

I set out a little orchard this spring, about 140 trees, you can find spurs from 12 to 18 inches long, this year's growth on newly set trees. That shows a good, strong condition. The only trees out of that 140 that have died were two or three cherries and one or two plums which I moved from a quite dry location to quite a wet location and I think the cherries drowned.

In flowers we seem to be able to produce almost anything that is produced down in the southern part of the state; we have great masses of phlox, dahlias, gladioli and other annuals doing very well.

A Member: Do strawberries ripen later than here?

Mr. Smith: Strawberries come on the latter part of June and early July. The season, going north, other things being equal, varies about one week per 100 miles, and we are about 200 miles north of Oshkosh, so that our season will be about two weeks later than your season. But we are located on Lake Superior, right in sight of the water, the largest body of fresh water in the world, and it seems to have a softening effect on the air. We do not suffer from late spring frost nor early fall frosts. Last fall on Thanksgiving day I cut in the field a cauliflower that was in fairly good condition; it had been nipped somewhat by the frost. There was one or two inches of snow on the ground at that time. We have tomatoes until well along in November. We had celery last year that weighed about two pounds to the stalk; we have cabbage now that will weigh 10 or 12 pounds. We had our first early cabbage to eat on the 4th of July. In Green Bay it used to be our aim to put cabbage on the market on the 5th of July, but we did not always do it; the earliest we ever sold cabbage was the last day of June. We began selling up there this year a little after the middle of July.

Mr. Sperbeck: How do apples do up your way?

Mr. Smith: They do finely. I have got six, and they must be as large as those plums over there, now. The apples in our county are not in bearing yet, only in isolated instances. Nearly every farmer that has been on his place any length of time has a little apple orchard, quite a good many are being set. The trees look well, generally speaking, and a few are coming into bearing. Quite a good deal of small fruit is being set in the way of strawberries, raspberries, gooseberries, currants, dewberries, etc., and so far as I know, in every case are doing well. I have put in some strawberries for next year. In the woods you will find all kinds of small fruit on everything, from a little bit of a plant four inches high up to trees. Fruit seems to be the strong point of Nature there.

I would like to impress upon you people the idea that the extreme northern Wisconsin, by that I mean that part which is on the Lake Superior drainage system which runs back from 10 to 30 miles from the lake, is a good place to go to make your living. I have not any land to sell, and have no friends that have land to sell. The soil is strong; we have lots of sandy soil; we have a lot of clay, but not brick clay that will stand, as it does here. If we strike clay, unless it is pretty dry, we want to lookout, or we will be buried, it will slide right down. There seems to be some sort of slippery consistency to the clay that is different from central Wisconsin clay. If you throw clay out on top it will become like rock, but in a little while it begins to crumble and goes to pieces, slacks like lime, and does not go back to its first consistency.

The winters are I think less dry than southern Wisconsin winters. While we have perhaps extremes of cold; if you have it 30 degrees below zero we are liable to have it 35; if you have 40, probably we have 45, but those times, as in central Wisconsin, last a very few days, and I think most of you will agree with me that if we are going to have it 30 degrees below zero it might as well be 35 or 40, so far as being out and working in it with any degree of comfort is concerned. The general winter weather has been from 10 to 25 above zero; sleighing usually comes along the holidays and stays till spring. We can usually plant in April. There are thousands of acres of land for sale at all sorts of prices, if any of you are looking for new locations to start in, look up northern Wisconsin.

The President: Owing to lack of time, we will have to cut out discussion on this paper, and take up the next subject on the program, a short talk by Prof. Sanders.

Prof. Sanders: A question was asked me this morning by a person who I thought was fairly well posted on the organization of the University College of Agriculture and Experiment Station regarding the nature of the work, and I was surprised at the apparent lack of understanding of conditions down there, so I will take just a moment to explain them. Fortunately, in Wisconsin the College of Agriculture and the Agricultural Experiment Station are one and the same body, so that one corps of men can take care of all lines of work.

The College of Agriculture is made up of a number of different departments, with experts in each department. We have a large number of departments, the Department of Animal Husbandry, Dairying, Horticulture, Plant Pathology, Entomology, Poultry, Veterinary Department, which is a recent addition, a Department of Home Economics, the Extension Department and a number of others. When any of you write for information, if you do not know the exact department to write to, it makes little difference, because a letter addressed to the Agricultural College will be opened at once by the clerks and sent to the proper department. We want to ask a stronger and more hearty co-operation of the people in our work and we can arrive at that co-operation better by understanding your troubles and hearing all the questions that you encounter in your work. Write to us, tell us what your troubles are, send us specimens, if insect trouble or a fungous disease and we will be glad to send bulletins to any one who wants them. A postal card addressed to the station will obtain these bulletins along any line you wish. It has been said by many foreign investigators that we have the best agricultural college; it was so considered when I was in Washington, we think that it is today one of the leading institutions in the country. Now, the departments that appeal to the horticultural members principally are the Departments of Horticulture, Plant Patholgy and Plant Entomology. The Department of Entomology is the one I am interested in.

In the Department of Economic Entomology, we carry on experiment station work, inspection work and Nursery Inspection. The latter phase of the work has occupied most of my time for the last year and a half. The conditions in the nurseries in our state are on the whole fairly good, not what we might wish, but they are really better than they are in some states that I know of, but our nursery interests are not up to the high standard that they should be. They are not co-operating with the experiment stations, nor are they interested in our horticultural progress as they should be. There is very little advertising done by the nurserymen in our state. For instance, I represented this society at the Michigan State Horticultural Society last year, and I was very pleased to note that they had a building twice the size of this room in connection with their meeting, at which the nursery-

men exhibited their stock and had literature for handing out, and a number of manufacturers of insecticides had their material and samples to give away, a great many makers of spray pumps had their machines there and they went to considerable trouble to exhibit the working of their machinery and it really paid them to do it. I wish another year we might get something in connection with our own state society. I frequently run across people among our horticulturists who do not know of nurserymen within twenty-five miles of their own locality and they will send to New York and Pennsylvania to get a little nursery stock that they can better buy near their own location, particularly small fruits, strawberries and raspberries.

The scope of the work in the Department of Entomology is rather varied, but the principal line, the relation of the insects to horticulture, agriculture and public health, the latter phase we are taking up in a rather strong manner.

The common house fly is one of the worst pests affecting public health and one that can be rather easily controlled if we understand the methods. It is only recently that the house fly has been regarded as the pest that we now know it is, and only recently that we understood the connection between the house fly and transmission of diseases. The house fly is the most filthy insect of any that I now recall; it breeds in common barnyard filth, walks over cesspools and immediately flies to our tables, wipes its feet on the food, baby's hands and face and thousands of millions of germs are distributed in that way. I go into hotels, into public eating houses, into country homes where the flies are literally swarming, and it takes away my appetite, because I undestand the nature and danger of the insect.

Nursery inspection has been somewhat of a bugbear to many people, that is, to those who had to be inspected. They thought nursery inspection was of little importance. There is a well known fruit growing section in our state where the people are almost entirely discouraged, ready to throw up their hands and quit, because they have so many insect pests and fungous diseases that are killing off their plants. Those people have avoided nursery inspection and really have broken the law. They have brought in infested and infected plants from other states and they have exchanged and sold among

themselves until the whole region is one mass of disease. I do not know but we will have to quarantine that whole section until things are cleaned up, but it only shows what will be done if we avoid all kinds of inspection. Further I find there is but one spray outfit in that entire fruit growers' region. I do not know how people can expect to grow fruit of a good quality without making the acquaintance of the spray pump.

The most important of the injurious insects affecting fruit trees is the flat-headed apple tree borer which affects trees recently set out; it lays its eggs on the outside of young trees. The larva hatches and bores beneath the bark. You are all familiar with the fine sawdust that it leaves. If you dig a little deeper and follow the tunnels of this larva, you will find a larva about three inches long. That fellow remains in there during the winter and hatches out in the following June to continue its work.

San Jose scale is a frightful pest; I found it in thirteen nurseries last year, but I am glad to say that we have been able to eradicate it from all but one, and I trust we will be able to eradicate it from that one this year.

On the small plants, the strawberries, we have had great complaint from cutworms, which is a fearful insect when it gets started, but it is not so hard to control. Take a pound of wheat bran, mix with a pound of Paris green, moisten with water and add some cheap sugar or syrup till it is sticky enough to hold together, scatter that about your infested plants along during the evening and the cut worms coming cut at night will eat that in preference to the plants. Or you can spray with arsenate of lead and the cutworm will eat any foliage which is dying or wilting rather than standing crops. The raspberry cane borer is a common insect which has been abundant in the state this year.

You have noticed raspberries wilting and dying; if you will examine you will find a small puncture, generally two on a cane just near the tip of the twig, that is the egg-laying puncture of the cane borer. As soon as you find those wilting tips, cut them off and burn them. The leaf roller on the strawberry folds the leaf and fastens it together. Arsenate of lead sprayed on and kept on will control that pest. There was a man at Sparta last year who, if he had sprayed in the early

part of the season, could have saved his strawberries from the leaf roller, but he neglected to do so and now his strawberries are gone. The arsenate of lead must be sprayed during the growing season and during certain periods of the development of the insect, every ten or twelve days, because the new foliage pushing out offers a fine field for the young larvae.

Arsenate of lead in most cases is superior to Paris green because it adheres to the foliage longer than Paris green and will not burn the foliage. Insects develop more rapidly in warm weather than they do in cold weather and people in the North have fewer insects and fewer generations of injurious insects than farther South.

The white grub I want to mention, on strawberries, is another hard fellow to control, you cannot poison it because it never comes above the ground to feed. The white grub and cutworm are two insects we have to control by cultural methods, late fall plowing. If the white grub is bad in a field, do not plant strawberries next year and do not plant corn, because corn and anything of the grass family is the favorite food of the white grub. Put in some other crop.

Just a word regarding our new nursery inspection law. The nursery inspection law was modified somewhat at the last legislature. The fee has been reduced in some cases to cover the growers of small fruits, those who wish to sell strawberry plants and have less than five acres of plantation are charged only $5.00 instead of $10, as heretofore. It is unfortunate that we do not have inspection free, as in some states where the legislature makes provision for it. The law is more stringent regarding the issuance of licenses, it leaves the inspector to issue licenses. The fee is $5.00 instead of $10. Considering the slight expense of issuing the license, I think it is more reasonable. The inspector is enabled to revoke any license which he has given out for reasonable cause. Any misrepresentation of nursery stock which is grown or offered for sale as to variety or quality is a misdemeanor under the new law, so that we hope to put a stop to this miserable practice that Wisconsin has been subject to of agents coming in here and misrepresenting their stock and selling it at outrageous prices and when the trees come into bearing, we find they are seedlings, or some inferior stock.

Mr. Irving Smith: Do I understand that this nursery inspection law covers any one who sells a hundred strawberry plants to his neighbor?

Prof. Sanders: It is supposed to do that.

HORTICULTURE AT THE UNIVERSITY.

PROF. J. G. MOORE.

This seems to be a sort of symposium on the departments in the university which are more closely allied with the horticultural interests of the state. While teaching is a very important part of our work, it is by no means the only line in which we are trying to do something for the state of Wisconsin. Our organization is placed under three heads, exclusive of executive work:—instruction, extension, research and station work. Extension and station work come so close together that it is difficult to draw any hard and fast line separating one from the other.

We usually speak of teaching work first because it is a line of work in which we have a chance to meet by far the largest number of people who are particularly interested in the lines of work which we follow. The teaching work in the department is not an entirety of itself, that is to say, in the college we have no course, or so-called course in horticulture. Any one entering the university to take up work in the College of Agriculture is obliged to take other work besides pure horticulture even if he is desirous of taking only horticultural subjects. While there may be some slight cause for criticizing the organization along this line, nevertheless, those who have gone through a course at college realize that if the specialization is too close, the student is not so well fitted for the work in which he is interested when he leaves school as he would have been had he selected a wider course. We aim in the Horticultural Department to give a thorough course in different phases of horticultural work particularly along practical or applied science lines. Every student who takes a four year or two year course in agriculture and completes the course is required to take at least one course in horticulture. That course

we designate in the catalog as the "Principles of Fruit Growing." I do not know that fruit growing is any more important in Wisconsin than is vegetable gardening, but it seems desirable to give the fruit course as the one which our students should take.

Following "Principles of Fruit Growing" we have a course which takes up the field work and which goes into the details of some of the subjects touched upon in the first course, such as spraying, pruning, frost protection, and matters in connection with the actual operations in the field. Recently the university authorities have very kindly voted us sufficient funds to construct a new horticultural building in which will be located the Plant Pathology and Horticultural Departments, and in this building provision has been made for a spray laboratory in which the student will be given much more practical work than we have been able to give in the restricted laboratory space which we have had in the past.

In connection with the fruit growing course, we have what we call a course in Pomology. This line of work consists in the identification, judging, and packing of fruit as applied particularly to the apple. Along with standard varieties of fruit grown in various parts of Wisconsin we have fruit from Michigan, New York, Missouri, West Virginia and the western states for comparison, noting the differences in the same variety grown under different conditions and also specimens of commercial varieties grown in other sections, but which are not found in this state. By this method, the student after he has taken this course is able to recognize a large number of standard sorts. The work is quite largely confined to the apple because the college does not open until so late in the year that it is very difficult to have specimens of the small fruits with which to work. We do, however, have some work with plums, grapes, peaches and the quince. In connection with this work we are installing work in packing of fruit in the standard boxes because we believe that sooner or later some Wisconsin fruit will go forward in this sort of a package just the same as practically all the fruit of the western states does at the present time. This course does not consist alone of laboratory work, but also of lectures in which the student is instructed in the characteristics of the various species to which our common fruits belong, the relationship

and other points of interest so that a student who is going into experimental work or teaching work will know to what particular species the fruit belongs.

In the course in plant propagation methods of propogating fruits, vegetables, and greenhouse plants are dwelt upon and laboratory practice in the making of root grafts, top-working trees, budding and propagating by means of cutting and seed is given. In these four courses we have aimed to keep in mind the main points with which a student who goes out from a college of Agriculture will come in contact whether he goes into practical work or Experiment Station work.

Along vegetable lines our work is confined to two courses, one for forcing vegetables, and another a course in vegetable gardening. The outline of the work is very similar to that which I have discussed in "Fruit Growing." It consists in actual field operations in addition to the study of methods. It may be of interest to you to know that each of our students who takes a course in vegetable gardening is given a garden of his own. The student plants and cares for the garden as a part of his work up to the time that school closes in June so that he gets the practical work in the construction of the hot bed, in the care of the bed, laying out the garden, different distances of planting succession of cropping and all the various other phases which come into the actual operations in the handling of a commercial vegetable garden.

We also have some courses which we do not classify under any one particular line. As you all know, landscape gardening is a very important phase of horticulture and one which has not been as prominent in the past as it is destined to be in the future. The demand for landscape gardeners is greater today than ever before and so in the Horticultural Department we aim to give some instruction in this work although we do not plan to give a course which will make a professional landscape gardener. The course extends over two semesters and consists of learning to identify and characterize plants used for home ornamentation and for ornamentation of the city park. This is an important feature because no one can become a landscape gardener unless he knows something about ornamental plants. There is also a discussion of the care of these plants and their proper arrangement, grouping and planting around the house. After

studying the various plants with which he will have to work, the student is put into the drafting room and made to construct plans for different plantings.

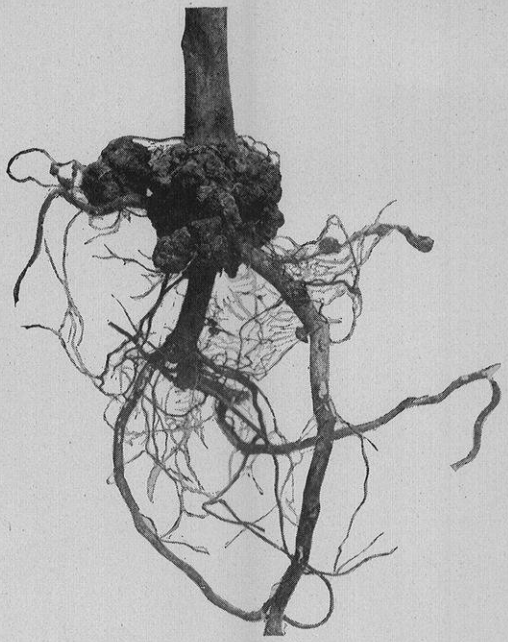
We also have a course in floriculture which takes up a study of the decorative house plants, a discussion of the landscape work around the home and then propagation of these various plants. Plant breeding also comes in for consideration. In connection with the Department of Experimental Breeding, we are giving a course in this subject so that the student may get the practical work in the greenhouse and orchard in pollination, emasculation, and various other phases of practical plant breeding work. The lack of time prevents my telling you what we are doing in the other lines of work which I mentioned at the onset.

CROWN GALL AND HAIRY ROOT.

PROF. L. R. JONES.

You have asked me to discuss the diseases of nursery stock. There are several upon different plants. The one deserving special attention at this time, however, is the Crown Gall and the closely related trouble known as Hairy Root and I will confine my remarks to this. Probably everyone here knows these troubles well but I have brought along specimens and photographs showing the various forms the disease may exhibit. (Apple specimens shown). On this small first year seedling tree is evidence of the beginning in the excessive development of films, roots along one side with some swelling. Should this root be grafted you will readily understand that a typical case of hairy root or crown gall would probably develop as shown in these two year old apples. (Specimens exhibited).

A comparison of these specimens will show all intermediate stages between the typical crown gall with hard knob-like swellings at crown or on roots and the typical hairy roots arising in tufts from a somewhat swollen place on the root. In other cases the disease may appear as swellings on the branches (apple specimen exhibited) perhaps as large as ones



Crown Gall of Apple.

A bad case on nursery stock. Note not only the large gall at crown but smaller ones forming on the fibrous roots. Such stock should never be planted; reject or burn it.—Prof. L. R. Jones.

Hairy Root of Apple.

This is on nursery stock from the same lot as the crown gall. Both are due to the same cause, parasitic bacteria and closely related diseases. All such stock should be rejected or burned.—Prof. L. R. Jones.

fist, studded with buds or slender roots, termed "hairy root." Similar galls may develop on the crown or roots or along the canes of the blackberry (specimens exhibited), upon which the disease is destructive. It also occurs on the raspberries, quince, peach, rose and other members of the rose family; upon various other trees and shrubs including the honeysuckle, willow, poplar, chestnut and walnut; upon various garden and field crops such as beet, salsify, turnip, parsnip, lettuce, red clover, hop, cultivated daisy, etc. While this is not a complete list, it illustrates the important fact that this is one of the most widely distributed diseases. It is of still more importance to know that the recent investigations of Dr. E. F. Smith and others have shown conclusively that this disease on the different plants is or may be one and the same thing and intercommunicable. While it is possible to have different types of gall disease, the common forms of crown gall and hairy root are unquestionably caused by the invasion of a species of parasitic bacterium (*Pseudomonas tumefaciens*). If this organism gets into the young growing tissues it there lies and multiplies and stimulates the diseased developments.

It has recently been shown to have disease characters similar to cancer in the animal body, although of course not identical.

The transmissibility of the disease from plant to plant should be accepted as settled. There remains opportunity for difference of opinion as to how much harm these galls do on certain plants e. g. in apples. Some claim them to be seriously harmful, others say they do little or no damage. The majority of practical orchardists, who have had experience with galled trees are, however, decidedly against the use of diseased stock under any circumstances. There is no difference of opinion, however, as to the harmfulness of the gall on raspberries and some other plants. Where the gall gets started with raspberry plants they may be rendered worthless if not killed outright.

Understanding that the disease attacks a wide range of plants including those of such important crops as the various orchard fruits, raspberries, blackberries, beets and clover and that it is intercommunicable from one to another, no one will wish knowingly to harbor it in his soil, much less buy plants which show it. It is therefore, clear that nurserymen should

co-operate with the State Inspector to secure and distribute only gall-free plants. If it costs more to do this let the price be made accordingly, the purchaser can better afford to pay a higher price for healthy stock than to purchase diseased stock at any price. Orchard planting is a long time investment and the earning of a few cents in price and accepting an inferior or doubtful tree at the outset is a short sighted policy.

Since this is a wide-spread trouble it is not easy to get rid of it entirely and no single specific remedy is known. In closing I will summarize the best suggestions that have been made for its control, based on the results of the studies by the experts of the United States Department of Agriculture, Doctors Smith and Hedgcock.

First: Strict inspection of nursery stock with condemnation of all diseased plants.

Second: Burn such diseased stock, preferably right on the field where dug.

Third: Use only healthy stock for propagation with care not to contaminate or infect them while propagating.

Fourth: Plant only in clean soil, where none of the disease has ever been known to occur, and rotate crops in the nursery, so that susceptible plants are not grown year after year on the same soil.

Fifth: Make close smooth grafts, using root and scion of as nearly equal size as may be, wrap with wax cloth or continuous thread.

Sixth: Propagate especially susceptible varieties by budding .

Seventh: Store grafts preferably in sand, and if period of planting is delayed beyond two weeks, hold in cold storage.

Eighth: Plant with union of root grafts 3 to 4 inches below surface.

Ninth: Be careful not to break or bruise callus in planting. Avoid wounding of young plants in cultivation.

Tenth: Avoid wet, heavy soils which increase the liability to diseases.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

WINTER MEETING

MADISON, JANUARY 9, 10, 11, 1912.

TUESDAY AFTERNOON, JANUARY 9.

The Meeting was called to order by President Bingham at 2 P. M. in the Assembly Chamber, Capitol Building, Madison, Wisconsin. The President introduced Hon. James A. Frear, Secretary of State.

ADDRESS BY HON. JAMES A. FREAR.

Mr. Chairman and ladies and gentlemen of the State Horticultural Society: At the request of Mr. Cranefield, state horticulturist, I am pleased to say a few words of welcome to the men and women of your association who are doing so much to convince the world that Wisconsin is a fruit country second to none and with untold possibilities for the future. The Wisconsin fruit exhibit presented by Mr. Cranefield at Milwaukee during the state fair opened the eyes of all visitors to this fact and formed a basis for the prediction that in the near future Wisconsin will not only be known as the greatest dairy state in the country, first in many of the grains, hay, live stock, tobacco, sugar beets and

other products, but that it will also be known as the garden state of the Mississippi Valley competing on more than even terms with the great irrigation fruit projects of the west and the south.

I have been asked to briefly discuss a question recently presented by me at the National Irrigation Congress, held in Chicago and in doing so will briefly suggest that Wisconsin is just awakening to its own possibilities. Its progress in agriculture is due to the same spirit evidenced by the advanced ideals that have governed recent legislation in the state. While our national government has been advertising homestead lotteries, we in Wisconsin have been passed in the wild race for free lands, in the rush to new reclamation schemes, to the Alabama pecan groves, to Florida everglade propositions, to Oregon apple orchards and to the vast, treeless, cheerless plains of Canada, all invitingly portrayed in alluring literature that attracts the guileless and unsophisticated.

During the past we have modestly hidden the light of our state under the bushel but we are now challenging comparison with one and all of these districts and believe that here will be found more favorable conditions than can be had with any of the various propositions mentioned. We believe the possibilities of successful farming are better today in Wisconsin than in any other state or country. Favorable conditions of climate and markets we have long possessed, but a movement is now on in Wisconsin that reaches out a helping hand to the individual farmer teaching him the best uses of the soil he is cultivating, the value of good seeds, the most approved methods of farming and finally we are studying business accounting on the farm, the actual cost of producing crops and stock with the expectation of presenting a cooperative scheme whereby farm products may soon be sold with less loss and waste.

Our markets are unequaled, for Wisconsin is in the heart of the most populous part of the Mississippi valley, surrounded on the north, east and west by the greatest lakes and river in the world, affording cheap transportation to the southern and eastern markets. Duluth, Superior, St. Paul, Minneapolis and Milwaukee are distributing points for millions of people while Chicago, the greatest grain mart in the

world close to our southern border, absorbs all of the products we can raise. Fifteen millions of people are today within the states bordering on Wisconsin and nearly one-half of all the population of this country is to be found within the states directly reached by our waterways.

In markets, water, climate and soil we challenge comparison. Flax, barley, oats, corn, and even wheat grow as well or better in Wisconsin than elsewhere. We have few competitors and no superiors in the field of agriculture. Our exhibits sweep the boards wherever contests are to be had—a high testimonial not only to the soil which produces the crops but to the energy and intelligence of those who have raised them. The Hood river valley and the North Yakima valley never offered better fruit than Bayfield, Waupaca, Door, Chippewa and other counties in Wisconsin have produced during the past year, while the frost on the pumpkin and on the apple has given to the Wisconsin product a flavor that can never be duplicated by the western fruits with which we are ready to compete. Clover and hay grow everywhere in northern Wisconsin, in the field, among the trees, along the roadside and when put into cows it returns to us over $80,000,000 annually in dairy products, making ours the greatest dairy state in the country. We can profitably grow everything, from barley and beans to peas and pickles, from cattle and cheese to timber and tobacco. We raise the finest cherries, strawberries, apples and grapes that are placed on the market, just as we have distanced Virginia and Kentucky in the production of tobacco per acre.

Poor land is to be found in Wisconsin, but millions of acres of good soil is yet undeveloped, as rich in fertility as land found in the older sections of the state and to be had at a nominal price.

This is briefly the message I would give to you. A quarter of a century hence Wisconsin will remain the great center of dairying and other pursuits, surpassing all other countries as it does today, because the conditions of climate, soil and intelligent methods of farming and stock raising within this state, leave us without a competitor.

There is no other state or country which offers equal agricultural or horticultural opportunities when these facts are considered.

Contentment and happiness is brought about by social conditions, by churches, schools, the social center and all the conveniences of mail service that come to the settled communities we have in our state. Locate a Wisconsin farmer in Alberta, fifty miles from a railroad, and life is indeed miserable. Give him all the splendid home making opportunities to be found in the old Badger state and he is the most independent and contented man that can be found in the country.

It has been well said that when agriculture ceases to attract men to the field, the nation will become weak that has to depend on other countries to supply its necessities. There is no easy road for the lazy and thriftless man, but for those willing to work, to the man who is searching for the land of promise and who would find a home among a strong, progressive, Christian people where the spirit of co-operation and helpfulness is extended, there is no place today where opportunity is greater than in Wisconsin. It invites those within its borders to become acquainted with these conditions, holding out its hands with equal hospitality to those who come from foreign climes.

THE NEW ERA IN WISCONSIN HORTICULTURE.

BY W. H. HANCHETT.

(Paper read by Secretary.)

That we are just entering a new era in horticulture in this state is very apparent to all who have been taking note of things doing in the horticultural line throughout the state, during the past two years. The dividing line has been sharply marked and unmistakable to even the most casual observer. The horticulture of the past has been experimental to a great degree, bringing many disappointments with just enough rays of hope interspersed to keep its devotee enthralled and everlastingly at it. The horticulture of the present is an attractive business venture with well defined areas of suitable locations, and well established guideboards of experimental knowledge pointing out the way to success.

The horticulturist of the past was looked upon as a sort of fanatic, afflicted with a harmless form of lunacy. Today we honor him as a sturdy pioneer whose persistent experimental work has made *horticulture in this state an attractive business venture,* while we look upon the horticulturist of the present as an enterprising business man of a high order of intelligence.

As the past has been an era of experimentation, so the present is an era of rapid development and when we look around and see with what energy development schemes along horticultural lines are being pushed, we can readily understand that we do not concern ourselves as to means of accellerating the movement but are made to feel that there is great need of strenuous efforts on the part of the Wisconsin State Horticultural Society to make it an era, not only of rapid development, but an era of sane and businesslike development as well, else we shall fall on evil days.

Right here I wish to quote a few lines from a popular author:

"He who lives within things can never worship in truth"
"Eyes blinded by the fog of things cannot see truth"
"Ears deafened by the din of things cannot hear truth"
"Brains bewildered by the whirl of things cannot think truth"
"Hearts deadened by the weight of things cannot feel truth"
"Throats choked by the dust of things cannot speak truth."

How vividly a picture of earlier days, when I was a young man just attaining my majority, comes to me at this time. I had been an experimenter in horticulture from boyhood days. I was casting around for a business opening when the president of the Wisconsin State Horticultural Society, as a farm institute lecturer, was telling the people of the state that there was no danger of overproduction of fine strawberries. How eagerly I listened to that statement! How I wished to believe it! Why? Simply this; I was an experienced strawberry grower and knew I could raise large crops of fine strawberries and if this statement was true I knew I need look no further for a business opening. I knew something of markets but had some troublesome doubts as to their limits and the danger of overproduction. I was between the two fires, of hope inspired by the president's assertion, and of

despair inspired by my own doubts as to the extent of the markets. Hope said, "The president is a man of business experience beyond your years. His judgment should stand without question," and held up illusions of a happy home over which I, surrounded by loved ones, should preside. Doubt said, "The president's statement will only lead others to take up strawberry raising and hasten the day of glutted markets and calamity, and if you plunge in it will put an end to all your visions of home and loved ones."

In my perplexity I did what I have since learned was the only sensible thing. I wrote to the leading commission markets and a few of the leading country towns for estimates of the number of cases of strawberries that their trade would take at certain prices. When I had heard from all I found that estimates from different towns tallied so nearly with their population that I became convinced that they would make a safe basis of estimate of what the consumption would be in the territory within my reach. This I used with the census report to form an estimate of how many acres of strawberries it would take to supply the territory at prices which I considered satisfactory. My estimate was that 300 acres producing such crops as I had been able to produce would supply all the markets within reach from Sparta. A few years later Sparta alone came into the market with 600 acres and many competing towns had sprung up. The result is a matter of history. The strawberry crop was allowed to rot on the ground unharvested. The only satisfaction I got out of that year's business was to know that my pencil did not deceive me in making an estimate and that strawberries were so cheap that people got the strawberry habit which has worked to the advantage of strawberry growers ever since.

I mention this only to illustrate that there may possibly be a perfectly sane and cold-blooded business method of gauging development in any horticultural line.

If you will but take the time to examine the collection of prospectuses, issued by various real estate concerns, which Secretary Cranefield has in his office, you will agree with me that we are in the midst of things horticulturally here in Wisconsin and the all important question before us is: Shall we allow our eyes to be blinded by the fog, our ears deafened by the din, our brains bewildered by the whirl, our hearts dead-

ened by the weight and our throats choked by the dust till we can neither see, hear, think, feel or speak the truth.

Here we may well ask what is the *truth*? Where may we find it? How may we separate it from the fog and din and whirl and dust that is being kicked up by the professional promoter and the real estate shark?

Fortunately we have with us today representatives from several sections of the state who are so closely connected with horticultural interests in a business way as to qualify them to give us much plain unvarnished truth from their respective sections of the state. Let us ask Mr. Richardson of Sparta whether or not there is room for further development along horticultural lines in his section and if so whether he wishes to see development by the nonresident investor through the good (?) offices of the professional promoter or development by the home builder who wishes to establish a home and obtain a livelihood as a horticultural specialist. Let us ask Mr. Kern of Bayfield and Mr. Bingham of Sturgeon Bay and others prominent in horticultural work these same questions and then let us investigate the nonresident investor development of the Bitter Root district and some of the other western sections following this plan and compare it with the Minnetonka district in Minnesota with its resident development, small holdings and happy homes, and I think we shall have no trouble in deciding which plan for development we ought as a society to encourage.

It is however a fact that the argument may be truly used that the professional promoter will develop much more quickly the orchard possibilities of any section but let us stop to inquire whether even this is desirable.

Estimates from reliable sources place the acreage planted to cherries in the Sturgeon Bay district at from 2,000 to 3,000 acres and reliable parties who have been watching development in that section predict that this will be raised to 10,000 acres within a very few years. We are told also that the present bearing acreage is about 40, from which the very handsome returns received are being flaunted by the professional promoter before the dazzled eyes of prospective investors as an example of what they may receive if they will only sign a contract with them for a 10 acre orchard which they are able to show them with their pencils will bring in a hand-

some income for old age and retirement. How illusive is the inducement to the man working on a moderate salary! A compensation or income for the retirement of old age. Ah! That has been a perplexing problem with him for some time. Here is its solution and how easy that company of promoters are going to make it all. Just the signing of a contract, the payment of a few dollars per month and presto! The perplexing problem is solved.

How quickly it causes the fog to raise before the eyes! How quickly the din of it deafens the ears! But before we allow the whirl of it to bewilder the brain, let us use a small grain of sense and businesslike precaution and make some inquiries. Let us ask the representatives from the Sturgeon Bay district what in their opinion will be the effect of multiplying their present output by 250 or even 100? In their opinion will it be possible to obtain sufficient help to harvest such an output? Will it be likely that transportation facilities will be sufficient to handle it if harvested? And will markets at profitable prices be found for such an increase? Let us have estimates from them regarding the number of times their present output can be multiplied with safety to the investor. Let us ask these same questions of representatives from the various other fruit producing centers, regarding the particular line of production of their section. Let us insist on well considered answers, and then let us get the information thus secured tabulated in shape for distribution to the inquiring public that they may know the approximate truth and use it for their guidance and protection.

Some may object that such a course will check development and all will agree that rapid development at this time is desirable, but I think most of you will agree with me that the most substantial development will come from letting the unvarnished rays of truth so direct it as to keep production and market demands nicely balanced by pointing out those products of which there is an underproduction, developing ways of widening our markets and stimulating consumption, thus making room for a rapid and natural increase in horticultural production and thereby building up happy and prosperous rural homes and making this an era of rapid and businesslike development of horticultural interests in this state.

The President: We will stop a moment for discussion, this paper ought to be thoroughly discussed.

Mr. E. A. Richardson: While I am fully in sympathy with Mr. Hanchett's paper with regard to the advancement of any community under the orchard promotion system, yet I think that the building up of small homes and individual ownership of fruit farms is better, a more substantial development.

The Secretary: Mr. Hanchett asked the question if in your opinion you would be justified in planting 300 acres more of small fruit in the vicinity of Sparta?

Mr. Richardson: I think we would be justified in planting out 300 acres more, or in doubling our output of the present time. While we have been shipping fruit from somewhere in the neighborhood of 500 acres, we think we could easily market fruit from 1,000 acres. The only point would be in the distribution of the product, and we have found in the marketing of fruit that we would have been able to market fully twice as much as we have been marketing.

The Secretary: Is there any representative of co-operative orchard ventures here who would be willing to speak on this subject? You see Mr. Hanchett in this paper raps at the development along the line of company promotion schemes, standing strongly for individual development. Now, we ought to have all the truth. He asks here for the truth. We have in the state several companies who are promoting fruit growing on a large scale by co-operative methods.

Mr. Richardson: I do not think Mr. Hanchett in his paper intended to criticise co-operative fruit raising. I think he intended to disapprove of the practice of a company getting together, buying a certain number of acres, 50 or 100 or 200 or more and then selling it out to people who are not in a position to care for it successfully.

Mr. Toole: I do not think that we want to discourage what may be done in the line of promotion by companies, whatever we may choose to call them. I am glad that we look forward to booming Wisconsin as a commercial fruit growing section of the United States, but of still greater value to the State of Wisconsin will be that feature of fruit growing that makes people believe more in the state and still further, make people believe outside of the state, that fruit growing in Wisconsin is so far advanced that it adds to the attraction of our home

and makes Wisconsin the great home state, because we can, if we choose, grow very fine orchards, which some day will be equal to those grown in the west.

Mr. M. S. Kellogg: The question of development of horticulture in this state through co-operative concerns is one that is somewhat like the development of a country through some co-operative real estate company that buys up a few thousand acres of land, sets out trees and unloads it on some poor enthusiasts who do not understand the business. The men who have built up Wisconsin in the past are the men who have carved horticultural results out of the hardships that they have endured, and it is only through the individual work and it is the individual behind the horticultural work that is going to count. It is not any company, and you cannot get results from co-operative concerns that you get from individual efforts, I don't care what sections of the state you work in. You will find that is true in horticulture as well as all other work.

The Secretary: There must be somebody here to speak from the co-operative or promotional standpoint.

A member: Mr. Bingham.

The President: I do not know that I can add anything to what has already been said: I know that it is a big problem and whether it has been fully worked out satisfactorily I can hardly say. I know that supply and demand is a great factor in the production of fruit; whether that will be overdone I do not know. That only remains to be proven. We do know this, that to a certain extent the sale of fruit is considerably helped by the production in any locality of sufficient amount to interest the buyer, to interest people to come to that section to buy fruit. To what extent this can be carried on, of course, has to be determined, and perhaps will be largely governed by the amount of energy put forth in the line of marketing. It would probably depend a great deal on the kind of fruit we grow. A perishable commodity like the strawberry could not be shipped and marketed in as wide a range of markets as some other kinds of fruit and naturally would result in a glutted condition of the market in certain sections and in certain localities. But in other classes of fruit, the apple in particular, I think there would be perhaps less danger of overproduction by large planting, from the fact that the apple is a

class of fruit that can be held to some extent, marketed in more of a moderate way, and not put upon the market in large quantities, thus forcing down the price. We have no representatives here today of the co-operative orchard men; I should have been glad to have had some of them here and take up this subject from their point of view.

Mr. Pellett: There are two different plans of co-operative fruit growing. One is that of the professional promoters who buy a lot of land with the idea of selling it out on monthly payment plans to clerks in cities who are drawing $15 a week salaries, who know nothing about fruit growing and expect to get rich quick. There is another class which is being developed by fruit co-operative enterprises that have considerable capital invested. The work is placed in the hands of competent managers and the whole scheme is really a profitable venture. If it is profitably managed the one will perhaps add to the possibilities of the fruit growing region, while the other will soon just be growing up to a waste of weeds and dead and dying trees and will rather tend to discourage further development in that section. As far as overproduction is concerned I do not think we need to have any fear of that, once we master the subject of distribution. But when fruit is rotting on the ground in one section, in other sections not far away there will be an actual dearth of fine fruit, so that the main question in that respect it seems to me is to work out some plan by which we may distribute the product on very short notice and in good condition.

The Secretary: It is not my practice, as most of you know, to take any active part in discussions; I do not propose to do so after this session, but this is a subject in which I am very much interested. For years I have spent some of my time and considerable of my energy in the attempt to combat or overcome, I may say, the efforts of the western orchard growers in getting Wisconsin capital and Wisconsin people involved in orchard enterprises or promotion schemes. I continued along that line with more or less success, rather less than more. The time soon came when development along commercial orcharding lines in Wisconsin was of importance. Just as soon as commercial orcharding came to be recognized as one of the industries of the state, behold, we had with us in our midst some of the plans that I had been fighting for years. There

are three or four different plans for development. One is the plain stock company, for which I have the highest respect. Another is the corporation, or company organized to sell acre shares of orchard, for which I have less respect; the third is the pure promotion work for which I have absolutely no respect. So far as I have any knowledge, we have none of the last named class in Wisconsin. If there are any companies organized for the purpose of fleecing the people, I do not know of them. If you know of any, I wish you would let us all know. We have in "Horticulture" a medium through which we can give them the proper kind of advertising. We have, however, a large number of stock companies of the second class mentioned. They are working toward horticultural developments, they are developing the fruit business beyond any doubt, they are doing it on a safe, and I may say a sane and honest basis. I have investigated to some extent the methods by which these companies are doing business, and I am willing to speak a good word for all of them that I know about. But still, the question is always before us, is that the best basis on which the fruit growing and horticultural interests of the state are to be developed?

That is the question asked in the paper. Shall we encourage the planting of hundreds and hundreds of acres in one block, increasing wonderfully the development of fruit growing, or shall we give it less encouragement, and give our greatest encouragement to the individual holder, the individual planter, the home owner and home maker? I am not going to conclude my argument on that point. This is one of the most important things that faces us today: Shall we, as a society, give our encouragement to "promotion" schemes, shall we discourage them or shall we encourage the individual planter on the small scale?

MARKETING THE APPLE CROP.

A. K. BASSETT, BARABOO.

After carefully pruning, spraying and cultivating an apple orchard, this all important question arises: "What is the best method of marketing the crop? When we buy spray mater-

ial, farm machinery and labor, we are asked to pay a fixed price, but when the majority of apple growers wish to dispose of their crops they consign their produce to a commission house and accept what they are willing to send in return.

Sec. Cranefield states in the last issue of the WISCONSIN HORTICULTURE that we ought to assassinate the dishonest commission man. At that rate they all ought to be assassinated. It has become second nature for them to be dishonest. In the first place there are too many of them and in order for them to live in the style they do, it is necessary for them to make false reports. Last summer several stopped at my place as they were making a tour in their automobile from Chicago through to Minneapolis. They looked over my orchard and showed me how to grade fruit, and said that most of my apples would go as first class. Most of the returns I got showed that they sold for cull prices. If they did sell well, they took out a little extra for handling them. On one occasion I wrote to find how the extra charges came about. They sent me a nice letter saying that this was a choice car of early apples of which they had more or less trouble in making disposition. They sent me a list of charges which showed $30.75 extra for icing and demurrage.

Why not eliminate the commission man and sell direct to the retailer and consumer? The large grower and the fruit growers association can probably do business with the commission house, but it is from the standpoint of the smaller growers that I wish to speak.

I consigned the bulk of my early apples to a commission house and, receiving very poor results, I began to look around for trade of my own. I began by placing a small advertisment in my local paper, stating variety and price. This brought greater results than I anticipated. I received orders from many parties who had once lived in the vicinity of Baraboo, but had moved away and took the local paper. From one party I received the fourth order and could have sold them more if I had had the apples to spare. Several persons from the city, while visiting in Baraboo, saw my advertisment and ordered some sent to their homes. One Chicago lady ordered two barrels of early apples, and as soon as she got home she sent me an order for ten barrels more for her neighbors.

Through Baraboo people I shipped many apples to parties living in the Dakotas, Minnesota, Utah, Colorado, Michigan and Illinois. Only a short time ago one of our leading dentists sent a box of my Snow apples to Los Angeles, California, and word came back that they arrived in fine condition and the man said that he would be sick if eating too many apples could make him so.

The majority of my orders, however, came from the northern part of Wisconsin.

Many summer visitors from Devils Lake came up during the summer and, seeing fruit which they declared was far superior to any they could buy in the city, left orders for a barrel or two to be shipped as soon as they went back, and later ordered some for the fall and winter. This was at the time when the commission houses reported apples a glut on the market and sent very poor returns. Yet these people declared the cheapest apples they could buy were 40 cents a peck.

Then, too, I had letters from a great many grocery and fruit dealers from the small northern towns. To several I sold apples right along.

After getting started in selling direct to consumer and small retailer, I was able to dispose of the remainder of my crop and could have sold the quantity many times over. I did not get four or five dollars a barrel as some folks did that we read about, but I sold from $1.60 to $3.00 per barrel F. O. B. at Baraboo, according to variety. And this, considering last year's yield, is very good money. Money talks, yet the letters I received from satisfied customers, were encouraging. This is the way they run:

November 17, 1911.

Mr. Arthur Bassett,
Baraboo, Wis.

Dear Sir:—Apples rec'd. in fine condition, as fine a barlel of Fameuse as I ever saw. We are certainly enjoying them. Enclosed find money order for $3.00. Many thanks for your trouble.

Respectfully yours,

C. C.

Marquette, Mich., November 8, 1911.

Mr. A. K. Bassett,
Baraboo, Wis.

Dear Mr. Bassett:—

The snow apples were duly received. They are the finest snow apples I ever saw—thanks.

Inclosed please find a $4.00 check for same.

Very truly yours,
G. W. D.

In contrast let me read you one from a commission house:

Chicago, Ill.

21 Bbls. Apples

Received 9–5–11

For Acc't of A. K. Bassett
Baraboo
Wis.

7 Wealthies	$1.25	$8.75	
3 Cooking	1.25	3.75	
1 Sweet		1.40	
4		6.25	
6 Blush decayed		2.50	
			$22.65

loose pack no face

Freight	$7.82	
Commission	2.27	
Cartage	1.05	
		11.14
		$11.51
E. & O. E. Net proceeds		8.40
Remarks: Price for 21 bbls		$3.11
21 bbls.		.15
Per bbl.		.05
Per bu.		

About this same time I made a shipment of the same variety to Hillsboro, North Dakota, which were ten days on the road, and another to Hooper, Colorado, which traveled eighteen days. In both cases word came back that the apples arrived in fine condition.

I am so well pleased with the success I had in selling direct to consumer and retailer that hereafter I intend to dispose of all my apples in this way.

The location of Wisconsin makes it an ideal place in which to market a crop in this way.

The freight rates on a barrel of apples from our station to any point in the state is not over sixty-six cents, thus making it possible for a consumer to get apples at picking time

for $3.00 or less, which is a very moderate and satisfactory price and leaves the grower a good compensation.

In the northern part of the state, where there are thousands of apple-hungry people, few apples are raised, and retail prices are never lower than thirty-five to forty cents a peck for cull apples. At least that is what residents of those parts tell me.

From past experience I know a good many apples could be disposed of to the working classes living in the factory towns near the large cities. These people, like those living in the northern sections, would consume more apples if they could buy them for what they are worth.

I think if one wanted to make a specialty of selling fancy fruit they could find a ready market for them in the large cities.

If anyone has an orchard located near a city of some size, he can dispose of a great many by peddling them. An aristocratic grower might consider this method beneath him, but it is an honorable business, also a money-making project. I sold practically all my late fall and winter varieties in my home town. I deliver them by the bushel as my customers wish them, thus saving the cost of the barrel, which pays for delivering. I find that people would rather buy a bushel at a time than a larger amount. I have many customers who use from three to four bushels a month. This goes to show that people will consume more apples if they can buy them right. I notice that it is the people of moderate and ample means who buy the most apples. The rich people usually wish to purchase about ten cents worth, and of course such trade is not worth soliciting.

Many persons say to me, "I don't see where you sell your apples, I can't sell any." My one answer is "Have the right goods and then advertise."

When my young orchard gets into bearing I intend to advertise on a large scale. I shall place advertisements in the local papers of some fair sized northern towns, stating grade, variety, freight rates and price. I think it is very essential to state the price, as the majority of people do not care to bother about writing for prices. If the price suits them and the fruit is guaranteed, they are quite likely to send a trial order.

A Wisconsin farm paper is also a good place to advertise in, thus getting in contact with farmers who do not raise apples.

I spoke before of the chance of selling extra choice selected and packed fruit in the large cities. For this purpose I would advertise in some magazine likely to be read by the moneyed class. I ran across an article awhile ago about an eastern grower who made a specialty of doing this. This is the way it reads:

> "HAVE YOU A HANKERIN' for those firm, sweet apples you used to knock off the tree with a club when the old man wasn't looking? That was back in the days when the East—the natural apple country— was producing bumper crops. It was before the days of Oregon apples that have size and color, but lack the real flavor of Eastern hillsides. I have rejuvenated a Vermont orchard and will have for October delivery a limited quantity of apples that are just a little the best that can be grown. Drop me a card for the particulars."

The grower ought to place "catchy" labels, containing the farm name and location, on the barrels. This is the modern way of advertising and is extensively used by manufacturors of food products. We are all familiar with the brands—None Such Mince Meat, U-need-A Biscuit, etc. Fruit shipping associations are now falling into line. They are adopting brands which are trade-marked and are advertising them to increase consumption of their fruits, and I think it would be profitable for the small grower to do likewise.

But lastly, and most important of all, one must guarantee the fruit. The recollection of quality remains long after the price is forgotten. If I get a letter with the money in it, I send that man just as good apples, and maybe a little better, than I would the man who pays after he gets the apples. Send a man as good apples as you guarantee and he will tell all his neighbors and friends and you get *their* orders, but send him poor apples and he is lost forever.

It seems to me that here is an excellent opportunity for a young person to enter a new field of work. It will take a few years, of course, before a brisk trade can be established, but

remember this always, that unless one sends a customer apples of quality, you are killing trade. It is the come-back order we are after, and a customer will not come back with a second order unless he gets what he wants.

At present at least, there is very little competition in this line and the time is fast approaching when the middleman must go.

Mr. E. A. Richardson: I should like to inquire how large a crop Mr. Bassett had?

Mr. Bassett: I have at present about 500 trees, scattered over 12 to 14 acres. I expect to plant about 100 acres.

Mr. Richardson: How many barrels of apples did you market this year?

Mr. Bassett: In all about 800 barrels.

Mr. M. S. Kellogg: I should like to ask if Mr. Bassett packed any in bushel box packages?

Mr. Bassett: I shipped in barrels, practically all, except once in a while I had an order come for a box to be shipped to friends by express.

Mr. Richardson: Did you ship mostly by freight, or by express?

Mr. Bassett: All my fruit went by freight.

The Secretary: Do you find a demand for boxes?

Mr. Bassett: I think the patrons I have been looking for in our own part of the country, factory towns, prefer a barrel. One has to have more money for a box package. It is generally understood that the box apples are a little better than the barrel apples. If you are going to handle box apples you have got to use more care, it costs more to do it.

Mr. Rasmussen: I think Mr .Bassett is a little too severe on the commission men. I have found some crooks also among consumers.

Mr. Richardson: I think Mr. Rasmussen is all right. You will find good straight men among the commission men. Of course there are some that are pretty sharp, working for their own ends, but from my experience I will say, there are some good, straight, honest commission men.

Mr. Bassett: There are exceptions to all rules. But if there are ten per cent honest commission men I never got acquainted with them. The only way a little fellow can fix a commission man is to ship him 25 to 30 barrels and tell him

you have about 1,000 barrels, get him to pay a satisfactory price for them and then ship to another fellow.

Mr. Rasmussen: Ship your goods all to one good firm, guarantee every package, stand by it. I find that is the best way.

Mr. Bassett: That is what I advocate doing. If I can get a good retailer they are all right, but there is no use putting an extra price on them. I can sell them all right to the consumers, do my own commission business as I get a trade worked up. The fruit will go to the consumer for less money and you will have more.

Mr. Rasmussen: I think the commission man can handle them on a cheaper scale than we can. We have got to have a middle man.

Mr. Bassett: Then I would be my own middle man, if I were selling direct to the retailer. I would like to ask Mr. Richardson if they don't sell to the consumer? Couldn't I do that just as well as the big man?

Mr. Richardson: Yes, we sell a good many cases of strawberries, raspberries, small fruits and apples to consumers, but we still use the commission man, we cannot get along without him, because some days we will have more than the local trade will take care of, and we have to send our surplus to the commission man. We find this, too, at the commencement of the season, if we get a good commission house they expect us to furnish them through the season, every day. They are working up their trade just as you have worked up your trade and they have got to supply their trade, and they are looking to us to supply that trade. You will find that you will get some very good commission houses that way. We supply them every day, and also supply the local trade.

Mr. Bassett: That is what I said, the fruit growers association can do that; you have some idea as to what you are going to get for those varieties when you ship them to the commission house.

Mr. Richardson: Yes. About six years ago I had a local order trade myself, and we used to ship our surplus to the commission house and we found the same thing there. If they knew stuff was coming in every day, knew they were going to get goods, they would do the square thing, but if we shipped today and did not ship any tomorrow, they could not depend on what was coming, they could not depend on getting the

goods to fill the orders for their customers, and consequently we might not get the prices that we ought to have had for that shipment, for the reason they had ordered goods from some other place. I do not think that commission man is dishonest, because he does not know what to expect and he gets all his trade can stand on that day. That might have been the way with your apples, they went into the market when it was overstocked, and if there was only one car he could not get a better price for it.

Mr. Palmer: I have had considerable experience with commission men and I have found there are honest commission men, I believe just as honest as there are shippers. I have found a great deal of trouble handling apples with bad packing, and I find very few men who pack apples so that I dare put my own in and accept their pack. I have talked to a man in our town who handles a good many more apples than I have, and he said of all the dealers he has not found one that he has dared buy apples from without change of packing. If we pack good stock and ship to good, honest men, such as I know there are, we can get pretty satisfactory returns, take the season through. We can take out individual shipments that we do not know where to put, that we ought to dump to get rid of, that we do not get good returns for. But take the average sales all the way through, I think we have done pretty well with the big crop that we had to handle. That has been my experience.

Mr. Kellogg: I should like to ask Mr. Bassett if he kept any record of the cost of advertising and working up this direct-to-the-consumer outlet for your apples? Can you work up a trade of that kind, say covering a period of five years and do it on the same percentage that you can sell your apples through the commission house?

Mr. Bassett: I think you can.

Mr. Kellogg: That is not figuring any shortage for spoiling of the fruit in transit; that you have to take your chances on in sending to the commission house. But I have an idea that while you may be able to dispose of from 800 barrels possibly up to 1,500 barrels readily through a direct-to-the-consumer method, if you had 2,000 or 3,000, or at the outside 4,000 or 5,000 barrels to dispose of it would be pretty hard to sell those apples direct to the consumer without the aid of the commis-

sion man. I have had some little dealing with commission men and it has been my experience that there are honest commission men and they will deal fairly with you if you will put up goods in nice shape and they see that you are ready to stand back of them.

Mr. Palmer: We have tried both the commission house and the man that Mr. Bassett speaks of. The regular commission man who does simply a commission business is the man to ship to. The man that comes to buy, sometimes makes you a good price, but if you ship to one of those men that buy a certain amount and also sell on commission they sell their own apples first.

CO-OPERATIVE MARKETING OF FRUITS.

BY HON. P. A. ROGERS, GRAVETTE, ARK.

(Paper read by Secretary.)

The co-operative marketing of fruits by the grower rests upon the sound and fundamental principle that in union there is strength, and as developed in this country, is the outgrowth of necessity, for the growers in many communities have found that they must hang together or else they will hang separately on the ragged edge of want. The rapid growth of the fruit and truck industry of recent years has been the outgrowth of conditions and developments that have occurred in other directions. Without the marvelous extension of our railroad systems to every quarter of our country and without the refrigerator car, we cannot conceive of the fruit and truck industries as more than local enterprises, and then the people of each community would only enjoy such vegetables and fruits as could be produced in their own locality, and in these they would be limited largely to the season in which their products grow. But with the railroad and refrigerator car, the people in every section of our broad land, embracing, as it does, every variety of soil and climate, can and do enjoy the wide variety of products of every other section. Today in Madison, with the mercury playing around zero for weeks at a time, you may enjoy your oranges for breakfast, you may have your bananas, you may have your lettuce, celery, rad-

ishes, and other vegetables, fresh from the gardens of the south; and if you have an appetite for it and your purse is long enough, you may have strawberry shortcake. With the first appearance of spring here, you may have watermelons from Texas, Florida and Georgia. Before your strawberries begin to bloom, we are shipping you the famous strawberry of the Ozarks. This change of conditions has revolutionized the business of fruit and truck growing in this country and with this change has come, necessarily, an entirely different method of marketing. Where fruit and truck are grown only for the local market, the grower is necessarily his own salesman. He collects his products, hauls them to his nearest market, and either retails them to the consumer or else sells them to the retail merchant. In this case, the growers' market is limited at the outside to the distance he can transport his product with a wagon and team. But the railroad and refrigerator car have given him, it matters not though he live in the most remote corner of the country, the United States and Canada for a market. For instance, the grower of strawberries in the Ozark section picks, packs and hauls, his berries to the shipping shed. He can follow them no further. They may go to Denver, they may go to Winnipeg, they may go to Buffalo, or to any one of the hundred points that his berries reach as a market, but wherever they may go, he can see them no further than the car. This, then, calls for a method of marketing different from that which would prevail if he could find a market in his nearby town. Here will you allow me to trace the evolution that has occurred in the marketing business of the fruit and truck grower. Go with me to a new country, where the sound of the locomotive whistle has never been heard. The people are a simple, rustic population. Here and there is a country store, where the frugal housewife may exchange her surplus butter and eggs at a ridiculously low figure for such merchandise as will meet her simple needs. The county seat, fifteen or twenty miles away which may be visited once a year, to the rustic is a kind of metropolis which he describes with pride and may be with some arrogance to his admiring household. The farmer here grows the ordinary crops in measure sufficient to meet the needs of a family familiar with the simple life. At length a change comes. The precursors of the railroad make their ap-

pearance. The county paper has in its weekly issue columns devoted to glowing accounts of prospects of the railroad that is to go through the county. Then follow the agents who are to locate the right of way. Enthusiastic railroad meetings are held, subsidies are raised along the competitive routes; the route is at length located. After great efforts to raise subsidies, townsites are located. Then comes the construction, then the first train and the celebration along the line at the various stations. Everybody will now be rich. No more long trips with wagons and teams. No more journeying for days over rough roads in wagons or carriages to visit distant relatives; life will surely now be easy. But matters finally settle down. The people come down out of the clouds and get down to everyday business. They soon learn there is something for them to do. Then the transition from old methods to new begins. Some enterprising farmer concludes he will depart from the ways of the fathers. He will embark in a new enterprise. He will try planting a plat of strawberries, early potatoes and a quarter of an acre of tomatoes, may be some beans or peas, for shipment to his nearest city market. The venture proves profitable beyond his highest expectations. It is too good to keep. He tells it to his neighbors and reports it to the county paper. Next year everybody in this neighborhood follows the example of their enterprising neighbor. They are successful. The example is contagious. The next year the farmers at a dozen stations fall in line. Up to this time, every man ships independently and by local express as nobody grows largely enough to load in cars. Soon the markets that can be reached by local express are swamped. Everybody loses money and the business is near being abandoned; but it is suggested that if the growers will load together and load car lots, that they can reach much more distant markets. This is done. Profit is again received and a new impetus is given to the industry, and it continues to increase. Thus you have the organization of local associations. These local associations are formed throughout a whole district, covering a wide territory, and become active competitors of each other in the various markets that they all reach. the result is disastrous. There is no concerted action among the various associations. There is co-operation among the individual members of each association but ruinous competition

among the local associations themselves. Results again prove unprofitable. Not only is there destructive competition among the local associations, but, there being no concerted action among them, there can be no intelligent distribution. Some markets are glutted, others are neglected. The results received are such as would be expected to happen from such unwisdom. This condition cannot long continue. It must be changed, or the business will languish and soon be abandoned. After repeated efforts, attended with disappointment and failure, at length an organization of the local associations is formed. They establish a selling and distributing agency, whose business is to look after marketing the output of all the local associations which have united in the co-operative plan. Now I have traced the origin and development of a co-operative organization for the marketing of fruits or vegetables. And what is the history of one is essentially the history of all. They are a necessity and a growth. They arise from conditions. As conditions arise, men usually provide the means of meeting those conditions. In this connection I believe it will be well to state some obstacles in the way of organizing co-operative associations. These obstacles arise from ignorance, perverseness or self-interest. Ignorance and perverseness may be corrected, but where self-interest is the origin of opposition, the problem assumes a more difficult aspect. Some men oppose anything that is a departure from the old and trodden paths. This I call ignorance. The man who prefers to go in the old rut rather than to pull onto higher and firmer ground, is either too ignorant or too indolent to make the effort. Such a man's opposition to organization, while natural, is not at all formidable and may be overcome with proper effort. Then the man who opposes just for the sake of opposing, just to be opposite, can usually be reached by persuasion or proper diplomacy. But the man who opposes because his selfish interests, as he may believe, are encroached upon, is the man who places his own interests above the public good. Such a man cannot be reached by any appeal for the general welfare, and will yield only when he finds that opposition will not avail. He usually appears in the person of some local manager, who conceives that if his local association joins the central organization his opportunity for self aggrandizement will be lost. He has influence with his

local association, else he would not occupy the position he holds. In such cases it takes time and a convincing appeal to the growers themselves, and in some instances, then, failure to bring in the local association may result. Such a man may wish to be placed at the head of the organization, and if the growers refuse to meet his wishes, then his disrupting influence will be actively exerted. If a bad year comes when prices are disappointing, and such years will come, the disorganizer has his opportunity and he does not neglect it. At such times it requires the best effort of the strong supporters of the organization to hold it together. I will not here undertake to state at any length the advantages of co-operation. I went over that ground pretty thoroughly in an article read before the Missouri State Board of Horticulture, which was published as Bulletin No. 12, and which may be had by writing Professor W. L. Howard, Columbia, Mo. However, I will summarize by stating, as concisely as I can, some of the most obvious advantages of co-operative effort in marketing fruits and vegetables. First. It secures a wider and better distribution of products and therefore a better price. Second. It enables the distributor to keep in close touch with the market and have a better knowledge of conditions in all territories into which his commodities may go. It avoids often the glutting of good markets, and the neglecting of others. Fourth. It enables the producers to keep good agents in the best markets to solicit business, and generally look after his interests. Fifth. It enables the producers to protect themselves more effectively against the loss caused by the improper handling of their products by the transportation companies. Sixth. It places the producers on a better footing with the trade, and therefore better terms can be secured. Seventh. It enables the grower to furnish a more regular supply to the markets as their needs may require, thus enlarging the consumption of his products.

In conclusion, co-operation in marketing has saved the citrus and deciduous fruit business in California from ruin, has built the truck business of southwest Texas to enormous proportions, has prevented the small fruit business in the Ozark country from languishing and being abandoned, and wherever intelligently applied has given success and satisfaction.

WEDNESDAY MORNING SESSION.

PRESIDENT'S ADDRESS.

As we come to the close of another year we look back and see many changes and many things done, and many things undone.

We miss from our number the genial face of our esteemed friend Dr. Loope. He was a man of many sterling qualities. I won't try to name them as you all know them, some of you better than I do. You know too, the many kind genial ways that endeared him to all.

Passing from these sad memories to what has been accomplished, we find that horticulture has made more advancement in the past year in this state than ever before.

Parts of the state that were heretofore unproductive of fruit are being developed and will, in time, be wholesale fruit sections,

Men who have never thought of owning a farm have bought land and are planting it all to fruit trees. It is the capitalists who are stepping into the work and not with their eyes shut. They have finally awakened to the fact that there is money in fruit raising and it is wholesome work and can be done in Wisconsin.

Our society is the source of information to all these beginners and a guide to many in their selection of location and varieties to plant. This society is very fortunate in having for its secretary a man who will "hew to the line, letting the chips fly where they will." No one can justly say that one section has been favored to the detriment of another, and this is right and as it should be, for after all we are all interested only in horticulture for the advancement of this work in Wisconsin.

Having confidence in our own state, we are interested in making her rank high in the list of states adapted to the production of the different kinds of fruit. Nor should we be more interested as a society in one line of horticulture than another,

but in each as they rank in importance. We should assist the development of each by a united effort.

The progress that has been made in the last few years is evidence of what can be accomplished by a good live society with a live secretary.

I attribute the rapid advancement, in horticulture in Wisconsin largely, if not entirely, due to the Wisconsin State Horticulture Society. Because it was at such meetings as this that we all became interested and then, as we went to our own several locations in the state, we interested others and so the good work has gone on.

There are many thinge yet to be done by this society. Many people are starting in horticulture who will need encouragement, who will need timely hints and suggestions. Our magazine is exceptionally well suited for this work. We are realizing its worth more and more. Here, again, we find that by the assistance of all who can, this magazine can be made to do a wonderful work in the advancement of horticulture in Wisconsin.

Timely hints and suggestions can be thrown out to the different lines of horticulture, market gardeners, home gardeners, the school grounds, home grounds, small fruit growers, tree fruit growers, commercial orchardist and home orchards.

This is all being done to some extent and by co-operation can be continued. You must not expect the secretary and editor of the magazine to be an encylopedia of information and should assist him in the line you can.

There are still fields to enter for new work along all lines of horticulture. New varieties of apples to test out for the benefit of the commercial and home orchard. New methods of culture to be tried, new systems to follow to maintain fertility of the orchards for years. Many methods to try out to prove many theories pertaining to the perfect development of the apple, that Wisconsin may grow and put on her own markets apples equal in beauty, quality and size to the best and most perfectly grown Western apple.

Those who visited the State Fair and viewed the horticultural exhibit saw evidence of beauty, size and color equal to any apples ever grown, and this leads us all to believe that, by careful methods all along the line, Wisconsin can produce apples with the most favored sections.

A little work along the line of systematic thinning of fruit to determine its value to the commercial growers, pruning to a less or greater extent and its influence upon the crops would be of value in all lines of tree fruit culture.

The information obtained could be applied to home orchards as well as commercial orchards.

A careful study of markets and conditions to determine more fully varieties and their merits for commercial planting—a little start in the use of the bushel box for fancy fruit etc., all live topics to be investigated and worked out by our society.

ANNUAL REPORT OF SECRETARY.

The outlook for horticulture in all its branches in this state is decidedly encouraging at the present time. We were sixty years laying the foundations for commercial horticulture in this state and on such a foundation we should build an industry that will rank with stock raising, dairying and other branches of agricultural endeavor.

Wisconsin ranks first in the output of dairy products, why not in fruit? Of those who will smile indulgently at this and perhaps doubt the sanity of the questioner I will ask another question: Why is Wisconsin the leading dairy state? Wisconsin soils are no better if as good as those of Illinois, Indiana, Ohio, Iowa or a dozen other states. Our grasses and grains are not more nutritious nor our seasons as favorable as those of many other states, and only one-half of the state in area is developed agriculturally.

No Solomon is needed to answer this question. Every one who has observed knows that it is due to the "men behind the cows," due to the wide-awake, progressive, seeking-to-know, spirit of our dairymen. Hoard, Henry, Smith and other leaders pointed the way, urged without ceasing the improvement of dairy breeds, better housing and care of stock, and above all the establishment of co-operative creameries and cheese factories.

For thirty years these men labored along these lines and with what results we know. The College of Agriculture, the

Dairymen's Association and the farm press of the state sought first to make dairymen, success followed as night follows day.

In extent of territory adapted to fruit growing Wisconsin leads many if not all of the states in the upper Mississippi valley.

We have millions of acres of apple land, of cherry land and of small fruit land; we have the varieties adapted to our climate; we have the market at our doors, why should not Wisconsin rank high in the production of fruit? And yet, in spite of these advantages, it is not long since horticulture in Wisconsin was considered a huge joke.

Strange to relate, we have even now in Wisconsin otherwise sane men who really and truly believe that the only place where apples can be grown with profit is some remote point west of the Rockies, some fabled land of sunshine, just at the foot of the rainbow. For it is a fact, which we cannot dispute, a fact which I am compelled to state, although reluctantly, that we actually have thousands of people in this state who have sent, and are still sending, good hard money to the far west for investment in "Unit Shares" in Colorado, in Washington, in Oregon and even in the Bitter Root valley.

Money for investment in so-called irrigated lands, where the water-rights belong to some one else than the land owner, and in salaries to so-called managers!

Fortunately not all of our people are rainbow chasers for we have and have had for some time a few earnest, progressive men who have demonstrated conclusively that: fruit raising is quite as profitable in Wisconsin as in any other state east or west; that more money can be made from fall apples in Wisconsin than from oranges or lemons in California or Oregon, or peaches in Connecticut or Georgia; that there is more profit in raising Duchess and McMahan apples in Wisconsin at $1.00 a bushel than in Winesaps in Oregon at $1.50 a bushel; that the McIntosh apple can be grown to a higher state of perfection in Wisconsin than in the west; that the Wisconsin grower can buy an acre of land and plant it to fruit trees and bring it to profitable bearing for less than it costs to ship a carload of western apples to Chicago; that the cost of producing a bushel of apples in Wisconsin is less than the freight charges on a bushel of apples from Washington or Oregon to Chicago; that there are cheap lands in Wisconsin; that

the state is 350 miles from north to south and covers nearly five degrees of latitude; that the Wealthy apple ripens in southern Illinois in July, in southern Wisconsin in August, in central Wisconsin in September, and in northern Wisconsin in October; that fruit growing is not a question of latitude but of isotherms, of local conditions.

All of this and "much more than twice all of this" have we learned within a few years and we are taking the lesson to heart.

These men have placed Wisconsin on the map, may their tribe increase!

Turning now from generalities to specific facts, we note that the 1911 fruit crop in the state, especially the apple crop, was an abundant one, and judging from all facts obtainable exceeded that of any year since 1896.

The total production of apples in Wisconsin is a very difficult matter to determine, but an estimate of 400,000 barrels for 1911 seems to be quite conservative.

Probably one-half of the crop was from farm orchards which averaged less than 50 cents a bushel on the market. That the farm orchard, as now conducted, is the greatest drawback to the successful marketing of tree fruits in this state there can be no doubt and it is the duty of everyone interested in this business to discourage the planting of fruit trees in farm orchards beyond the actual needs of the home. The fact that farm orchard fruit does not rank with that from the commercial orchard is not necessarily a reproach to the farmer. If he attends to his business as a farmer he cannot give the attention to fruit that it requires to produce first class quality. Nor need our attentions all be directed to the elimination of the farm orchard. We have as yet too few growers who give to the growing, picking and packing of apples the care needed.

Progress in orchard planting has been marked in three sections during the past year, viz., Door, Bayfield and Crawford counties.

Door county now has about 2,000 acres of cherries, to be exact 1998½ acres, and fully as much more will be planted during the next two years. Twenty-two cars of cherries, averaging 512 cases, and 48 carloads of strawberries of 512 cases each were handled by the Sturgeon Bay Fruit Exchange this year. This, as can be readily seen, is but a beginning. It has been

estimated that the shipments of cherries from Door county in 1920 will amount to two hundred carloads a day for twenty days, requiring an army of twenty-five thousand pickers. It is evident that grave problems face the peninsula growers.

One of the encouraging features of the situation in Door county is the steady development of the district north of Sturgeon Bay. Orchards of considerable size are now being planted at Egg Harbor, Fish Creek, Sister Bay and Ellison Bay, all on the Green Bay shore, and in addition a company of our leading fruit men has acquired a tract of four hundred acres near Ellison Bay, two hundred of which will be planted to apples next year. This, with the purchase of a three hundred acre tract by Professors Jones and Moore of the Agricultural College, insures permanent development of this section.

The Washburn-Bayfield-Cornucopia-Port Wing section is developing no less rapidly or surely than the Door county region. Extensive orchards of apples and cherries, as well as strawberry and small fruit plantations, are being set out each year, in fact, about as rapidly as land can be cleared it is set to fruit.

A newspaper report of late date states that sufficient fruit trees have been received at Washburn to set three hundred acres, and careful estimates show that at least five hundred acres of fruit of all kinds will be planted in the Washburn district this season.

Twenty-five carloads, 12,499 cases, of strawberries were handled by the Bayfield Fruit Shippers Association, which brought the growers an average net price of $1,50½ per case.

Cherries sold readily in the local market at $2.00 per case. The Fruit Growers Exchange of Bayfield reports sixteen carloads of berries at an average of $1.50 per case.

The third section, which will be called hereafter the Kickapoo, is yet in the initial stages of development, and while no returns can be recorded the prospects are most encouraging. While Door and Bayfield are the cherry and berry counties, the clay ridges of the Kickapoo country will produce more apples than all the rest of the state if the present rate of development continues.

While these three sections have been treated somewhat in detail, it must not be understood that they are the only sections. Sauk county produces thousands of barrels of apples

each year, but here the business of fruit growing is not new. One buyer shipped 6,600 barrels, but reports the quality poor in the vicinity of Ableman, Reedsburg and North Freedom owing to lack of proper care in the orchards. Baraboo growers won a good name for care in pruning and spraying. The difference is readily explained, the former are almost without exception farm orchards while the Baraboo orchards are owned by fruit men.

Nor must we conclude that our opportunities are limited to sections where orchards are now growing, for there are many undeveloped regions in the state where conditions are as good or better than in the counties named.

The clay hills or ridges famous in Richland and Sauk counties extend north and west through Monroe, Eau Claire, Chippewa and Dunn counties. All that is needed in these places is the same sort of work that we have done in the Kickapoo to make them fruit counties, ranking with Orleans and Wayne counties of New York.

Waukesha and Milwaukee counties may also be classed as undeveloped, even though fruit has been grown there for seventy-five years. Milwaukee buyers send to New York and Michigan for apples that can be grown equally as well at home. Milwaukee grocers are today paying $4.00 per barrel for apples. Truly, Milwaukee county may be classed as undeveloped.

The small fruit business and vegetable growing have held their own in spite of drought and scarcity of help.

On the whole, the business of fruit-raising in Wisconsin is decidedly encouraging. Commercial horticulture is now an established industry and a rapidly growing one.

Our society has been closely identified with the movement at every step. We have aided and encouraged, and in some cases initiated work that has resulted in increased values exceeding in extent hundreds of times the amount of our state aid from the beginning.

SOCIETY BUSINESS AND AFFAIRS.

The reports of the secretary under this head from year to year show a marked resemblance, for the reason that the work of the society during past years has been alike. You must not understand from this, however, that we stand where we did one year ago, for we have grown immensely in a year.

The membership now numbers 1779 consisting of 1572 annual and 207 life members, an increase of 333 annual and 27 life members since the date of my last report.

While the increase has not been all that was hoped for, it has been steady and lapsed memberships are few. We have lost during the year only..... members.

While there has been a steady increasing effort through the office of the secretary to increase the membership among those whom it would benefit, no mad efforts have been made to add names merely for the sake of size. We hope some day to have at least five thousand members, but we want at least four thousand nine hundred and ninety of them to be horticulturalists at heart.

A marked improvement is evident from year to year in attendance and interest at our meetings. In the early days of our society the conventions comprised about all of the work, but they are now merely an incidental feature. They furnish, however, an accurate index of the success of our work and still constitute a valuable part of our efforts in horticultural uplift.

The exhibit staged by our society at the State Fair was the first real apple show ever held in Wisconsin and was a splendid success from every point of view. A detailed description of this exhibit is neither necessary nor expedient at this time. Over one hundred and fifty bushels of apples were shown that excelled in size, coloring and quality any ever before shown in Wisconsin. Twelve thousand people, by actual count, passed through our tent on Thursday, and for the week at least 60,000 visitors enjoyed the privilege for once of seeing good apples.

While the exhibit was expensive, it is generally agreed by all of our members who saw it that it was worth many times its cost.

Our infant, WISCONSIN HORTICULTURE, is now nearly a year and a half old, has passed safely through all ills incident to childhood, and is pronounced by its many admirers a healthy and likeable child with a promising future.

We still answer questions, thousands of them, during the year. While the magazine provides a medium for answering questions of general interest, many are received daily that require an immediate reply.

The Information Bureau still remains an important feature of our work.

Our main features, trial orchards and school grounds, have progressed with satisfaction and success during the year. As a more or less complete discussion of the school problem appears in the January number of WISCONSIN HORTICULTURE, it will be unnecessary to go into details at this time.

The status of our trial orchards will also be reported by the chairman of the trial orchard committee.

In conclusion, I desire to extend my sincere thanks to the officers, the members of the executive committee, and the members of the society for their hearty good will and continued support during the year. Our society is doing a splendid work, and whatever results we have attained have been due wholly to the loyalty and cohesion of the membership body. United we stand; two thousand earnest active members—and we must and will make things move in good old Wisconsin. We still have much to do, many problems to face, but we are not afraid. Nature has bestowed on us the soils and the climate, all we need is the "man behind the tree." We have a few of them now and they are putting Wisconsin on the map as a fruit state, when we get a few hundred more, each with his fruit farm of ten to one hundred acres, and we have them right here at home if we can only find them, when these men get under way, the prophecy of your secretary that Wisconsin will one day rank first of all the states in the production of fruit will not seem such an idle dream.

REPORT OF LOCAL SOCIETIES FOR 1911.

Name of society.	No. members.	Increase over 1910	Membership fee.	No of meetings.	Average attendance.	No. of exhibitions.
Washburn	57	1st year	1.00	8	22	None.
Bayfield	125	10	.50	2	50	Store window exhibits.
Madison	35	12	1.00	6	12	None.
Manitowoc Co.	44	8	.50	2	50	One.
Lake Geneva	40	.....	2.00	18	15	Three.
Oshkosh	29	16	1.00	12	20	None.
Poysippi	14	1	.25	3	17	None.

On motion, the reports were accepted as read.

REPORT OF CHAIRMAN OF TRIAL ORCHARD COMMITTEE.

Last summer, when the Wausau orchard was about ready to harvest, the trial orchard committee made a trip to that city and looked over the condition of the fruit and the markets. The committee estimated the crop in the orchard and accepted bids for same, considering the highest bid a fair price for the apples, the per cent of number ones running small, owing to the damage done by the summer hailstorm.

The productiveness of the various orchards can be readily determined by the superintendent's report.

The committee found the cultivation in the orchard very satisfactory, the trees in good condition, and that the spraying had been quite thoroughly done, the fact being proven by the small percentage of wormy apples found. The portion of the orchard devoted to plums, being practically worthless, should be cleaned up, as this would add much to the appearance of this valuable apple orchard. After the summer meeting of the society the committe visited the Sturgeon Bay orchard, finding conditions similar to those of other years. Here the cultivation was good, the spraying found quite satisfactory, excepting some evidences of sun scald on the apples, indicating that lime and sulphur in conjunction with heat may produce injury.

The Switzers in this orchard were found to have blighted themselves nearly to death. The committee decided they should all be cut out and burned for the good of the balance of the orchard.

Some time after this, after the long wet spell, which made the orchards very muddy, the committee, with the exception of Mr. Palmer, started out October 9, and visited five more orchards. We visited first the apple orchard at Manitowoc, finding it very promising and thrifty. Here we found a very heavy cover crop, properly following a summer of clean cultivation. At this orchard the committee advised some experimental pruning to try and rectify the badly crotched condition of the trees. These, I might add, were in this condition when planted, having been poorly pruned in the nursery and grown too long there before being planted. The cherry orchard was reported in a very much more promising condition than the year before, although about seventy-five or one hundred trees are needed to replace the dead and crippled ones, many of which should have been pulled out and replaced the year before. The cover crop, together with the manure advised to be applied, will add humus enough to the sand, so that in another year a marked difference should be noted.

Then on to Sparta, where a visit was made to the grape vineyard. Very little need be said about this, as the vines are still young. After some argument over the pruning and future care, the committee decided it would perhaps be advisable to mulch quite heavily along either side of the rows to prevent the great wash which is occasioned by the location of the vineyard on this steep hillside, composed of a soil the major part of which is clay.

We met the superintendent of the Whitehall orchard on the train, and as we had learned of its condition before hand, felt that his O. K. was all right. This orchard also has had the cover crop in the fall after the cultivation of the earlier part of the season, and made a very satisfactory growth.

Upon entering the Barron orchard one has staring him in the face certain well drawn lines, very marked, and very beneficial from the standpoint of experimental work. This orchard, while an utter failure from the standpoint of successful orcharding, is nevertheless a howling success in determining where not to plant commercially. In this locality they

had better stay out of the apple business, especially on lands of a similar nature, for we find the trees about worthless after the second year. In this orchard the trees become black at the heart after the removal of limbs, even the scars caused by the removal of the smallest limbs never heal over, and a serious condition exists from this time on. Upon some of the most favorable soils and upon some of the best drained lands possibly the home orchard might be made a success, but do not plant commercially. This orchard had a soil capable of producing very good farm crops, as shown by the cover crop growing there.

The Popular orchard was later visited and found in good shape, that is the plums and apples were, and as the cherries were abandoned some time ago, these are all there are to be considered now. The trees are doing well and look to be in good condition, since the plot was tile drained. There were a few apples this year, and as to quality they were fine for we sampled some. This was the only orchard from which we received an apple during the entire trip.

The President: There are one or two other orchards that are not reported on. I should like to ask Mr. Hays to speak of the Gays Mills orchard.

Mr. Hays: I lived in the orchard practically all summer. The orchard, which was planted in 1908, has made a remarkable growth, and I think we are entitled to the credit of having the best growth of any orchard in the state of its age. We have some Northwestern Greenings that certainly show remarkable growth. We took some measurements and we found one tree four years of age that measured 12 inches in circumference and was about 13 feet in height, and Mr. Cranefield and others will bear me out that the trees are very much alike, there is not very much difference, this one is not an exception. Our Wealthies bore some apples this year; this was the only variety that bore any quantity. We had some trees that were loaded. One tree in particular had 176 apples, all of them of good size, all perfect. We practice clean cultivation, as recommended by the Society, and cover crops. We have sown oats and had a good cover crop every season. Our cherries planted in 1910 have shown fully as remarkable a growth as apples, but we have nothing to report of those except the one year's growth. We have used

the same culture methods as in the apples. Grapes planted in 1909; one acre yielded this year 1600 pounds of grapes. Those grapes netted us $58.

The Secretary: I will ask permission of the president to swear to all that has been said in regard to Gays Mills orchard and I would go even further. I want you to bear this in mind in regard to Mr. Hay's report, keep always in mind this fact,—that orchard was planted in 1908, not in 1898. In the fall of 1911 one tree bore 176 apples. It was a lot of fun down in Milwaukee to show the Western fruit men around. I never enjoyed anything more in the fruit line in my life. They would admit, step by step, that "these are good apples." "Aren't they as good as you can raise in the West, as large, as finely flavored?" "Yes, they are, they equal ours in quality, in size and in color." I had to drag that out of them. "But there is one thing in which we excel, and that is early bearing." Then we would get around to Mr. Hay's exhibit where he had the 176 apples from one tree planted three years, and then there was no further argument. It demonstrates beyond any possibility of a doubt that we have in Wisconsin all of the elements necessary for the successful raising of fruit and that is demonstrated fully in the Gays Mills orchard. Do not get the impression from what I say that I believe that that is the only place in Wisconsin where that can be done. It can be duplicated in a dozen different places in the state, right at home, right on your own farm, no doubt.

Mr. Hays: This Wealthy tree was not a freak tree; we had another tree that had 130 apples on, another 110, and so on. I could have enumerated quite a number, but that was the best.

A Member: May I ask the gentleman the age of the trees when planted?

The Secretary: They were the ordinary three-year-old nursery tree. The stock in that orchard came from three different places. The Wealthies were from Iowa; some of the trees were grown in Missouri.

The Secretary: It was not the duty of the Superintendent of Orchards to report at this time, it is the duty of the Trial Orchard Committee. The Lake Geneva orchard is in the most excellent shape, it is the closest rival of the Gay's Mills orchard that we have among the demonstration orchards, and

I want to point out this, so that we may keep it in mind in the future. The Gays Mills orchard has never been cropped, never has been anything taken from the ground. We cultivated and cover-cropped it, rather an expensive proposition. The Lake Geneva orchard, planted one year later, same kind of trees and under like conditions as possible, excepting distance apart, has been cropped lightly, that is, has been cropped to beans, etc. Five or six years hence we will be able to measure results. But up to date the Lake Geneva orchard is in excellent condition.

ORCHARD CONDITIONS IN WISCONSIN.

BY MR. G. H. TOWNSEND,

Madison, Wis.

(Paper read by Mrs. Townsend)

The Wisconsin State Horticultural Society has done a great service to the fruit growers of the state by it's trial orchards and the collection and dissemination of the accumulated knowledge of it's members. The Society is, in fact, a sort of beacon light to ward off Pomona's ship from the rocks and shoals, so that she can sail on in her majestic glory, past Bingham's shores and Cranefield Bay to Apple Harbor.

Our officers are indeed, practical men determined that the people shall not only know how to raise fruit, but that the fruit shall be raised.

Of course, the society cannot compel people to devote time and money to fruit growing, but as the highest authority in the state it can put all action in cold storage by continually saying "don't" and it can greatly stimulate activity by saying "Come on, here is the place and now is the time!" Achievement is what is wanted, but as there can be no achievement without means, there is the ever troublesome question, how-shall the thing be done?

Some think that the work of the society should be mainly to aid farm orchard development; others opine that only indi-

viduals will make success, and still others believe that companies or co-operative orcharding is most likely to succeed.

In view of the fact that there is undoubtedly a lack of information and considerable mis-information, it is an opportune time to consider conditions in Wisconsin in their relationships and find out what is necessary to make orcharding a success. It is, of course, true that some varieties of apple trees will grow almost any place except in the swamps, but it is one thing to raise trees and another to raise good fruit.

The matter of growing apples for home use may well be undertaken anywhere, because the expense is not large and crops at rare intervals justify the undertaking, but growing apples as a commercial enterprise necessitate yearly crops.

THREE YEARS TO GROW APPLES.

There are but few people who ever stop to think that it takes three years to grow apples after the trees are old enough to bear fruit. The branch grows the first year, the fruit spurs the second and the apple the third. The problem is how to develop all of these each year, and it is the failure of orchardists to recognize this need that results in one crop in every three or five years and in some cases complete failure to grow any crop at all.

SOILS.

A recent article in one of the fruit magazines stated that any soil with a porous sub-soil four to six feet deep was good apple soil. That statement may be true in some localities, but as a matter of fact, a soil that will produce large crops of apples every year, requires ability to grow branch, spurs and apples at the same time and to do this must possess at least three distinct characteristics.

The first of these is humus, and the man who planteth apple trees in soils without humus will later tarry in the shadow of his own disappointment. There must be an abiding place for soil bacteria and even though the soil have enough substance to last hundreds of years, without humus it profiteth nothing. True, the humus can be put into the soil by turning under green crops or with coarse manure, and if this must be done, in the language of David Harum I would say, "Do it

fust." If we are not satisfied with our faces we can add any tint we desire when we desire, but putting color on apples is quite a different thing and the scientist answers the wail of the grower with colorless fruit, "apply potash to the soil," and so if we are to have red cheeked apples as the complement of our lovely rose cheeked maidens, the soil must have the necessary mineral elements, potash, phosphorous and iron.

Aside from the elements of plant food, an apple soil must not be too heavy nor too sandy—one holds too much and the other too little water. Such a soil is designated as a "Clayey loam." The soil should be deep and contain some gravel and limestone usually found in limestone ridges.

It is claimed by some that the founders of the "trusts" followed the Indian legend of creation which is that the world was first made of water, and a certain political faction insist that the water used by the trusts can't be gotten out by any system of gravity. Here the fruit grower has the advantage, for he can plant his orchard where the land has enough pitch or incline to allow gravity to rapidly draw away all surplus water. If an orchard must be planted on level land, drain tile put in at a depth of four or five feet between each row of apple trees will meet the requirements. The orchardist should not only be seriously concerned about how to get rid of all excess of water, but also how to keep enough water. If we plow a plot of ground twelve inches deep and then work it down until the plowed ground is approximately thirteen inches deep, and then saturate it with water until it ceases to flow away, it will hold three or three and a half inches of water and a like amount of air. Twenty-five per cent water would be an insignificant percentage for a trust and twenty-five per cent air, wouldn't be a starter for a Western land boomer, but these are highly conducive to plant growth in warm weather. If we increase the percentage of water it will push the particles of earth farther apart near the surface, and beneath it will push the air out as no two substances can fill the same space at the same time. If the subsoil holds too much water the bacteria that transform the simple chemical elements of the soil into the complex elements of the plant—the tree—becomes inactive, whether from pneumonia, la grippe or merely colds I leave for further investigation.

The roots of apple trees will not penetrate deeply into soils that contain an excess of water, not only because of their aversion to "cold feet" but because such soils contain too little air. Excess of water may be the cause of arrested development any time during the growing season. Old orchards may be found in an adjoining state that have never produced a good crop of apples because always sick from too much or too little water.

On the side of too little water may be found withered hopes and razed castles. When the water content falls to one and a half inches to each foot in depth, growth ceases. Here the advantage of deep soils is manifest as each foot may add a quarter or half more water supply. If the moisture be insufficient, three things may happen: Should the tree be bearing much fruit there will be but little growth of branch and few or no fruit spurs; the apples may drop before maturity or mature under size, the tree may kill from the lack of moisture or winter kill by freezing dry.

When the best soil has been chosen the conservation of moisture belongs to the art of the orchardist. If you look well to the water supply and keep it ample without excess, you may expect a crop of apples every year, provided of course, the bloom is not frost-killed. In this particular Wisconsin is in far better position than the orchardists of the South and Southwest, and even the Southeast. It was reported in the fruit journals that one locality in Colorado used a hundred and twenty thousand orchard fires and then lost their fruit, or the most of it, last year. This condition is likely to be a frequent experience because the cold air from the mountains is continually sinking into the valleys. The late blooming period in Wisconsin makes it practically free from frost killing in favored localities. It is the every year crop that counts because expenses go on, crop or no crop, and frost killing not only takes the crop killed but may break the routine of the tree and grow nothing but wood—no fruit spurs—if the season be wet.

We make no extravagant claims for Wisconsin which is unlike those of our brothers toward the setting sun. There is so much al-ka-lye in the West that one might easily be saturated with the part used to make soap and owing to the amount of air in circulation, some people are puzzled to know whether

the western tornadoes are cause or effect and ascribe much of the western interest to one word of five letters: b-l-u-f-f. Wisconsin's future apple greatness will be spelled the same way only in the plural: b-l-u-f-f-s, but the difference is that Wisconsin bluffs are God-made and need no artificial man-made substitute. All our lives we have heard that elevation protects from frost, but it is not the whole truth. Frost may kill at a high elevation and not kill at a much lower one. The principle is this: Cold air falls and warm air rises. High elevation does not protect from frost on large areas or if there should be still higher land adjacent to throw down the cold air without a lower basin or valley near by to receive it.

You have heard of people going so fast that they "only hit the high places," and the reason that Jack Frost don't hit the "high places" is because his increased density—the effect of cold—makes him fall into the holes, so to speak.

The high ridges adjacent to the Mississippi and Wisconsin rivers in southwestern Wisconsin are exceedingly fortunate in this particular, and this region contains a large acreage of unsurpassed apple soil, filling all the conditions heretofore enumerated. Large bodies of water are also a protection against frost and operate in this way: The sun shines on an unmoved surface of land all day and it warms during the day faster than the water, because the water moves and comes up from the depth. As long as the ice remains unmelted the cold air holds back vegetation for some distance from the water shore. After the water begins to warm the land cools faster at night than the water and this creates warm currents to overcome frost and considered from the practical view point, commercial orchards should only be planted near the lake shore or on high ridges. In the matter of continuous or frequent rains during the blooming period which seems to prevent pollenation, Wisconsin is more fortunate than any of the apple regions South or Southeast.

The "Bogey" man of the Wisconsin grower is winterkilling, but it should be borne in mind that he is not the only one, for the orchards over a large part of the "corn belt" have at some time been winter killed, and as the danger of winterkilling decreases southward that of drought killing increases. Experiments in the Northwest show that some varieties will winterkill even when top grafted on hardy stock, or root pro-

tected, while others will not. In our present state of knowledge we are not able to tell from physical structure how much cold a variety will stand, but that the main reason for top hardiness is maturity of each seasons growth, and a fair index of this is early ripening of fruit. An apple grower should raise the very best varieties and cover the longest season possible his region will permit, but must recognize that the shorter the season the more limited the number of varieties he can grow, and these must be early maturing kinds. The hardiest varieties, called "ironclad" are the Duchess, Patton's Greening and the Hibernal—the latter raised mainly for top grafting. These varieties will stand the winters 42 degrees beyond the North Pole. The Wealthy is the hardiest apple of quality and will stand any part of Wisconsin if grown on a good apple soil and winter protected by snow. Where it winter kills it should be worked on the Hibernal. The Dudley, Snow and McIntosh come next in hardiness and the McMahan and the North Western Greening seem to be next. The superior quality of the Snow and McIntosh will enable Wisconsin to capture the world's markets if the growers so desire. From the information at hand it appears that a good many people are inquiring for good hardy winter varieties without being conscious that more than hardiness is involved. Each variety has its cycle of development and this cannot be speeded up like an automobile.

The early winter varieties, such as the Jonathan, Grimes Golden and the Delicious, will require about three weeks longer season clear of frost than the Wealthy. The Ben Davis will require still more time and it is only medium late. Some varieties will adapt themselves to short seasons, but it is like shortening a coat with a pair of shears—so much cut off in size. In proof of this, the Ben Davis and the Jonathan have been grown top worked on Hibernal so far north in Minnesota that they only attained the size of crabs. The longest season in Wisconsin is to be found on the high ridges in the Southwestern part of the state and here the Ben Davis will not grow full size except in the longest, warmest seasons. The Jonathan, Wagner, Grimes Golden and the Delicious have somewhat shorter seasons and will grow approximately full size in southern Wisconsin. The short life of the Wagner can be overlooked because it is an early and prolific bearer. The

Jonathan has stood well on its own roots in Richland county. The Delicious has grown well, so far, both on its own roots and top worked, and the Grimes Golden top worked, so that it is safe to say that with root protection in the winter or top working on root hardy stock our South Western ridges are destined to become famous as the northern limit of these fancy varieties, and while our percentages of large sizes may not equal those grown in the southern apple districts, we have advantages in regularity of bearing, later keeping qualities, a home market, and enjoy a late exclusive market for these, as the Bayfield district does in strawberries. It is time for Wisconsin to take notice of the success and failures of top grafting. Extensive trials in the northwest seem to justify the following conclusions:

(1) It is not practical to greatly shorten long season apples by grafting winter varieties on summer trees, such as the Duchess.

(2) Varieties that are top hardy but not root hardy may be made entirely hardy by top working on root hardy trees of similar or slightly earlier maturing season.

(3) Varieties that grow rapidly should only be grafted on rapid and not on the slow growing kinds.

(4) The scions should be inserted in grooves sawed in the limbs and not by the split cleft method and the grafted limbs should not be much more than an inch in diameter and preferably smaller.

The prospective orchardist must keep his market in mind and so long as the large cities afford a market for short keeping apples the growers will be happy, but when it comes to distributing short season apples to towns and villages in less than carload lots the grower will be confronted with quite a problem and cold storage near the orchard will be a necessity. If we expect to grow apples in Wisconsin, it would be a great mistake not to choose a location where nature has done the most, and when this has been done the art of man begins. He must meet the requirements of those trees that grow too much or too little wood; must fight insect pests in the right way at the right time with adequate equipment. In dry seasons moisture must be conserved by cultural methods and in wet times excessive water must be drained away. To meet difficulties, to guard against them, to gather and market a crop and do

everything in season requires considerable business and executive ability, so that a capable man cannot afford to sacrifice his time for the income obtainable from a small acreage.

FARMERS NOT APPLE GROWERS.

The conditions outlined practically eliminate the farmer because only parts of a few counties are really good orchard lands. Orchard work and farm work nearly always conflict and when they do the farm gets the labor and the orchard gets the bugs. Individual orcharding would be ideal if conducted on sufficiently large scale, but men who have large enough means usually have too much on hand without the care of an orchard, and young men who are disposed to such employment have insufficient means alone; and this brings us to

FORMS OF COLLECTIVE ORCHARDING.

The term "collective orcharding" as used is intended to cover all associated or co-operative orcharding which must take one of three forms: The incorporated company, the undivided acre unit systems, or the divided tract method of five acres.

There was a time when men associated themselves together in business enterprises as partners, but this form has for good reason been almost entirely superseded by what is known as "incorporated companies," which are authorized by every state, but varying as to conditions and requirements. The collective means of several used as one is in our opinion a practical method to operate orchards in Wisconsin, because it is possible to do so on such scale as to meet the essentials of successful orcharding such as the use of power, sprayers, tools, shed and cold storage which lengthens the season of handling the crop, the advantage of being able to ship in carload lots at all seasons, and keeping help employed all the year. The small grower must buy barrels made up while the large grower can buy his stock and make his barrels, boxes, crates and baskets in the winter season. The large grower also finds it easier to get pickers because more widely known and longer season of work. The large grower may also use culled apples in various ways not practical for small ones. Growing apples to make money not only requires

knowledge of fruit culture, but a good deal of business and executive ability and such a man would earn a thousand dollars a year and upwards in other employment. Now, if a man's time is worth a thousand dollars a year, that would be a tax of one hundred dollars an acre on ten acres and the larger the acreage the less the acreage burden for management. This shows something of the relative advantage of large as against small operations. Apple growing under present conditions is a commercial business requiring knowledge and capacity. The Agricultural Colleges are educating young men for this work and a considerable number of these with experience will be fitted for this work and capable managers will be easy to get, provided the undertaking is large enough to justify compensation equal to compensation of teaching or the salaries such men could earn in other kinds of business. The objections of some against an incorporated company, that men have bought mining or other stocks and lost their money, is no valid objection to an orchard company. Some concerns never intended to do any actual business but were organized solely to swindle credulous people out of their money. The objection that legitimate corporations in other kinds of business have been wrecked by schemers has some force. This has usually been done by expansion and debt. Expansion carries large expense and means usually no dividends, and fear and dissension among the stockholders which is an opportune time for some creditor to bring suit, have a receiver and ultimately sold under execution to pay debts. The wrecker buys in the property and goes on to fortune at the expense of the original stockholders. It is a pity that our laws are unable to reach more of the stock swindlers and the only safeguard in corporations is the character of the men composing it.

To meet the objections to corporations the "Unit System" was invented which is a system of individual ownership associated together and operated as a whole. An individual or a number together forming an operating company can buy or may own a tract of any amount and sell it in acre units. The land is conveyed to a trustee for convenience of transfer and safety. The trust deed sets out the conditions of the trust, such as no debts can be contracted by either the trustee or any other person except the purchaser of the unit. After sale of

units the operating companies continue care and development as agent or lessee. If the tract contained one hundred acres there would be one hundred units numbered from one to one hundred, undivided. The purchaser of one or several units gets a certificate from the trustee which is usually a bank or trust company, and also signed by the operating company that develops the tract. When the purchaser pays for his unit or units he leases his interest for perpetuity or for a term of years, so that all the units are operated by one manager and the compensation is usually twenty per cent of the net profits. The unit holder pays no salary and only the labor and material are charged as expense.

The objection offered against this system is that the operating company as lessee might quit and in such case it would be an orchard property without a manager, which might happen to an individual or a corporation.

The third system is the five acre plot or some multiple of it. Under this plan the company selling the plots contract to plant and care for the orchard for a number of years. Many persons under the belief that a small plot of ground in orchard meant independence will some day wake up to find disappointment instead of fortune. To those who merely want a country home in summer or all the year any acreage will answer. Those who have been accustomed to earning good salaries and expect to get the equivalent out of fruit should have twenty acres at least. Owners of small tracts will find it most profitable to combine in the matter of tools and equipment and in selling their product. To persons having some income small tracts of five or ten acres will make a homestead, but others having good health and good positions had better invest under plans previously described and continue in their regular work.

Perhaps the ideal way would be for each unit owner to pay a small sum in addition to the price of the land into an equipment fund and in this way form the operating company from the unit owners. There would be no temptation to wreck the operating company because it would not reach the land—not affect the orchard. We have endeavored to set out the possibilities and conditions as clearly as possible so that the prospective orchardists may see for themselves what is practical.

The Secretary: There is one subject that perhaps might be brought up at this time, in view of the fact that Mr. Hanchett

was not here yesterday when his paper was read. There are two points brought out in that paper that seem to me are of the utmost importance to the fruit grower of the state. One, calling attention to the fact that there may be overproduction of fruit in the state owing to the extensive planting, and the other a warning against the exploitation of the fruit business in this state on the part of large companies and corporations, that is, putting out large areas of fruit in contradistinction to the making of homes of fruit men. Mr. Hanchett is now here and can speak for himself.

Mr. Hanchett: I think Mr. Cranefield has stated pretty closely the things I wish to point out. I was sorry I could not be with you during your discussion of the paper yesterday; I assure you it was not because I was afraid to stand by my guns. I wish to state now, however, that a fear of overproduction in my mind is not so much of a threatening cloud on the horizon as a fear of over-exploitation. I think that will be a point that we will never reach, that is, overproduction in fruit in this state, if it is done in the way of natural development of building up homes by actual residents, owners. One of the things that I did think that this Society should point out was the swindles which would doubtless be carried on in the name of orchard development in this state as they have been carried on at other points, this fleecing of the innocent sucker through the inducement that all he has got to do is to sign a contract in a certain orchard company, pay over a few dollars of his hard earned salary every month, that is something that we ought to discountenance and to put a stop to. In regard to the paper which was read, I am glad there is some one that is trying to think out a plan by which collective development may be carried on in a way that will profit the investor. I have not found out what any of the men towards whom I directed inquiry and discussion yesterday gave as their opinion in regard to development in their section, but I am of the opinion that every one of them can truthfully say that there is a chance for a considerable amount of development in horticultural lines in their respective sections. For my part, I believe there is a chance for great development and it is one of the things that we want to see. But one of the things that we should guard against is the swindling of innocent people through wildcat companies who will surely take up the work.

The Secretary: I do not oppose companies that are doing a legitimate business. We have some of them in this state, both stock companies and orchard development companies, but we are also getting the other kind. There will be printed matter circulated throughout the state during the coming year advertising extensive orchard companies and investment companies. First of all, I want to give you that warning and I hope that it may go out through the press that it is the feeling of the members of this Society that we do not encourage that sort of thing, that we are not so crazy over the development of fruit that we will endorse anything and everything that comes to hand. There is another thought, and I do not hesitate to say it, that the companies that are now developing these large propositions in my mind are making a mistake if they say to the investor that the investment of $1,500 or $2,500 will bring them an independent income. I care not if the annual income from an acre of cherries in Door county is $500. Of course the question of development along the other line of individual ownership is entirely aside from that, but I do not want the public to feel that we approve and endorse the large co-operative ventures as the best method of development of the fruit industry in the state. I insist that the substantial development in this state will come from the homes. We may have a thousand acres in one block and we will have but one home. If we had that divided up into ten or twenty acre tracts, we will have hundreds of homes. That is what we want. We want the man behind the trees. It is the development of homes that we want in the state. We do not want to discourage any legitimate honest investment venture. Two years ago I said in my report if we can have a company in this state that will plant one hundred acres of fruit in one block, we will have something that will surprise the people of the country. We now have a hundred and forty acres up at Sturgeon Bay, but I believe we do not need to encourage that sort of development any further, that every one should work for the development of the fruit business along the line of individual ownership.

WEDNESDAY AFTERNOON SESSION.

THE FARM ORCHARD.

H. C. MELCHER, OCONOMOWOC.

In his letter assigning me a place on the program of this meeting Secretary Cranefield said I was expected to plant and care for an orchard of two dozen trees to supply the farmers' family with apples *with none to sell.* To keep well within the question, I think I will resign at the end of five years, for I cannot imagine the family this side of Salt Lake City that could profitably use the product of these same trees after they reach maturity.

In times past it was often necessary to spend some time in meetings of this kind to try to prove that Wisconsin could raise apples at all, but after the showing of the past year we think that question is forever eliminated and will never be shot at us again. The commercial orchardist is taking advantage of the knowledge gained and there are being more large orchards planted in Wisconsin than ever before; and why should not the farmer also take advantage of the situation and profit by it?

The subject is "The Farm Orchard"—an old subject—one that has been discussed so often that we feel our inability to present anything new, but we remember that the Gospel has been preached for nearly two thousand years and there are still sinners in the world. The evangelist that comes to your town does not come with a new story but it is the same old story told, perhaps, in a little different way that finally compels you to "come across." and so, if what I have to say will induce someone that has no orchard to start one, or cause another one to add to his, I shall feel that my effort has not been in vain.

In locating the orchard the farmer is at a disadvantage. It must of necessity adjoin the home grounds. He may have an ideal spot in a remote part of the farm, but his two dozen trees would be at the mercy of tresspassers and would not receive many of the little attentions that could be given it when close by. It is very often possible to have the orchard simply an ex-

tension of a well kept lawn. Wherever I have noticed this the effect has been very pleasing.

If there is one mistake more common than any other in the farmers' orchard it is that of too close planting and this in spite of all the advice given on the subject. Twenty-four feet each way seems like a long distance for the young trees but you can still cultivate and raise crops for the first five years and by that time they will not seem to be so close together and you can afford to let them have full possession.

I have in mind an orchard just across the street from my home, formerly owned by my father. He was a great lover of trees, also an agent for nursery stock and always did his own delivering. At the close of each season all surplus stock was planted in his limited grounds. It was so closely planted that cultivation was never possible. In this orchard were many of the early bearing varieties and for a few years bore good crops. This orchard is on a much traveled highway and was always pointed out as an object lesson in favor of close planting and was largely copied. It is now twenty years old, and although many of the trees have been cut out, it has been unprofitable since it was twelve years of age.

I have seen only this last year new orchards started with trees but sixteen feet apart, or worse still, have seen young trees planted between older trees that were already too close together. The farmer is very often an easy mark for the persistent fruit tree agent and will often give a small order to get rid of him and think no more of it until the trees are delivered when he will take his spade in one hand and his trees in the other, will hunt for a place where they will be the least in the way and never give them another thought. That farmer's two dozen trees will never supply his family with apples.

In selecting varieties the farmer has the utmost latitude. Commercial growers usually grow what the public demands, or try to create a demand for what they grow. The farmer can grow many choice varieties that are not usually considered profitable but they add variety and sometimes help to lengthen out the apple season.

Do not make the mistake of planting too many early varieties. Remember we are not raising apples to sell. If you are living up to your privilege you also have small fruits on your farm. You have passed through the strawberry and raspberry

season and there are still blackberries to be had when the first apples are ready. You are not so fruit hungry as you will be at almost any other time of the year, so for that reason we would not have more than four of the two dozen early varieties, and I would have as many different kinds. We all know the Duchess is the leading early apple, but no family wants four Duchess trees. Other good ones are Yellow Transparent, Tetofski and Red Astrachan.

The gap between summer and early winter can be profitably filled in with Wealthy, Longfield and McMahon. If you plant two of each kind they will furnish more apples than you can use, but you may want to make some cider and Longfield and Wealthy are excellent for that. You will also want a couple of crab trees and I would recommend Whitney No. 20 and Sweet Russett. They are good to eat, excellent for pickling but worthless for jelly. Never plant a Transcendent unless you can plant it by itself in an isolated place, for it will surely blight and carry the trouble to all of its neighbors.

This will leave twelve trees for the winter apples. They are not, as a rule, as productive as the earlier kinds and besides we expect them to take us over a longer period of time.

For early winter we have Fameuse, a general favorite, and no home orchard is complete without it. While it lasts we do not care about anything else.

Seek-no-further, Newell and Talman Sweet are also entitled to a place. The Northwestern Greening never was a favorite of mine but it is still "fashionable" and perhaps you had better have a tree or two of it. You can also plant Ben Davis with the assurance that it will live and bear you good crops, but remember once more that we are not raising apples for sale.

Grimes Golden is a winter apple of high quality that should have a place in every orchard. Grown in Wisconsin it is a much longer keeper than when grown further south, and will keep well into March. You can see samples of this variety at this meeting that in type, size, color and quality are the equal of those grown anywhere.

We will now assume that you have planted these two dozen trees and cared for them to the best of your ability, that you have cropped the land rationally and not at the expense of the trees. We will pass over the intervening years and take a look at it at the end of five years. If you have given the trees

a "square deal" you have had some apples and you have learned how much more satisfactory they are than the same kinds taken from the purchased barrel. But is that all you have learned? If you have been at all observing you have learned many things. In the beginning the trees all looked alike to you, but as they have developed you have noticed some one thing that is peculiar to each variety and you find that you can go into a strange orchard even before fruiting and name the varieties almost as unerringly as the experienced stockman can separate the different breeds. You have also noticed that one variety unaided will grow into a perfectly symmetrical tree while another with the same environment, like a wayward child, will need almost constant correcting to keep it within bounds.

If your orchard is on the highway the passerby has often stopped to compliment you or ask your advice and you see the necessity of posting up on these questions and in this way you are educating yourself. But beyond all this you have seen how it has added beauty to your farm and incidentally has added value. We believe by this time you are so much interested that you will not stop with the two dozen trees, but, like the collector of antique furniture or rare coins, you will want everything you see or hear about. I have heard a story told of our A. J. Philips, and I can easily believe it, that he once traveled fifty miles to secure a few scions of a promising seedling. An outsider would call him a crank, but to us he is an enthusiastic horticulturist. We think some of this spirit was born in him. We also believe much came to him through cultivation and he just can't help doing such things.

We believe the farm orchard, more than any other one thing, is responsible for the "back to the land" movement that is so strong at the present time, and we are sure you are not looking forward with so much pleasure to the time when you expected to sell out and move to the city, and this couplet from Goldsmith comes to you with its full meaning:

> "How blest is he who crowns in shades like these
> A youth of labor with an age of ease."

You have suddenly discovered that you are in love with your farm and would not part with it at any price.

But this "back to the land" movement is not new. It is as old as the hills. Let us quote once more from Goldsmith; after traveling over most of the civilized world and having partaken of most of its pleasures, the time came when he longed once more for the rural scenes of early life. Listen to what he says:

"In all my wanderings round this world of care
In all my griefs—and God has given my share—
I still had hopes my latest hours to crown
And in these humble bowers to lay me down:
To husband out life's taper to a close
And keep the flame from wasting by repose.
And as the hare when hounds and horns pursue
Pants to the place from whence at first it flew,
I still had hopes my long vexations past,
Here to return, and die at home at last."

TREATMENT OF FARM ORCHARD AFTER FIVE YEARS.

A. W. LAWRENCE.

It seems hardly probable that Secretary Cranefield associated this topic with a farm orchard of my ideal. My conception of a farm orchard would be one consisting of just trees enough to supply the home with an abundance of seasonable fruit. An orchard of not more than twenty or thirty trees, and these located near the house would, if set out about thirty feet apart either way, make an ideal place for the garden. Although having nothing to say about the garden, I take it for granted you will have one of which you will justly feel proud, one well fertilized and with plenty of humus in the soil. Let us put the rows of garden truck far enough apart so as to allow of cultivation with the horse, for this will insure more thorough cultivation. If a cover crop were grown the latter part of the season on the strip where the early potatoes, green peas and such like were taken off, it would also be advantageous to the future crops and trees. In the fall each year, just before it freezes, do not neglect to make a little conical mound of dirt around each tree, to the height of about six or eight inches. In the spring before the farm work becomes urgent, give the trees what little pruning they may need, for this, if attended to each spring, will mean but a few

minutes labor. After this the small spray outfit should be made use of each year, to the extent of at least one dormant spray, one part lime and sulphur to ten parts water, before the leaf buds show their green. As you can buy the commercial lime and sulphur already for use, with the exception of its dilution with water, it makes a very small job. One more spraying each year after the tree leaves out, will in all probability suffice until the trees commence bearing. After this and until the close of the ten year period give them their yearly pruning in the spring and with their fruit now in evidence add to the spraying, using the latest spray calendar as a guide.

Possibly this may be changed from time to time as brains and science are certainly awake along these lines. For farm use I would advise the use of the simplest spray mixture that is efficient, and certainly at the present time the lime and sulphur comes the nearest to filling the bill. Use 1¼ gallons lime and sulphur in conjunction with 2 pounds Arsenate of lead, diluted in 50 gallons of water, for the three later sprayings.

Possibly after the first six or seven years, for the farm orchard, it would be as well to advocate the sod system, if the grass would be mown at least four times and all left on the ground, and in addition a liberal amount of old straw placed each year, around and under the entire branching surface of the tree. This would undoubtedly be more feasible than the commercial plan of thorough clean culture with a cover crop in the fall, and would in most sections be a marked improvement over the slipshod methods now certainly in evidence over our great commonwealth.

One thing that I feel is of great importance to any orchard, and might be added to the treatment of this one on the farm, is the care necessary to keep the ground level, not allowing the dirt to get worked up higher around the trees than it is in the center of the spaces.

THE FARM ORCHARD—TREATMENT AFTER TEN YEARS.

J. S. PALMER.

An orchard, after a farmer has had the mismanagement of it for ten years is usually little less than a crime, and about the only treatment I could recommend would be to grub it out and put it out of its misery.

But *this* orchard seems to be an exception to the rule and after the osteopathic treatment it has received at the hands of Brother Lawrence, should be in perfect condition, every tree in its place and producing about one barrel per tree, or 75 barrels of No. 1 fruit per acre—showing a net profit of $200.00, equal to the net profit derived from any other 20 acres on the farm. This is an argument that will appeal to the farmer, more than all the smooth talk handed out by the Horticultural Society, the nursery man and the tree peddlers in all Wisconsin. The probabilities are that he will develop into a first class commercial fruit grower, plant out a large orchard and be happy ever after.

Cultivation in an orchard is as essential as in a cornfield and the soil should be in about the same condition for one crop as for the other. By proper cultivation and cropping, the fertility of the orchard can, in a great measure, be maintained, but the application of fertilizer will be necessary, as the removal of the enormous crops of apples this orchard will produce in the near future, must take a good deal from the soil. I have had no practical experience with commercial fertilizers, but there is fertilizer out by the barn that answers every purpose and I have never seen any bad results from its liberal application to a bearing orchard.

The best cover crop to grow in an orchard is clover. There seems to be something about the clover plant that will put the soil on which it is grown in the best condition, and one season in clover, after thorough cultivation, will load these trees with apples, so they will have to be propped to prevent breaking down. Cut this clover in July and let it lie for a mulch. On this mulch apples will drop with a minimum of injury, and in our climate, where the picking season is short,

this is an important feature. We have never been able to raise all No. 1 apples and the lower grades must be utilized if we are to get the best results from this orchard.

There is always a market for windfalls. We can often realize enough from this fallen fruit to pay the expenses of the orchard, but if they are allowed to fall in the mud, they are of little value.

Mr. Flanders: A near neighbor of mine had a small orchard which was separated from mine by but one lot. In the early days we had no difficulty with codling moth, and the codling moth infested his trees at least three years before they reached mine, with just a distance of one block between us. It confirms me in the view that the codling is not a fast traveler, but is easily controlled. There is another point I wish to speak about. One of the gentlemen rather be-littled one of my favorite varieties of apple, the Transcendent crab. My experience is somewhat different from his views. I have a Transcendent crab tree standing in my yard and it has been bearing apples for thirty-three years, never has had any disease, never has failed to bear. The year before last I took twenty round silver dollars out of that tree after some three or four hundred school boys had all they could get hold of and all our neighbors what they needed and all our family. The tree is probably as healthy a tree today as there is in the state of Wisconsin. It never has been sprayed, never has been cared for. In fact, my trees have been raised after the fashion of the old moss-back farmer, I set them down wherever I happen to find a good place that I thought they would be out of the way. I set out ten trees and in the last twenty years, without any spraying, pruning or cultivating, we have averaged about forty bushels of apples a year. It may be on account of our climatic conditions, I think we have a good climate for apple trees. Of course my experience does not extend very far out of my district, but it seems to me that there should be two sides to this question.

Mrs. Howlett: I should like to say a word from the farmer's side. We as farmers are not as indifferent to the subject as you might infer from the remarks here. We have discussed this subject in our societies and we have come to the conclusion that it is a good chance for farmers to co-operate, because every farmer who has just a few trees does not care

to go to the expense of buying an expensive spraying outfit, but we do think that by co-operating and hiring some one of our members to do the spraying in the neighborhood that we will reap great benefits.

Mr. Palmer: In regard to the Transcendent, I know a tree that has stood for thirty to forty years right in the dooryard until last year, and it is the only tree that I know of anywhere in our locality that had not blighted itself to death, or nearly so.

The President: The general trend of these papers has been along the line of the small farm orchard of from twenty to thirty trees. Has anybody anything to say on the other side of this question? Is this the consensus of opinion? We want to get here the general impression so that we can have something definite, some conclusion to come to.

Mr. Roe: In regard to the size of farmers' orchards, I have found in late years while buying fruit from the farmers that the larger farm orchards are not paying. I do not know why, but they are falling back, but where they have a few trees planted around the house they seem to take better care of them, and they seem to be getting better results than they are getting in the larger orchards.

Mr. Larsen: This matter of farm orchards the same as all other horticultural subjects, is a matter of education, and I think a great deal could be done if those that are interested in these matters in various communities would take it up. For instance, there is no reason why the young people growing up nowadays should not know what varieties may be raised and with what varieties it does not pay to trouble. As a matter of fact, I think it is not the nurseryman, but the agent, that largely determines what the farm orchard is. The agent comes around and succeeds in selling the farmer trees that are not adapted to his locality and we find in these farm orchards all kinds of trees, some do not grow, some do not bear and some are not profitable. If we could, in some way through our schools, through our farmers' clubs, through our Farmers' Institutes and other agencies get the people to understand what varieties really are worth while, what varieties have been tried, instead of letting the apple tree agent go around and sell to the farmer largely from pictures in the book, we will have better farm orchards to start with.

Mrs. Howlett: This gentleman advised cultivating an orchard and then seeding it to clover. I should like to ask if you have an orchard that is well sodded after ten years, has quite a good sod mixed with clover and tame grass, whether you would advise breaking this up?

Mr. Palmer: If I had an orchard in sod, I should advise getting the sod out of it just as quickly as I could. I would only have clover one year. The worst condition we can have in an orchard is to have sod, even with mulching. Mulching will kill out some of the sod perhaps, but the trees cannot do much in a heavy June grass sod, such as we get in Wisconsin. I would get it out as quickly as I could. After it is once removed and cultivation has been thorough, then one year in clover, with the clover for a mulch, will be all right.

Mrs. Howlett: What would be the best way to get rid of the sod?

Mr. Palmer: It can be done in several ways. Probably the best way would be to plow it under. It could be cultivated out with a spring tooth or with a disc by continuous cultivation all summer. In that way we would get rid of the sod, but if it has long been in sod, I would plow it out; not plow deep so as to injure the roots of the tree, then cultivate thoroughly and cross plow. If there is anything I do not want in an orchard, it is June grass.

The President: There is one point in connection that I should like to bring out and that is why do you advise clover for only one year?

Mr. Palmer: Because in our climate, we cannot keep clover clean more than one year, we will get June grass, the clover will run into a sod. I think clover has a great deal to do with making an orchard bear by slightly checking the growth. continuous cultivation will make an enormous growth in an orchard and by seeding in clover and letting it be in clover and clover mulch one year would check the trees and get it into bearing. A ten-year old orchard is old enough to bear.

A Member: What do you seed your clover with as a nurse crop?

Mr. Palmer: I should sow clover alone without any nurse crop. Work the soil up in good shape in the spring with the harrow, then sow clover without any nurse crop and it will make a good growth, then mow it off soon and leave it for a

mulch. Mow it in July, leave it for a mulch and next spring work it into the soil.

Mr. Ames: What varieties would the commercial orchardist recommend for planting, say, a ten-acre orchard?

Mr. L. H. Palmer: This is a pretty deep question and we change it so often that it is rather dangerous to say anything about it. The most I can say is to tell the most profitable varieties we have had in our country the past season. Probably the Wealthy and the McMahan have done as well as any trees we have. I am afraid we are coming to some disappointment in the McIntosh. The McIntosh was one of the best, but it has lost with us. It is not much later than the Wealthy with us and does not keep as long as we had hoped it would and it has some other bad points. The Fameuse up in our country this year has done the best probably of any tree we have. The fruit is very nice, the color and size are just right and they are late enough so as to come into a very good market. Of the later apples, we have one that I think is very promising, and that is the Windsor Chief, a winter apple. I do not know of anything, as far as we have gone with it, showing any more promise than the Windsor. I have a Windsor ten years old and so far they have been hardy. I have been giving them the best conditions to cause them to blight and they are not blighting as bad as the Wealthy under the same conditions.

The President: I should like to ask Mr. Lawrence what he thinks of varieties for a ten-acre orchard?

Mr. Lawrence: For Northern Wisconsin and the lake shore counties, I would probably consider the Wealthy as best, the the Snow and McIntosh and Dudley. There are others, but those are probably varieties enough. If you want a winter apple, Northwestern Greening has been exceedingly good with us and the Talman Sweet is a good winter apple for smaller planting. We are planting considerable of the Duchess.

Mr. Thompson: Would it be necessary to plant more than one variety in a ten-acre orchard for pollenizing?

Mr. Coe: So far as I know it is not necessary. There are some varieties, however, not grown in Wisconsin to any great extent, that are not self-fertile but of the commercial varieties grown in Wisconsin I do not think there is any objection to planting ten acres in one variety.

Mr. Roe: I should like to ask some of these commercial orchardists if there is any money in planting some very early eating apples?

Mr. Palmer: The great trouble with the Yellow Transparent and some others, they will not ripen even enough. You have to keep picking, picking all the time. If you leave them ripen, they will fall off while the others are getting ripe. It is a double expense to handle those apples on that account. Then they have to be handled very carefully and put on the market carefully in order to get good results.

(MR. TOOLE IN THE CHAIR.)

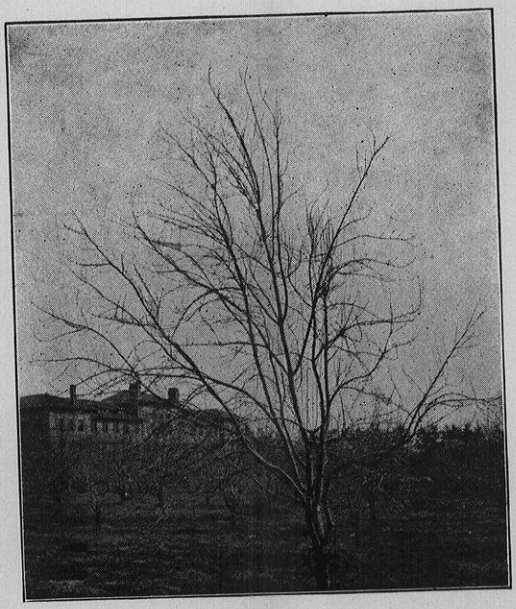
HORTICULTURAL METHODS IN THE EAST.

PROF. W. S. PADDOCK, COLUMBUS, OHIO.

Prof. Paddock: Speaking of farm orchards, the farm orchard is the curse of horticulture in Ohio. In a year like this, when the average farm orchard has yielded a large crop of fruit, apples will be dumped on the market, many of them affected by the scale and apples inferior in quality, thus spoiling the market for well grown apples from sprayed and well cultivated orchards. The farmers' orchards are gradually dying out from neglect, being eaten up by scale and disease.

THE NEW HORTICULTURE OF THE EAST.

Most of the intelligent people of the nation have heard in one way or another of the famous orchards of the intermountain states and of the northwest. The boxed apples from those sections are familiar sights in retail stores, and the children have come to know that the large red apples of the fruit stands which they long to taste, come from that fabulous country—the far west, and this leads me to say that the idea fixed in this and in similar ways in childhood is not easily dispelled in later years, consequently, a large proportion of each succeeding generation is schooled in the notion that the eastern fruit is of inferior value.



Pear tree in need of pruning.—Paddock.

A well-formed apple tree.—Paddock.

All must concede that as a section the west leads the world in the production of fine fruit. In no other section has fruit growing been developed along such intense lines. They have learned many things in regard to general orchard management that are new, and for this due credit should be given. In the meantime eastern growers should not be jealous or prejudiced, but should be willing to learn and ready to adapt western methods to their conditions insofar as they will apply.

It might be well at the outset for us to analyze western methods and see if possible wherein western orchardmen have been able to establish their enviable reputation. It is true that their horticulture is not so very old, and we may be sure they made many mistakes in the beginning, but their development has been very rapid, so we now find that their practices are fairly uniform and their business is becoming stable. One of the first things that one notices is that the western people have learned to adapt varieties to soils. Thus we hear of a Jonathan section, a Winesap section, Esopus section and the Yellow Newtown section. This means that certain localities, or restricted regions, are making a speciality of these varieties which they have found by experience to do remarkably well under their conditions. Even in the same neighborhood the distinction is made between the heavier lands of the bottom and the lighter soils of the mesa. Then we notice that in all the newer orchards only a few varieties are planted. The grower knows in advance that his fruits must go on to the markets of the world and under these conditions large quantities of a few staple varieties are wanted. The old-fashioned show orchard of many varieties has no place in the west.

We next notice that in the matter of cultivation great care is given the western orchards. This is a feature in orchard management which may be overdone and we believe that in some sections, the western fruit growers have worn out the soils in order to give clean cultivation. However, they are learning that clean cultivation is not all there is to soil management, and are turning their attention rapidly to green manures. But whatever system is finally adopted we may be sure that it will be developed for all that it is worth.

In the matter of pruning and training, much attention is given the trees and gradually, systems are being evolved which are adapted to the different conditions that are found

in the various localities. These people soon learned that low headed trees possess many advantages. It would probably have taken the eastern growers many years to have come to this conclusion had not the San Jose Scale fortunately appeared on the scene. The methods of training trees have not yet been fully worked out as one can see by the discussions in the western fruit journals. However, this is a subject that is receiving much attention, and no doubt, well established systems will soon be evolved. The thinning of fruit is another practice which insures a high grade product. This has not been neglected, and is found to be an important element in their success.

I presume that the western man has more reason to be proud of his success in spraying than in any other one thing. In many sections the common fungous diseases of the east such as Scab, Bitter Rot, and Arkansas Blotch are unknown. But other pests are prevalent and in much greater numbers than we ever see them here. Take for example the one insect, Codling Moth. This is a most pernicious insect under semi-arid conditions and if left uncontrolled will usually infest an entire crop. In the beginning of their spraying experience, large quantities of poison were used and many sprays were applied during the season, but still a large per cent of wormy fruit was given in tribute each year to this insect. The entomologists, however, of the various experiment stations have been insisting for many years that fewer sprayings and more thorough application would bring better results. Professor Gillette of Colorado early advocated that the first spray, as soon as the petals were mostly off the blossoms, was the important one, reasoning that if this spraying was well done that most of the insects would be killed, and hence, there would be a small second brood. He was able to demonstrate in actual orchard experiences that his theories were correct. A little later it was determined that the poison which fell upon the ground during the process of operation was the cause of the death of many orchard trees. This lead to the trial of sprays which were weaker in arsenate and of one spray for the season for this pest instead of 8 or 10 as had been given by some. Professor Melander of the Washington Experiment Station has recently published some figures on the spraying for Codling Moth which are very interesting and deserve

careful consideration. As a result of his teachings a number of Washington fruit growers have tried spraying but a single time during the season for the Codling Moth. By tabulating results obtained by a number of orchard men in that state he has figured out the percentages of wormy apples and the number of times sprayed as follows:—

	Growers.	Sprays.	Wormy.
1909	19	1	2.1 %
1909	17	2	7.75%
1909	5	3	23. %
1909	5	4	6.7 %
1910	21	1	.73%
1910	10	2	2.24%
1910	10	3	3.64%
1910	13	4 to 7	8.42%

It is thus clearly shown good spraying has no relation to the number of times the trees are sprayed, but rather a man must understand the life history of the pest he is spraying for and he should become impressed with the notion that only thorough work counts. It strikes me that after observing home grown fruits on the markets of the east, that one thing we need to learn above all others in fruit growing is the art of spraying. We have been dabbling with it for many years, but I am convinced that there are only a few men who actually spray thoroughly and to the best advantage. We have numerous pests, both insects and diseases, and it will not do to be satisfied with having even a few scabby specimens or those that are otherwise blemished appear in our packages of fancy fruits. We must get over the notion of thinking that the consumer will regard such blemishes as being characteristic of the variety. It is enough for us to know that all blemishes detract from the appearance of our fruits and we should constantly compare its appearance with the very best that comes from the west.

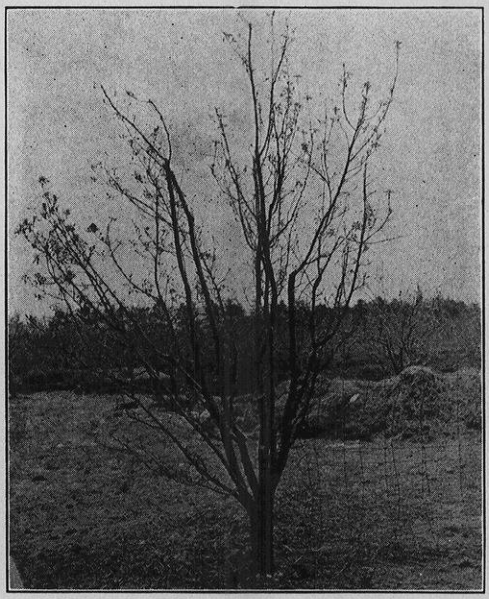
Another feature of orcharding that has been well looked after in the west is that of marketing. It is difficult for us in the east to get together on any sort of marketing schemes for the reason that we can always sell our product for some price. I often tell my students I think it would be a good scheme if we had to ship our fruits to California for a few seasons. We would then be compelled to learn the art of marketing as our western neighbors have been compelled to learn, and it cer-

tainly would be to our advantage. Since the western men have been compelled to combine in marketing they have developed the plan for all that it is worth, and we now find them successfully invading the markets of the world. At the same time eastern fruit may be going to waste, fruit that is perhaps superior in quality, and with little attention to cultural management, it is the equal of any in appearance. A study of the Fruit Growers' Marketing Association of the west would do all of our farmers and fruit growers much good.

Along with the selling of fruit goes the question of advertising. No doubt one of the reasons why the western fruit is well advertised is because of the fact that they have fruit lands for sale. But no one can doubt that demand is created when a name such as "Hood River" is constantly brought to our attention and always associated with elegant fruits.

Judging by the western standard we of the east have many things to learn, but our condition is by no means hopeless. A few growers here and there are adopting western methods and as a consequence are reaping western rewards. As a case in point I may mention an incident that I picked up at the New England Apple Show. I was struck with the fine appearance of a display of McIntosh boxed apples. These apples were the equal in appearance of the fruit and the style of pack of any that can be grown anywhere. Upon inquiry I found that the grower had four acres of seven year old trees of this variety. These trees yielded 1100 bushels, over 90% of which were extra fancy, and when rigidly graded and packed in boxes brought the grower the handsome sum of $3.25 a bushel. Among the barrel displays there was one particular fine lot from New Hampshire. A great deal of pains had been taken in grading and packing, and when they were examined by a dealer he readily paid the grower $10 a barrel for the lot. In contrast with this lot, a majority of the other barrels which were entered in the same class in the big show were graded and packed in the usual style, that is with nice apples on top and inferior ones in the center.

In the handling of orchards in the past "neglect" has been the rule, but in the new horticulture the growers are recognizing that they have engaged in an intense business. Our horticulture must be largely revolutionized, and we should be ready to adopt western methods insofar as they are ap-



Neglected pear tree pruned back or "dehorned."—Paddock.

Neglected trees soon get in this condition; thin out the brush.—Paddock.

plicable to our location. We have the advantage of the nearness to large markets, and moreover, in most of our states there are many thriving small cities which will use large quantities of produce, and the home grown stuff will usually be preferred if it can be secured. It all too often happens that eastern cities which are located in orchard centers are for some reason not supplied with home grown fruit. A case in point is that of the city of Rochester in New York. This fine city is located in one of the famous fruit regions of the United States. No finer Baldwins, Greenings, Russets and Northern Spys can be grown anywhere. Yet the city people have been unable to buy choice home grown apples which they much preferred to the strange varieties which were offered them from distant states. This conditon has been so marked that an investigation was made by the City Chamber of Commerce with the result that an Apple Show has just been held which has for its main feature the getting together of the city consumer and the country producer. A similar condition obtains in many localities and suggests the necessity of co-operation in marketing. A local market is always best for the grower who has any of the qualities of a salesman, but if he is not located close to a large market he probably will have to depend upon the markets of the world, and so is largely at the mercy of the traveling buyer. Unorganized methods of selling usually result in low prices, and this in turn results in lack of care and finally in poor fruits. A good marketing system invariably results in better orcharding, better quality, better grades and better prices.

The new fruit grower of the east, or the man who can adapt himself to the changed conditions, will, if planting a new orchard, pick his location with care. He will locate with regard to air and soil drainage and he will give up the notion that the waste places of the farm are good enough for orchard trees. He will know that continuous cropping to fruit takes more of the elements of fertility from the soil than does continuous cropping to grain. Some system of culture will be adopted which will keep an abundant supply of organic matter in the soil, and the moisture supply will be conserved to the best advantage.

After the location has been decided upon, the choice of varieties will next engage the attention. If a local market is

to be catered to, more varieties may be used than is the case where distant shipments are to be made. The planter will be sure that the varieties selected will be adapted to the region and to the soil. He will know that the Ben Davis and its associates, such as the Grimes, Winesap and Jonathan will not succeed as a rule in a region where the Wealthy thrives best. Short seasons require quick maturing kinds and such kinds become fall or early winter sorts in regions of longer growing seasons.

Nursery stock will be selected with care and the prospective planter will take the time and pains to inform himself on the general subject of fruit growing so that he will not be influenced by the wiles of irresponsible tree agents. No doubt many of you have heard the familiar story of trees that have been propagated in some mysterious way or upon some hardy stock, and possibly some of you have been induced in this way to pay 75 cents or a dollar a tree for inferior stock. One soon learns that it is best to deal directly with the nurserymen or with a resident dealer. It makes but little difference where stock is grown so long as it is well grown, but it must be true to variety and free from insects and diseases.

It is of little use to go to the expense of planting an orchard unless one knows something of plant growth. The up-to-date fruit grower will know how plants grow, how they take their nourishment so that mistakes in culture will be less common. He will know how to distinguish between fruit buds and branch buds, and so will become a skillful trainer and pruner. Training must be begun when the tree is young if we are to make the most of the trees, and it should be continued through the first three or four years when pruning proper begins.

Added to these operations are the details of cultivation, fertilizing, spraying, thinning, picking, grading, packing and marketing. Then there is the subject of by-products, the utilization of which has come to mean so much in the handling of many kinds of business.

Time will not suffice to go further into details, but when we come to take account of the many intricate sides of fruit growing, all of which must be developed to the fullest extent if we are to meet successfully increasing competition, it begins to look as though fruit growing is an intricate business.

If one is the fortunate possessor of a mature orchard and it has been neglected he will proceed at once along modern lines to renovate it and put it into shape for profitable bearing. Pruning will be the first consideration. The limbs will not be denuded of branches from centre outward, leaving a matted tangle of brush at the tip ends, but rather by judicious thinning, bearing wood will be left on all suitable portions of the tree. The trees will now be ready for spraying if scale is present, and if not, everything will be gotten in readiness for the coming season's campaign. This does not mean that the equipment and materials alone are to be made ready, but that the man should receive the most attention. He must make up his mind that more thorough and intelligent work must be done, and to this end many a long stormy day or winter's evening may be put in to advantage in studying Experiment Station bulletins and other similar publications.

The cultivation of orchards is a vexed question at the present time, but if the old orchard has not been bearing satisfactorily some means should be taken to improve the soil. Cultivation with cover crops is generally conceded to be the best system, but in some special locations a sod mulch may be employed. This does not mean that the land is to be neglected, but that all the herbage that grows is to be returned to the soil, and if the system is to be a complete success this material must be reinforced with liberal amounts of stable manures, straw or other similar materials.

It is evident then that most of our eastern growers will be compelled to make radical changes in methods of management and in their mental attitude if they expect to keep abreast of the times. A few men here and there already measure up to these standards, but until a majority can do so our principal supply of choice fruits will continue to come from the west as is the case at the present time. And I have faith to believe that when the many men who simply own a few trees are put out of business by San Jose Scale so that our markets are not demoralized by inferior fruit our horticulture will present an entirely different aspect. This condition will naturally result in the business being carried on in a businesslike way and this is all that is necessary to make our horticulture the equal of any.

Mr. Roe: I should like to ask the Professor to explain the figures on spraying. I understood him to say that one third of a spray, according to his figures, is better than subsequent spraying, that the more you spray the worse the results.

Prof. Paddock: That was right. This Professor in Entomology, Professor Milander in Washington State, where these figures were taken from, had corresponded with a number of the good growers there and got those figures where they kept accurate measurement. He found as the result that the fellows who sprayed only once for codling moth had much better results than those who sprayed five or six times. The reason was that these men who were spraying just as the petals were dropping and who sprayed but once, knew that everything depended on that one spraying and they gave the best attention to that particular spray. If the calyx of the very little apple is filled with poison, seventy-five per cent would get that poison and enough would be lodged on the outer portion of the fruit to insure a large per cent of the remaining twenty-five per cent. So that if the first spraying is thoroughly done under Western conditions, it has proven to be superior to spraying more than once, particularly the spraying that the average man will do, not placing so much importance on the first spraying, he would not do any of his spraying so well as he would do it otherwise. Whether that would work the same under our conditions, I do not know.

Mr. Ames: Would you advise using wood ashes as a fertilizer?

Prof. Paddock: Yes.

A Member: Is there a large difference in the age of the trees planted in the West and those in the East?

Prof. Paddock: We in the East like a two-year old tree, that is, we want a large nursery stock. There is scarcely a tree of any description planted all over the West over one year of age. I am interested in an orchard and had charge of planting it, some ninety acres, and there was not a tree that was over a year, and they were all grown down in Alabama, they all grew remarkably well, and we can put the head on that tree exactly where we wish, that is the idea. I do not care to plant anything older than a year, any kind of tree, a good, well grown yearling.

THE HOUSE OR TYPHOID FLY.

PROF. F. L. WASHBURN, STATE ENTOMOLOGIST, MINN.

It is well to realize in dealing with this subject that little flies do not become big flies; that a fly, or any other insect for that matter, never grows in the perfect or imago or adult stage; that when we see on the window-pane flies of different sizes, the little ones should never be regarded as the young of the large ones, but as representing different species.

We are just realizing what a dangerous pest the house fly is. It is now called the "typhoid fly," though it is well understood that it is not the only insect, nor the only fly, which may carry typhoid, and that if all flies were destroyed we still would have epidemics of typhoid. The name, however, has served to call attention to its dangerous character, all the more dangerous because we have tolerated it so long in our ignorance of its true nature.

In taking up the subject of "The Typhoid Fly" the following questions present themselves:

1. Kinds of flies common about the habitations of men.
2. Varieties or species which are likely to enter houses, and having entered houses, to infest exposed foods; also the species likely to enter shops to infect meat as well as groceries and fruit exposed to their approaches.
3. Species infesting stables where cows are kept, or horses, or both; where the different kinds breed; their powers of traveling both by their own efforts, and by being carried.
4. Of those infesting houses and stables what species carry germs, and how.
5. What flies frequent human excrement, and what flies breed in the same.
6. Of the flies that do this how many are found in houses and on food.
7. Rate of multiplication of flies.
8. Hibernation of flies in houses, stables, etc.

Methods of prevention: (a) Prevention of breeding, (b) Screens, fly papers, poisons, etc.

Without burdening you with scientific names I will say that the flies we find about human dwellings, towns and villages, camps, etc. are the following:

First and foremost in abundance and in persistency, the common house or typhoid fly; second, the window fly, found on the window pane in connection with the house fly, and considerably smaller; the stable fly, especially obnoxious about stables and entering houses in the fall. This is the fly that, resembling the house fly closely, bites or stabs us, and has given rise to the erroneous impression that the house fly bites. Further, the blue-bottle fly, the apple or pomace fly, the cluster fly, the non-biting stable fly, the lesser blue-bottle fly, the green-bottle fly, and one or two others of less abundance. Nearly 100% of these is represented by the common house fly. All of these may and do enter houses; all of them may crawl over fruit and other exposed food. Any kind of meat would attract the house fly, and all the flesh flies, or blow flies. Almost, if not all, of the above would be attracted to garbage and other filth. In stables where cows or horses, or both are kept, one would find the stable fly and the house fly abundantly and other species sparingly.

It is a well established fact, as you know, that the house fly breed particularly in fresh horse manure; to a slight extent, evidently, in cow manure; in almost any moist filth; to some extent in garbage, and, most significant of all, in human excrement. Composing as it does at least 90% of the above mentioned flies, it is, therefore, the chief carrier of disease.

Turning then to the house fly, the chief violater against public health, we find the following well established facts:

Each female fly lays from 120 to 150 eggs; these eggs hatch in from eight to twenty hours, depending upon latitude and climatic conditions. The larva or maggot lives from five to seven days; the pupa the same. In other words, it takes about twelve days for one generation. It may hibernate in the pupal condition, either in manure, or on the surface of the ground. It also hibernates in the house or barn as an adult. There may be from twelve to fifteen generations in the course of a summer. Dr. Howard, who has done much work on the house fly, found in a quarter of a pound of well infested horse manure on August 9th, 160 larvae, and 146 pu-

paria of this fly, or about 1200 house flies to a pound of manure. We have had some interesting figures prepared, showing the tremendous fecundity of this pest. A full grown house fly, the female hibernating in the house, will produce in the spring, at the lowest estimate, 120 eggs. Assuming that one-half of these will be females, and allowing the breeding to go on without check for four months, we have this enormous number as the progeny from one hibernating house fly, namely, 214,557,844,320,000,000,000,000. Now then, an adult house fly measures exactly one fourth of an inch long. The distance around the earth at the equator is said to be 24,800 miles. Allowing 5,280 feet to the mile, it would take 3,688,312,000 house flies placed end to end to go around the world once. Using this number as a denominator, and the number of flies produced in four months from one mother as a numerator, we find that she will give rise, in the course of the summer, to enough flies to encircle this globe fifty times or more, and have plenty of progeny to spare.

It is difficult to determine the length of life of the adult fly, for as soon as we confine insects where they can be observed, we place them under such unnatural conditions that the observations are not to be relied upon.

As regards its powers of locomotion, and method of transportation, we cannot speak definitely as to the distance a house fly can go by its own unaided efforts. It is evident, however, that by making a series of flights this insect could cover a considerable distance. It, nevertheless, does not have to depend upon its own power for getting from place to place; railroad cars, street cars, horses and other animals, carriages, automobiles, provision wagons and meat carts, all do their part in carrying this pest free of charge. We have seen countless flies on an empty fish box in a wagon carried along for several blocks. We have also noted house flies on horses being driven in the country, attracted, undoubtedly to the horses by the smell of the stable, carried possibly a mile. The same can be said of flies in a carriage, and all of us have doubtless seen provision carts going their rounds attended by swarms of these uninvited passengers.

The house fly can and does carry germs on its feet, and on the hairs over its body, and in its intestine. Many of these are disease germs, and that they may live after passing

through the intestine is proven by finding living bacilli in fly specks.

That flies may come from filth to human food has also been proven by scattering lime on human excrement, and noting that the flies which have walked over that, and colored their legs with this substance were later observed in human food.

We have stated conditions under which the house fly breeds. It is well, perhaps, to also state that it has been quite established as a fact that it will not breed at all in dark places, and only to a very limited extent in a poorly lighted place. These are facts brought out by some recent experiments of Felt in New York state.

Of the diseases transmitted by the different kinds of flies I speak with some hesitancy, but I believe it has been established beyond question that it is absolutely certain that they may transmit; typhoid, anthrax, ophthalmia, tuberculosis, and it is further claimed that they may carry the typhoid bacillus in a living condition for over two weeks. Of the diseases which it is probable they transmit, or may transmit, the following have been suggested: Conjunctivis, cholera, leprosy, the parasite known as "round worm," dysentery, septicemia.

At the close of his paper, Prof. Washburn gave a description of a flytrap, submitting a printed circular in which full descriptions and illustrations are given, the same being Circular No. 22, July 25, 1911, issued from the office of the State Entomologist, St. Anthony Park, Minnesota.

Prof. Moore: We all do all we can to get rid of the flies in our homes, but how will it be in the depots of the railroad companies, in hotels and restaurants where it is more important that they should get rid of the flies because people are going from one place to another and they spread the disease and that is the way it is carried to our homes?

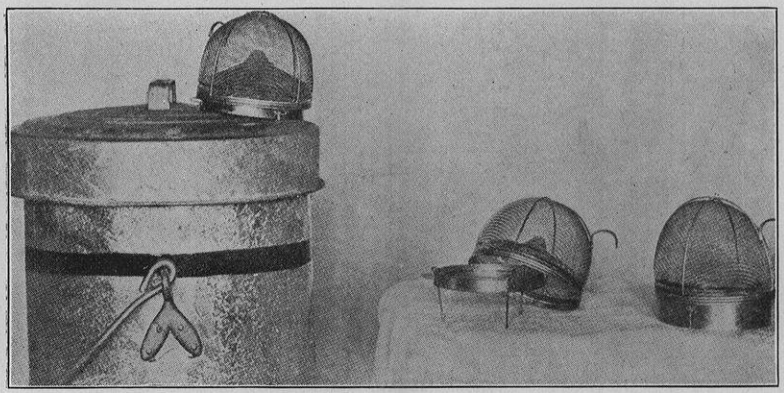
Prof. Washburn: I think undoubtedly it will come in time. We are all being educated along these lines and the time will come when there will be legislation.

A Member: Do you know of any case or instance where hotels or depots were doing anything to get rid of flies?

Mr. Washburn: No good hotel will allow a fly inside of its rooms. You should give that hotel a wide berth that does not keep flies out of its dining room.

Stable flies caught over one cow in one day, August 22nd, 1908.

What any boy or girl might rig up. A good sized bait box for those who have no garbage cans.



The Out-Door Fly Exterminator, finally adopted and now on the market. On right, attached to garbage can; middle figure shows ring by which it is attached to can; left hand figure attached to its own large bait box. Flies can enter trap from top of can, or cover of can may be made to fit loosely, allowing flies to gain access to garbage and thence enter the trap through opening in cover.—Prof. F. L. Washburn.

Mr. Pellett: Soon after reading Prof. Hodges' experiment in regard to catching flies, I went home and made a square frame, covered it with a remnant of wire screen, which cost about five cents, fixed a cone to the under side as Prof. Washburn has explained and set it in our kitchen door and it was surprising the number of flies that entered that cage and we shortly after had very little trouble with flies in the house. Some one put one in front of a store in town and it was not a week before the flies caught could be measured by bushel baskets.

Mr. Burrill: There is a book that has recently been added to the Madison Public Library, in which the Superintendent of Health at Providence, R. I., takes us entomologists to task for holding the house fly responsible for a great deal that it is not responsible for. He acknowledges that in the Spanish War typhoid fever was transmitted by the flies, but he claims the human race is still more responsible. That is the first authentic rebuff that the entomologists of the country have had, I believe, from another scientist in that line. He does not deny that the house fly spreads disease and he winds up with the conclusion that it will do more good than harm, because in cleaning up the house fly we will clean up a whole lot of other things, some of which are too well known at the present time, but this idea of getting people started is a great thing.

THE NAME AND THE GAME.

BY WILLIAM TOOLE, BARABOO, WIS.

Probably most of you at some time or other, have heard some one say, "If I have the name I may as well have the game," such expression generally following mention of some uncomplimentary rumor or accusation. It is something of a shock to think that anyone would choose to live down to some lower standard, rather than strive for a better life, and yet there are probably many who follow a downward course, because of the impulse of an unkindly attitude toward them. We love to think that we ourselves are choosing a name that is worthy, one which indicates exalted aims, and we may well

consider whether we are living up to the rules of the game, which is implied by the name, or the reputation which we assume. Perhaps there is no definite thought in our mind, that the stand which we take in society, imposes on ourselves obligation to live up to any definite ideals, yet we would be very jealous of any intimation, that we may not be worthy of the reputation which our acquaintances accord us. It is true that there are many who are satisfied to have acquired a name without having earned it, as we note that there are some who endeavor to secure their college degrees with as small a measure of intellectual effort as will carry them through.

If all participants in baseball played strictly to the rules of the game, there would never be any risk in being umpired; and if all players in football were true to the spirit of the rules of the game, there would be much less danger of those who strive for honors on the gridiron.

There are certain qualities of mind or character with which the world credits the horticulturist. If a lover of flowers, he is supposed to be generous and kindly, with high ideals. If a lover of fruit, then the world expects an accompaniment of temperate inclinations, and habits. If our lives do not accord with these ideals, we are not living up to the rules of the game, and our name is not a credit to those with whom we class ourselves. We will not look around to see if we can find in the conduct of others, misfits according to these rules of the game of life; rather let us look within ourselves, to see if we are living up to the standards which we assume, when we accept a desired reputation and it behooves us to give heed that we have studied well the rules of the game. The scholar, to pass examinations and secure his degree, must give evidence before he receives his diploma, that he has acquired knowledge in certain lines. Might not we, with advantage to all concerned, make a study of the ethics and amenities of intercourse with our fellow men, or better still, treat ourselves to a periodic examination of conscience, as do the members of a certain good Christian sect? In that case, instead of considering sins of pride, wrathfullness, sloth, envy and other of the deadly sins, I might, as a worthy horticulturist, ask myself, if I have kept my hens from my neighbor's garden; have I allowed weed seeds to wash or blow from mine to my neighbor's fields; have I planted trees on my line next my neighbor,

that his land shall help to yield profit to me; have I harbored insects or plant diseases, that might become a menace or injury to others; have I been as ready to share with others, as I have been to accept, the good things of life; have I been generous with flowers to the sick or shut-in, or selfishly kept to myself the abundance that might have been shared with others; have I been negligent in caring for the nursery stock I have bought, because of the promise to replace; have I been reckless in giving advice to the inexperienced, perhaps giving them cause to regret the possession of too many trees, of such varieties as Borsdorf, Longfield, Hibernal and Repka; if in the trade, have I been as careful of the roots of the stock delivered as of the appearance of the tops; have I been too ready to take advantage of the dealer's disclaimer of responsibility, and not used due diligence in endeavoring to furnish customers with what they have bargained for?

At the State Fair a visitor was making inquiries about the relative value of varieties. He was advised to make a study of conditions in his own locality, and choose varieties which had proved suitable there, for it is very important to make a good selection. He replied that it is more important to be able to get the kinds you order. There are many other things that might be considered in the line of what constitutes a good horticulturist, and not the least, is the quality of fruit we put on the market. We criticise the use by the other fellow, of red netting, which gives green peaches a luscious appearance, yet others may be as much disappointed in our apples, or berries if we have not done honest grading and packing.

And we may ask ourselves, if we have played fair with our State Horticultural Society, and given good measure of help for the benefits received. Have we given it the impulse of our enthusiasm, sustained by constant loyalty to the cause of Wisconsin Horticulture? Having considered some of the qualifications of an ideal individuality, for the members of our State Horticultural Society, may we not as well give some thought to the individuality and desirable characteristics for our State Horticultural Society as well?

If we consider retrospectively, the history of our society, and make comparisons with like organizations of other states, we have reason to be satisfied with our standing among kindred societies and yet it is well to consider if we have, at all

times, given evenly balanced attention to the various interests which the broad subject of horticulture represents. It is proper that fruit culture should receive leading consideration, for the history of the work of our society is a continued account of efforts to find the best possibilities of fruit growing in Wisconsin. We have proved so much, and excited such hopes for profitable ventures in commercial orcharding in Wisconsin, that it is due to those whom we have encouraged, to see to it that they are wisely directed. In the meantime, we must not forget, that the interests of the farmer and small grower, are just as important as are the interests of those who have surplus capital seeking investment. Each head of a family represents a center of happiness to several individuals; a possible membership in our society, and a vote, and an influence, in making and directing legislators. In reviewing the activities of our society we realize that in the past, we have considered a great variety of subjects, in addition to caring for the various grades of demonstration orchards, which we have established. I can now think of but one class of horticulturists whom we have neglected. That is the commercial florist. Why should we not have them with us, as well as the nurserymen? With the many and diversified horticultural interests now being promoted by our society, it is easily possible that some may be temporarily overlooked.

We have accustomed ourselves to depend on the versatility of our secretary, feeling confident that his varied talents will always serve us. Are we not at times negligent in showing, with helpful suggestions, our interest in his work? A surplus of kindly thoughts would be better than apparent indifference on our part. These promptings apply to the support of our paper, as well as to the general affairs of the society. Could we not catalog and classify the various subjects and interests, that should be considered by our society, that a balance may always be maintained? In fruit culture, we have the large and small fruits to be cared for by commercial and amateur growers; market gardening and the care of the home garden; flowers for indoors and out; shrubs in various classes; evergreens and other trees; landscape art, parks, cemeteries and drives; school ground decoration and school children's gardens; the promotion of local horticultural and civic improvement societies. The foregoing is but a partially suggestive list

of the many subjects that we have considered in the past, and which will come before us again in the future. Might not these subjects and interests be classified by subdivisions, in such a way that we might look to the various members of our executive board, to keep in mind and have a sort of supervision of the sections assigned them? As it is, we know that we can look to our Lake Geneva brethren for certain classes of information. We know just whom to look to for light on legal questions and to whom to turn for nomenclature wisdom. Do we estimate as we should the value of the good will, and good fellowship gained through intercourse at our society gatherings? Many of us do I am sure, but we are missing one good, enjoyable feature, in failing to maintain our annual banquets. Perhaps they have been suspended—I hope not abandoned—because it has been difficult to work up a sustaining interest in each event, but I suspect that our loss is largely due to the fact that we have overloaded our secretary with too many cares at annual meeting time. Why not have it established, that the vice president of the society each year, shall be chairman of the banquet committee? Or when we have systematized our work and assigned special duties to each member of the executive committee, let us, by all means, make a good selection for a director of social functions.

Now that we have considered some of the qualities, which stand for the make-up of a good horticulturist, someone may ask, of what avail is it to study the rules of the game and live up to the standard of conduct, which shall entitle one to feel that he is a horticulturist in good standing? Why do so much for others? Surely he will value the good will of his fellows, and to him will be the contentment that is always the reward for unselfish service. Honors will come to him in time, but honors are not continuously satisfying. The crowning earthly joy of a well spent life will be the consciousness that one has done his best, and that his life has been a benefit to his fellow men.

WEDNESDAY EVENING SESSION. (LADIES' EVENING).

The meeting was called to order at 8 p. m., Mrs. Marcia Howlett in the chair.

Wild Flowers of Wisconsin—Mrs. Marcia Howlett.

What Women Can Do to Keep Boys on the Farm—Mrs. L. H. Palmer, Baraboo.

Interior of Country Home—Mrs. Ward Davis, Oshkosh.

Country Life—Mrs. N. A. Rasmussen, Oshkosh.

Children's Garden—Miss Cora Astell, Baraboo.

WILD FLOWERS OF WISCONSIN.

BY MARCIA H. HOWLETT.

The woman who wishes to engage in horticulture has a high precedent for so doing, for in that first and fairest of gardens, God placed both man and woman to keep and to dress it. We, as horticulturists, claim a more ancient lineage than kings, queens or titled nobility.

The woman who engages in horticulture not only secures an abundance of fruit, flowers and vegetables to add to her material comfort, but at the same time, she also adds to her health and joyousness; for doctors' bills are decreased and the blues are put to flight.

No woman engages in horticulture for very long, without a hobby; and my hobby is wild flowers. In horticulture, as in all else, united cooperation can accomplish much more than isolated individual effort.

The task of preserving our native wild flowers, that in the pioneer days of our fathers swayed and nodded by the wayside and in the openings, or lit up the somber depths of the forest with glowing bloom, is well worthy of our united effort. The march of progress tends to trample and destroy our wild flowers, and in many places they are rare or entirely extinct. We have yet in a few favored localities in Wisconsin on shady hillside or in bosky dingle, beauty spots where from the time

the melting snows unfold the first anemone 'til the last Michaelmas Daisy is blighted by the frost, Nature's garden rivals man's most studied effort. Nature undisturbed gives the wild flower

"To rich and poor alike with lavish hand,
Though some souls never understand,
Or take them at God's value, but pass by,
The offered wealth, with dull, unseeing eye."

I ask all horticulturists to make a special effort to preserve our wild flowers, to study their habits, and help to keep them in all their delicate beauty and sweet loveliness for our childrens' children. Think not that your effort in this work will be lost, though necessarily feeble from the press of other duties. Neglect not to use your influence by word, deed, or thought, for who can measure their power?

"I shot an arrow into the air:
It fell to earth, I knew not where;
For so swiftly it flew, the sight
Could not follow it in its flight.

I breathed a song into the air:
It fell to earth, I knew not where
For, who has sight so keen and strong,
That it can follow the flight of song.

Long, long afterwards in an oak,
I found the arrow, still unbroke.
And the song, from beginning to end,
I found again—in the heart of a friend."

WHAT WOMEN CAN DO TO KEEP BOYS ON THE FARM

MRS. L. H. PALMER, BARABOO, WIS.

I sometimes think we don't half realize how large a part the boy plays in the lives of the most of us, or how dull and commonplace the country would be without his jolly, fun loving mischievous presence. The country is certainly the best place for him as it is little less than a calamity for a healthy boy to

be obliged to confine his activities, or work off his surplus energies, within the narrow confines of a city.

The subject of how to keep the boy on the farm is being much discussed, but no one can do more to solve that problem than his mother. It is said that a child's education should begin with his grandparents. Certain it is that it should begin very early in life.

Take him to help you make garden that he may early become interested in growing plants. Show him the seed germ as it starts, and encourage him to watch for it to push its way up through the soil. Call attention to the beauties of the unfolding leaves and watch with him the growth and development from the tiny shoot to the fully matured plant. Show him the relation the blossom bears as it opens and closes to the fruit, and get him interested in hunting for the varied forms of plant life in the home surroundings. Explain the necessity for thorough cultivation and the eradication of all weeds that the plants may receive the full benefit of the fertility of the soil. Point out the beauty of a well cultivated garden over one that has been neglected. It will help him when he has passed out to the larger realm of farm work, to understand why father insists that the fields be properly cultivated, and having learned the reason will not feel that, "Father is an old crank, just wants to keep a fellow at work." Give the boy a reason for what you expect him to do, and as a rule you will have no difficulty.

Help him to understand that though he is small, there is much he can do to help, and from the first exact instant and unquestioning obedience from him. Don't allow yourself to be coaxed or bullied into giving up to his whims. A boy soon loses all respect for a mother he can coax into granting his wishes against her better judgment, and with unutterable contempt in his voice will explain to his chum, "Oh she is easy. I can coax her over in a minute." Be honest with him in all things, fulfilling all promises to the letter. We have no more relentless critics than our children and a boy can receive no greater injury than to have his mother fail to measure up to what he has a right to expect of her. "Thou shalt not bear false witness," means infinitely more to a boy worked out in the family life than hung as a motto over the door. Teach him to be interested in and gentle with all live things. Show him

the difference between a butterfly and moth, and help him observe the changes in animal and vegetable life as the season advances. Help him to watch for the first birds and flowers of spring and tell him something of each. Make your home beautiful with trees and flowers that he may early learn to love the beautiful and form high ideals. Study his characteristics and guide him in his work. If he brings a bug or other insect to show you, don't give a shriek of terror and tell him to take the horrid thing away, but examine it with him, point out the beauty of its coloring, or the peculiarity of its formation and should he bring a pebble or some curious form of plant life, be interested with him, fix up a shelf in his room, if you can't afford a cabinet, that he may have a place for his treasures. Don't throw them away as trash. They mean much to your boy.

His room should be his to use as his needs require, and if shared with another, each should be taught to respect the rights of the other. In many homes there is a great difference in the furnishings of the boys' and girls' rooms. That is not just to either. Encourage the sister to make pretty and convenient things for her brother's room and also to keep it in order, and note with what pride he will call his chum's attention to the "gimcrack" that sis made or "see the handy contraption that mother gave me "for my birthday." Help both to understand how much they may be to each other in many ways. A sister is the best of modifiers for a boy, and a brother is the best anchor (except father) a girl can cling to.

Give your boy the best education you can, not with the idea that many do; that you want to fit him so he can make a living easier than drudging on the farm. That mistaken fallacy is fast vanishing into thin air, thanks to greater knowledge of business conditions. There is no class of men today, that needs to be educated along so many lines as does the farmer. Supplement his schooling with readings from the wide-open book of nature, as the broader and more complete his education, the greater will be his success as a farmer and a man. Keep in touch with his school, be a friend to his teacher, inviting her to your home that she may feel that you are interested in her and the work she is doing. Many times she is little more than a child and will be glad of your sympathy and help.

There is a general move all along the line to have agriculture taught in all schools, which is a fine thing, but while we are teaching farming to the boys, if we would go a step farther and teach our daughters to be efficient, contented home makers on the farm, we would do much toward making our boys contented farmers. If I were asked to tell in one sentence how to keep the boys on the farm, my reply would be, "Keep the girls there." Just as long as mothers bemoan the hard life of a farmer's wife and educate their daughters to think they will be happier anywhere than on the farm, just so long will the majority of the boys seek some occupation in the city. Teach your boys to be courteous, self-respecting gentlemen and they will be in no way inferior to anyone whom they meet.

Take your boy to church and Sunday-school and be an active loyal worker yourself that he may early become interested and enlisted on the side of right and justice. A boy has an inherited right to a dog, gun and fishing tackle. Give them to him and the opportunity to frequently use them and when he brings home a bag of game or string of fish, rejoice with him. Get up a family fishing party occasionally, inviting a neighboring family to join. It will do you all good and make the boys happy.

Make a red letter day of each passing birthday and all holidays. Invite his friends and give them the best room in the house, yes, all the rooms. You don't entertain your friends in the barn or on the woodpile. Why should your boy? Furnish plenty of games such as children delight in and have a dish of apples, nuts or pop corn for them to munch. Mingle with and be one with them. Don't worry about your dignity, it won't get lost. It is time parents, teachers, and preachers ceased to perch themselves on a pedestal so high as to be out of the reach of the boy they are trying to guide. You must come down to your boy's capabilities for a time, if you wish to keep pace with him as he develops and according as you bind your boy to you, with loving sympathy and keep in touch with his mind and heart, so will you be able to guide and control him when he most needs you. If your boy has not perfect trust and confidence in your love and judgment, at the age of ten or twelve years, you will not be able to in-

fluence him at the most critical time in his life, the adolescence period.

The boy should be kept busy with a judicious mixture of work and play. I would like to emphasize, let the work come first. Idleness is the mother of nearly all the discontent and mischief of boyhood. He should understand that he must work, as regularly as his father, that he is a part of the firm and that he is not only working for his father, but for himself also. The farm business should be an open book to him, that he may know as much as his father, the value of the stock and products of the farm, also what it costs to conduct the business. He will then be able to see the necessity for reasonable economy and be better satisfied if he knows what the proceeds from the farm are used for.

He should be encouraged to purchase some good stock for himself and care for it along with the other farm animals. Take special notice of it occasionally. Note improvements, if any, but don't be afraid to criticise if there be need. You must be brave and strong enough to help your boy see his faults and insist on betterment.

When the stock is sold, advise him about investing the money to the best advantage,—thus teaching him business methods and increasing his property interests and responsibilities at the same time. In short, give the boy a square deal all around. It may seem to many that these points were better left to the father, but in most cases the father is so busy supplying the needs of the family and farm, that he leaves the family affairs to the mother, believing that in all things pertaining to the home that "It is woman's hand that rocks the world."

While busy making a good farmer of your boy, don't neglect the social side of life. Fill your home with flowers, music and laughter. Keep up your personal appearance. In the hurry and stress of work, you are apt to grow careless in dress. You may not always be able to have elegant clothing, but you can always be carefully and tastefully dressed with hair becomingly arranged. When you go out with your boy, be especially careful in dressing, making the most of any beauty you may possess. He may not tell you, you look fine, but the quick glad look he will give you is worth working for. A boy is more sensitive than he appears to be and should

never have cause to blush for his mother's personal appearance.

Get him interested in organizing the neighbors into a social and culture club in which both old and young can take part. Hold regular meetings and have programs that will be instructive and entertaining. The head of the house may not be very enthusiastic about going out evenings, but he will go to please you if you present the subject in the right manner. Go with your boy to lectures and concerts. Give him the benefit of the best that comes your way. Patronize the public library, if there be one, if not get a movement started to provide one in some way. Furnish games of all kinds and a good supply of the best reading, magazines that discuss all up-to-date subjects, good stories of travel and adventure written by men and women who are alive with good red blood in their veins and know something of what they are writing. Have parties. Work, read, sing and dance with your boy. Don't be shocked, careful mother, but invite in such young people as you wish your boy to associate with and let them dance or play as they wish. They may take a little polish off the floor, better that than having him out in the streets looking for a place where he can have a good time, and he will find it too. He will be a much better boy, dancing with a few select friends in his home, than he will be with heart and brain hot with rebellion because you have denied him the privilege.

You may not lay up a large bank account, but you are doing something far better. You are working to build up and complete the best finished product of the age, a broadminded, well-educated, honorable farmer.

All this may sound rather strenuous, but when God gave us the privilege of motherhood, it was the greatest honor he could bestow. We should put forth every effort to live up to its requirements. In a few years, when your boys have gone out to farms of their own and some other boy comes to help with the work, be good to him, give him a pleasant home and you will not only have kept your boys on the farm, but you will do much to solve the problem of farm help.

INTERIORS OF FARM HOMES.

CLARA DAVIS.

This paper on farm homes assumes the fact that the gardener and his gardener-wife have made the outdoor surroundings of the home as attractive as possible, using flowers, shrubs, smooth lawn, trees, and always hard work, to bring about that condition.

And now as to the inside of farm homes. New houses that are being built in the country are about as convenient and attractive as those in the city, and many of the old farmhouses are having modern ideas introduced.

One of these ideas is that a house cut up into a great many small rooms is less desirable than one with fewer, but larger rooms; thus has come about the elimination of the parlor, a room whose stiffly arranged furniture and general "company" air never made it a very homelike or attractive place. Many new houses are being built with just one large living room and in some of the older houses doors between the old parlor and the living room are being cut wider, making the two rooms practically one. The question of heating may be raised. In case of a furnace there is no difference and if a stove is used one base burner will keep the two rooms warm and at a more even temperature than one small room, thus avoiding a great many of the colds that come with the winter season.

In regard to the furnishings—the walls of rooms that open into each other, like the parlor and living room we have been speaking of, should be finished in the same color, or in tones that harmonize. Browns and soft dull greens are always good. Rugs and carpets also, should harmonize in color with the walls. Pictures there should be, but not too many. They can be bought so cheaply now that people are tempted to crowd their walls with a lot of prints, water colors, and cheap oil paintings. Two or three well-selected pictures are enough for a moderate sized room.

The same is true in the matter of furniture. "Enough and no more" is a good rule to follow. If there is some chair, footstool or bric-a-brac that is not much used or has no espe-

cial interest, it is better out of the way, for unoccupied space looks better than that taken up by useless articles of furniture. A large reading table is such a companionable place for the family to gather round, and adds much to the comfort and appearance of a room. Comfortable chairs and bookshelves should be near. When choosing pieces of furniture it is well to have those in each room, of the same kind and finish of wood. The busy housekeeper will see to it that there are not many spindles and carved places to catch and hold the dust.

It is to be hoped that there is a downstairs bedroom in the farmhouse. In case of sickness this saves a great deal of work and if there are old people in the home it is asking a good deal to have them climb up and downstairs to a sleeping room.

There is not much to say about the dining-room except that it should be a cheery, well-lighted room. Growing plants in the windows add much to its attractiveness.

The kitchen is the place where the man has the chance to show his appreciation of his wife. This is where she spends the greatest share of her time and if this room is well-fitted and conveniently arranged it means a great saving of her time and labor. Painted or oilcloth covered walls are most easily kept clean. In case there is no pantry the china cupboards should be near the dining-room door. Kitchen cabinets are some of the new things that are being brought into modern homes and they are great helps in saving those many steps taken in traveling back and forth. The sink should be placed near the range to save carrying of water. It should be neither too high nor too low if a woman's back is to be considered. Thirty-four inches is the average height. A good drain leading from the sink is something that every country housewife will appreciate every day of her life. Nowadays after the first cost of installing has been considered, the farmer can have water piped through his house at less cost than his city neighbor. Using a double action force pump, the water is carried from the cistern to a tank in the garret. Being raised to this height gives pressure enough to supply water for kitchen and bathroom.

Leaving the kitchen, the bedrooms might be considered. Try to please the owners of the different rooms by having

the walls done in their favorite colors. Stenciling is popular and pretty too and not nearly so hard to do as it may seem. Curtains and covers for dressers and beds may be made at the expense of a little time and care. If artists' tube paints are used one has the satisfaction of knowing that the stenciled articles will not fade but come out of the wash looking better than they went into it for the washing seems to work the paint into the fabric.

Those who have old rag carpets laid aside can with joy take them out again for rag carpets are in style these days, especially for sleeping rooms. Because it lightens the task of cleaning, many people prefer to have bare floors, using rugs in place of carpets or matting. A strip of rag carpet with fringe at either end makes a good rug. Many women are having rugs woven to match the color scheme of the rooms in which they are to be used.

The floors in the upper rooms of most farmhouses are of pine. With a little work these may be changed to look like hardwood. First a coat of cream-colored paint (without gloss) should be given the floor, then the cracks filled with putty or crackfiller; next comes another coat of cream paint. When that is dry a coat of wood-shine or varnish of some kind will give the effect wanted and very good service also.

Everyone has photographs of friends or relatives that are good enough to serve as decorations of rooms but a photo is a personal thing and should not, as a usual rule, be displayed in a living room or parlor. One's own room is the best place for them. Small photos framed or passe partouted and hung in groups help to make a bedroom pretty.

And now from the top of the house let us descend to the bottom. A good cellar is almost a necessity in a farmhouse. A cement floor in the cellar is one of those things that add greatly to the comfort of life. If you haven't one, then here is a chance for the horticulturists to show that they are all-around men. For the asking most cement manufacturers will furnish booklets with all the information you need, a little money will furnish the needed materials, and work will do the rest and it can be done at a time when the outdoor work is not so pressing—even in winter, providing it does not freeze where you are working.

If there are a cistern and furnace in the cellar a good deal of space is already taken up by them and the bins for wood and coal. A room walled off for vegetables is a good thing to have. Another furnished with shelves for fruit jars will please the housekeeper and if there is no outdoor milkhouse, shelves and tables for milk pans are needed. If these rooms are given a few coats of whitewash their appearance will be much improved.

There are other parts of the house that might be spoken of but we will leave them. It is a fine thing to have a beautiful house, well furnished and conveniently arranged, but unless that house is a home, all these other things are of no value.

WHY I PREFER A COUNTRY LIFE.

ANNA L. RASMUSSEN.

After having lived about an equal number of years both in the city and in the country I have drawn conclusions and resolved that the remainder of my life shall be spent in the country. Not for one reason only, but for a great many, a few of which I shall mention.

I love the country which God made rather than the city which man made. Nature holds for me a charm which is almost lost to sight in the city. I shall not attempt to describe the beauties of Nature, as the poets and artists have taken care of that, but I think you will all agree that no poem nor painting, however beautiful, was half so inspiring as Nature herself. I shall read a little poem, which I think very fitting, entitled "Summer in the Country" by Louis E. Thayer.

SUMMER IN THE COUNTRY

Oh, summer in the country,
Everywhere a fellow sees
Things as glad and lively
As a swarm of new-fledged bees;
There are flowers in the pastures,
There are leaves upon each tree,
Oh, summer in the country—say,
That's the time for me.

Oh, summer in the country,
With its blue, clear summer skies,
With its beauties from days' dawn,
'Till the lingerin' sunshine dies;
Sometimes I think that man can catch
A glimpse of Paradise,
When the rays of cheerful sunshine
Come a siftin' to his eyes.

Oh, yes, I've tried the city,
But I could take no rest;
I longed so for the pillow,
That my head at home had pressed,
And my heart for me decided
That the country was the best.

Oh, summer in the country,
With the flowers and the birds,
With babblin' brooks and butterflies,
With bees and lovin' herds,
Oh, the feller may be happy,
Jes' as happy as can be
In the city, but the country,
Say—that's good enough for me.

There are a great many children in the cities who have actually never seen the sun rise nor set and have gotten only mere glimpses of a rainbow. In the country one may listen some fine spring evening to the concert of the birds and truthfully say it surpasses the band concerts of the cities. One is constantly in close touch with Nature, not only at every glance of the eye, but also at every turn of the hand and it is certainly more interesting and inspiring to work with Nature than with the most intricate machinery. Plant a few tiny seeds, watch them spring from the ground and quickly but steadily grow into beautiful flower crested plants or perchance into fine juicy fruit fit for a king's table.

And let me add right here that to anyone whose stomach is his best friend and who has a reasonably good digestive apparatus, the country affords fine opportunities. One is spared the expense and embarrassment of buying a dozen fresh eggs to find that half of them were fresh about six months ago; neither will you have trouble with sour milk for the country can give a good supply of clean sweet milk.

The vegetables, with which you are served, go almost directly from garden to kettle and are not dry, wilted and shopworn. The country housewife is also given the privilege of getting them from the field thereby taking a little needed out-of-door exercise and also creating an appetite for

dinner. And best of all are the berries. A great many city people fairly turn green with envy at sight of the bountiful dishes of berries and the pitchers of rich cream which adorn the tables of their country host's and they ask, "Why don't you bring such berries to town?" and the host smiles and answers, "Why?"

One advantage the country woman has over her city sisters is that she can, to a certain extent, choose her profession. Should she dislike certain duties about the house she can find plenty of pleasant employment out of doors and thereby earn more than enough to pay for hiring help in the house. Remember a man always receives greater compensation for his labor even though he may accomplish less than a woman. Who would not rather sit in a cool shady spot and prepare vegetables for market, or rather take care of a fine lot of chicks, than to fry a steak or bake bread on an average July day? Often my city sisters remark, "You are always so busy, why don't you do this way or that?" I really do not believe I am as busy as they are with their receptions, luncheons and afternoons at bridge, although perhaps I accomplish fully as much and I firmly believe in the old saying, "Let not the cost of your keep be wasted, be worth something."

Most country housewives can be somewhat independent. They need not necessarily depend on their husbands' salaries or dividends, but may have an income of their own. A small area may be devoted to the raising of some crops, which a woman can care for. She may have a profitable flower-bed or she may raise a fine flock of fowls, which will net her a neat sum. At any rate she will not be accused of going through man's pockets at night.

There again, the farmer's wife is a business woman. She is interested in a firm and should be able at all times to intelligently discuss business matters with her husband. If ever you had the idea that "any woman is fit for a farmer's wife," change that idea to this "a farmer's wife is fit for almost any other occupation." She should know the various trees, plants and flowers, the different breeds of animals and fowls; she should know how, when and where to plant all kinds of seeds, how to care for the plants and harvest the crops and in these days of scientific and progressive farming she is also expected to have some knowledge of book-keeping and stenog-

raphy. She must attain the ability of being an efficient saleslady and, besides this and a host of other knowledge, she must be a good housekeeper. Having mastered all these arts, she may some day aspire to assume the position of manager pro tem while her husband is in some distant part of the state attending the meetings of the State Horticultural Society. She will gladly be given the title, junior partner, but would, perhaps, by the stronger sex not so willingly be termed silent partner.

Then there comes one of the most important duties in life,—rearing of children. Children require fresh air, out-of-door exercise and plenty of room in which to play and opportunities to make themselves useful. All these are found in the country. Children are full of energy and are constantly looking for some way to use it. The country child has a dozen ways of carrying out his ambitions where the city child has perhaps only one. Country children may be given a little plot to care for and get proceeds derived therefrom or may be given pennies in compensation for their help or have a choice domestic animal all their very own—thus teaching them to help themselves and become good business men and women. The increasing effort now is to teach children that country life intelligently and skillfully directed offers health, independence and more of comfort and even luxury than most city people ever attain. Life is larger, freer and happier on the farm. Opportunities come to a child on the farm as often as to a child in the city. Statistics show that over 70 per cent of the really great men were born and brought up on the farm, including such men as Abraham Lincoln, Robert M. La Follette and President D. E. Bingham.

CHILDREN'S GARDENS IN BARABOO.

CORA ASTLE.

A widespread interest in the work of children's gardens is becoming more and more manifest. That the people as a whole gladly welcome some organized effort along this line is shown by the remarkable success of gardens under various conditions. The advantages of such work to the child and to

the community are many. However, it is the purpose of this paper, not to dwell upon that phase of the subject, but to tell briefly how plans for home gardens worked out in Baraboo, a city of between five and six thousand inhabitants.

In March of 1911 the women of the Twentieth Century Club decided to call a union meeting of all the club women of the city to see what united effort might be made along lines of civic improvement. The children's gardens of the past season were one of the results of that meeting. A sort of preliminary campaign relative to the gardens was carried on in the various clubs before the joint session, when a general sentiment strongly in favor of the movement was found to exist.

Gardens of different sorts were discussed, but we decided in favor of home gardens, as practically every family in Baraboo has a plot of ground available for cultivation. We realized too, that in a new undertaking, the children would need direction and encouragement which, under the circumstances, could best come from their parents.

In order to interest as many children as possible at the beginning and to keep them stimulated, we promised them a flower show at a date to be decided later and also a children's vegetable exhibit at the County Fair which is held in Baraboo late in September. At the Union Club meeting a committee was elected to arrange details and to get the work under way. To call the attention of the public to the project, the proceedings of this meeting were reported in both our daily papers.

The first work of the committee was to interest the teachers and to secure their assistance in presenting to the children such plans as should be formulated, and right here it might well be stated that the splendid enthusiasm and cooperation on the part of the teachers and parents made possible the success of the undertaking. In selecting the list of vegetables and flowers from which the children could choose the kinds they wanted to raise, we tried to avoid those having very fine seeds. Some additions to the original list were made at the request of the children, so that finally premiums were offered on the following vegetables and flowers: Tomatoes, cabbages, carrots, beets, onions, turnips, radishes, lettuce, parsley, sweet corn, pop corn, cucumbers, squashes, pumpkins, sunflowers, sweet peas, nasturtiums, verbenas, asters, phlox, painted daisies, snap-dragons, annual larkspurs, pansies, poppies, geraniums, and castor beans.

The children were required to raise everything from seed, excepting geraniums which were started from slips. In order that every child might have a considerable variety of vegetables and flowers, a local seed house was induced to put up penny packages for the children. However, there was no restrictions as to where seeds should be bought. We asked the children to keep account of the money spent for seeds and also of that received from the sale of vegetables and flowers. To encourage particularly these business methods, one of the women offered a special premium of bulbs on the accounts of gardens. There were other special premiums of bulbs, too, and we noticed that the children were far more pleased with them than they would have been with an equivalent sum of money. That might be an excellent means of encouraging boys and girls in the planting of fruits of various kinds, as well as ornamental shrubs and trees. We shall doubtless try it in Baraboo the coming season.

The contest was open to all children of school age residing in the city, however, high school pupils took but little interest. The younger pupils certainly went into gardening last spring with a great deal of vim, and, judging by results as shown at the exhibits, they kept at it through the summer.

When the time for the flower show arrived, the first Saturday after the opening of school, we decided that it might be safest to solicit flowers for decoration. People sent in great quantities of choice cuttings that added much to our display, but we found that the children alone would have made a very excellent exhibit. About sixty children brought bouquets, some as many as half a dozen each. We kept the small boys, who were on hand the first thing in the morning, busy fetching receptacles from the stores. It took much rapid work to get everything ready for the opening of the show in the afternoon, but finally the last bouquet was in place.

About two o'clock people began to come, and from that time on through the afternoon you could look up the street at any time and see a mother coming led by a small boy or girl. The children and the mothers were there in full force and a good many other people besides, both men and women. The show was held in the basement of the public library and the rooms were crowded all the afternoon. The evening attendance was also good. It certainly was very gratifying to hear express-

sions of surprise and appreciation on all sides, and expressions of sympathy and encouragement in the work were by no means rare.

The exhibits were arranged and judged according to wards, so, as Baraboo has three wards, there were three lots of premiums given. All premiums were divided 50, 30 and 20 cents. This arrangement prevailed at the vegetable exhibit at the fair also. Many of the flowers brought to the show would have done credit to older gardeners. It was interesting, too, to notice how beautifully some of the bouquets were arranged, while others showed careless handling. However, children are keen observers, and quick to take suggestions along lines interesting to them, so most of them at least will soon learn to prepare their exhibits skillfully.

After the flower show, the promise of a fine vegetable exhibit was so good that the officers of the agricultural society made a department for it and appointed a superintendent. They also secured a tent in which the exhibit was shown. Unless you have had experience with children in that sort of work, you cannot realize the interest the boys and girls took in their display. Some of them fairly lived at the tent when not in school. They were quick to see why perfection counted for more than size in the judging of their vegetables, and on the whole a spirit of fairness and generosity prevailed among them. As the Agricultural Society offered to give as much money in premiums for the children as the women should raise, we had been able to promise a very substantial prize for the best collective exhibit by the children of a single ward. This was divided 14, 12, and 10 dollars, the money going to the ward schools for the purpose of beautifying the buildings or grounds. Every child that had grown a vegetable or a geranium was on hand "to help the ward along," and after all was over it was really beautiful to see the satisfaction of the child who had received no premiums whatever, in the fact that she had helped to make the ward display.

Like the flower show, the vegetable exhibit received much favorable comment. By many it was conceded to be one of the most interesting features of the fair. The suggestion has even been made that the people of the city erect a building on the fair grounds for this special exhibit.

As to the financial part of the undertaking, expenses have

been met and premiums paid by receipts from the flower show and by voluntary contributions from individuals and societies.

The time should come soon when children may have expert instruction in gardening, and money so spent by a city will be returned many fold. Aside from the economic value, anyone having doubts as to the benefits of gardening for children should read Mrs. Burnett's new book "The Secret Garden." Of course not every child can have a secret garden or one so entrancingly beautiful as that portrayed by Mrs. Burnett, but each boy and girl may taste the joy of making things "come alive" while receiving the mental, moral and physical strength that comes from living in the pure air and working in the warm earth.

"Where you tend a rose, my lad,
A thistle cannot grow."

THE VEGETABLE FORCING INDUSTRY IN WISCONSIN.

FRANK OVENDEN.

Few people have the faintest idea of the extent of the vegetable forcing industry throughout the United States of America.

We are all more or less wrapped up in our own particular line of business and come to look on all others as of minor importance, even when they may be of a kindred nature and perhaps a sister branch of the same calling.

The forcing of vegetables is a branch of horticulture just as much as fruit growing, but, though closely related, are little known to each other. Each is an important branch of horticulture.

The forcing of vegetables requires the grower to carry on his calling near the city, which is his market. The larger the city the greater is the demand, and there is where we will find this industry thriving the most. In many of the smaller cities we will find the flower and vegetable business combined, but around cities like Milwaukee are many large establishments devoted to vegetables only. There are not nearly enough such establishments in Wisconsin to supply our de-

mand, a demand which is steadily growing and with a little stimulating will grow very rapidly.

A luxury at first, but soon a necessity, I am sorry to say that a very large part of Wisconsin's supply comes from other states. As this supply is obtained principally through Chicago and Milwaukee commission houses, it would be hard to tell from where we procured most of it. Reliable statistics are not to be had on the vegetable forcing alone and our Census Bureau gives the figures together with the florists, unless in the 1910 reports which are not yet published. I will tell you of a little journey I made last fall and what I saw, that may give you some idea of the extent of this business around our large cities, such as Chicago and also a probable source of supply for Wisconsin.

It became necessary for me to visit Evanston and the North West suburbs of Chicago last fall, so one fine morning found me standing on Ridge avenue, Evanston. From Ridge avenue west, is a large level stretch of country. This country is devoted, as far as you can see each way, to market gardening and truck farming, but what struck me most were the greenhouses in the foreground. The land is here laid out in city blocks and it seemed that every block was more or less covered with greenhouses.

Being a florist, and this my first visit in Evanston, I supposed these were all florists too, so I started out to inspect them, and you may imagine my surprise when I found that, with an occasional exception, they were all devoted to the vegetable forcing business. Many of these ranges were quite large, containing from fifteen to eighteen houses, each house 21 to 29 feet wide and from 100 to 200 feet in length. They were all up-to-date houses and were kept in good repair, which shows they were run by up-to-date prosperous business men. The homes of the owners of these ranges were also up-to-date and many were real fine homes. Many of these ranges were devoted entirely to lettuce, while others were devoted to various crops of vegetables. From Evanston I journeyed south along Ridge avenue as far as Rose Hill cemetery, a distance of six or seven miles, and it was more or less the same, but as I neared the cemetery the florist began to predominate and on the south side of the cemetery I found two of the largest ranges of glass in the United States, Peter and

George Reinberg's. They cover many city blocks and Peter Reinberg's contains 2,000,000 feet of glass. These are devoted entirely to roses.

I will not follow my journey any farther, as it was all amongst the florists, but what I have told you of Chicago is also true of Milwaukee in a much less degree.

From this is readily seen to what an enormous extent this business has grown around our large cities as Chicago, New York, Boston, etc. As I said before, the supply is far below the demand for winter vegetables in Wisconsin, and it seems to me that there is a good opening for many of our young and progressive horticulturists in this state to try their hands at forcing vegetables.

I am told that in the East many of the small fruit growers have forcing houses to occupy their time in the winter and with great success. The forcing business begins in September and is mostly over with by May, with the exception of tomatoes, cucumbers and melons, which are grown as an early summer crop as well as in winter.

Lettuce is the principal crop forced under glass and probably two-thirds of the forcing houses are devoted to this crop alone. This will yield from three to five crops in one season from September to May.

Radish stands next in importance and, as it grows and matures in from three to four weeks, is often sown between much slower growing crops. Tomatoes, cucumbers and melons are important crops, but require a much warmer temperature and are more particular in their requirements. They are often used to fill the houses during the summer when none of the cooler crops can be grown. Beets, beans, spinach, onions, cauliflower, parsley, cress, and many other vegetables are also forced under glass. Asparagus and pieplant (rhubarb) are two easily raised and good paying crops. These are raised under the benches as are also mushrooms.

The mushroom is more difficult to raise and those who are successful, make good money. There are some who make the raising of mushrooms a special business, having cellars, pits or houses constructed particularly for this business.

THURSDAY FORENOON SESSION.

PROPAGATING NURSERY STOCK.

WITH DEMONSTRATION.

PROF. J. G. MOORE.

To attempt to cover the subject of propagating nursery stock in the space of a short talk is impossible. We will therefore find ourselves confined on account of lack of time to a discussion of the more important phases of this subject.

The apple is by far the most important fruit in Wisconsin today and we will therefore consider first its propagation. There are two methods of propagating apples,—by budding and by grafting. Both of these operations come under the general head of graftage, which, in propagation we know as a means of propagating plants on the roots of other plants. The essential principles underlying the propagation of plants by these two methods are the same; the difference lying only in the matter of details in the operation.

In graftage we have the insertion of a sion upon a stock. By the term "stock" we mean that portion which is to provide the root-producing area of the new plant, and by the term "sion" we refer to the portion which is to produce the fruit bearing and food elaborating area of the new individual.

In budding, the sion consists of a single bud and the stock of a seedling which has been grown in the nursery row usually for one year. This seedling is commonly produced from seeds collected from apple pomace or the residue in making cider. In seedlings produced from this kind of seed we know very little of what the character of the seedling which we are to use will be as the varieties will be mixed, some coming possibly from tender sorts, others from those which are hardy and still others from those which are inferior and which will not make good stocks for the propagation of plants.

Nevertheless, nurserymen in this country have not found it profitable up to the present time to select the seed to any

extent by other means. In France and in some few instances in this country the seed for producing stock is from selected varieties. This is much to be preferred although the cost will be somewhat increased.

In grafting the sion is a short twig of the past season's growth, containing anywhere from 3 to 8 or 10 buds, depending on the length of the sion used and the variety to be propagated. The stock as in budding, is a seedling, but in the case of graftage instead of the stocks remaining in the nursery row and the operation being practiced there, they are dug in the fall and stored in the packing cellar or other convenient place until the proper season for making grafts.

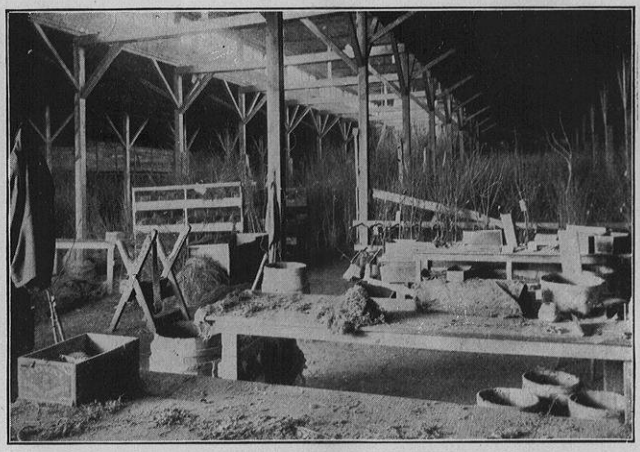
Budding is the method most commonly used in the eastern and southern states. The operation is performed in the north and in the eastern states in August using the buds of the present season's production. The method of inserting the bud is usually what is known as shield or "T" budding. It consists in making near the surface of the ground and on the side of the seedling protected from the sun, a horizontal cut, somewhere between ¼ to ½ inch in extent. Below this a vertical cut is made about one inch to 1¼ inches in length running up to the horizontal cut, making a "T" shaped incision from which the name of this method of budding is taken. From the bud stick which is a small twig of the present season's growth there is taken a bud making the cut from the bud toward the top of the branch. The stem of the leaf makes a very convenient little handle for handling this bud. It is then inserted between the edges of the vertical incision and pushed down so that the top of the piece of bark taken with the bud comes below the horizontal incision. The bud is then ready for wrapping. This may be done with raffia or some other material which will not injure the tree. Care should be taken not to cover the bud, but so wrap it that there will be as little evaporation as possible from the wound. The wrapping should be left on for two or three weeks, or until there has been a union of the bud with the stock. If the wrapping is left too long it will cause girdling of the stock which is undesirable. The bud should make no growth during the fall following its insertion, the only object being that it unite with the stock at this time. The following spring growth should begin, and when it has reached a few inches

in length the top of the stock should be removed so as to insure better growth of the new part. Care should be exercised in budding to use only first class buds from trees of known standard; prevent them drying out during the operation, and to see that wrappings are removed promptly when a union has taken place. It may be desirable to protect the buds during the winter. This may be done by mounding over the buds with soil.

Root grafting is by far the most common means of propagating apples in Wisconsin and other states of like climatic condition. As already indicated it consists of inserting a sion into a seedling stock, but in this case instead of inserting it upon the stem of the plant the sion is inserted on the root which gives the term "root grafting." One seedling root may furnish the root developing area for two or more new individuals which will be known as piece root graftage or the entire root may be used for new individuals, when it will be known as a whole root graft. There is some controversy as to the method of whole or piece root grafting, but at the present time by far the larger number of trees are propagated by the former method.

The piece of root which is used in piece root grafting is usually about three inches in extent. It is almost impossible to describe the method of making the cut for this graft sufficiently clear so that readers will understand the various operations. We shall attempt, however, to state them as clearly as possible. Cutting off the stock just below the crown which is the place of union of root and stem, selecting a straight side, and make a slanting cut about one to 1¼ inches in length. This cut will usually leave the end of the stock with an oblique surface, but it does not necessarily need to go clear through the stock. Beginning back upon this oblique surface about or in the center of the root, make an incision running nearly parallel to the side of the root, but inclined somewhat to the lower side as it is held in the hand. This cut should be about ¾ inches in length. It is desirable to have these cuts rather long for they give a much better surface for the union of the root and sion. It is easier to make the cut shorter, but the uniting area will be lessened. In making these cuts, they should be made smooth as wavy cuts make poor grafts.

Nursery packing shed and storage cellars.



View of interior of packing shed.

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It will take some practice to become proficient in making these cuts but anyone can soon become more or less expert in the operation. The piece of root is then cut off at the desired length. The cut on the sion is made exactly like that on the stock. If the operation has been well done when the tongue of the sion is inserted into the stock the surface of the cuts will come so close together when slightly pressed, that there will be no light showing between the cut when held between the the operator and the window. If the cuts have not been well made then there will be areas in which the stock and sion do not come together, which of course is undesirable. In inserting the sion into the stock care should be taken to have one edge of the sion flush with one edge of the root. It does not matter if the other edge of the roots projects beyond the sion as this can be trimmed off prior to wrapping without any injury. After the insertion of the sion on the stock, wrapping is necessary in order to hold them together until callousing has taken place, and a natural union has been made. This may be done by using either grafting string or grafting cloth.

The method of preparing these materials is by making ordinary grafting wax and soaking a ball of common twine in the melted wax, or by dipping pieces of old muslin into the wax. In removing the cloth from the wax, draw between two pieces of lath or other smooth sticks which will remove the superflous wax from the cloth. It may then be hung up. It will become hard in a very short time and be ready for use. In using it is torn into strips about ¼ inches wide and the desired length. In wrapping the graft, care should be taken to keep the edges in apposition and to wrap firmly so that they will be held in position. The graft is then stored; usually placed in sand or sawdust or some material which may be kept sufficiently moist so that the sion will not dry out, but not wet enough to cause moulding. They are then placed in a room or cellar with the temperature sufficiently low that premature growth will not take place. Six or eight weeks should be sufficient under normal conditions for the callousing of the grafts.

The question of the length of sion which is to be left is very frequently one which is troublesome to the propagator. In root grafting farther south and east the sions are left

about three to 3½ inches in length. In Wisconsin and similar states, it is desirable to leave the sion much longer than this, usually about five to six inches. The object in leaving the long sion is that in planting the grafts they are set deeper leaving only about one inch of the sion projecting above the surface. In this way the sion is induced to root so that sooner or later we have a tree on its own roots which is very desirable in this section. With the short sions it is impossible to do this, the tree always remaining on the roots of the seedling.

Grafts are planted in the spring after danger from late frost is past. Where a large number are to be planted, a furrow may be plowed and grafts set along the land-side. Where only a few are to be set the spade is probably the best tool to use. Insert the spade into the soil to a depth sufficient to allow the insertion of the grafts to the desired distance. The grafts may then be set at either end of the incision. Removing the spade may make another incision about two inches from the first and directly at the side. Then by using the handle as a lever, press the soil firmly against the grafts. Two men usually work in setting grafts by this method, and the one who is handling the grafts should step on the opposite side of the grafts as the man operating the spade pushes the soil against them. This insures the grafts being placed firmly in the soil which is desirable in order that rooting may take place, and evaporation be reduced to the lowest possible amount.

CULTIVATION AND CARE OF THE TREE FRUIT NURSERY.

MR. R. J. COE, FORT ATKINSON.

Mr. Coe: Prof. Moore has grafted our sion on the root and the next question is to know what to do with it after he had it grafted, and I think perhaps the better way would be to begin a little bit back and take the preparation of the soil first, the kind of soil and the condition it should be in. Land that will produce a splendid crop of corn is in pretty good condition to grow apple trees and preferably soil that

has grown a crop of clover two years previously. The clover roots loosen up the soil and put it in the best possible condition for plant and tree growth. How shall we plant our grafts? This is a question of considerable importance to us as nurserymen. We have tried several methods and we have finally gotten down to the spade method, using a man and a boy, the boy to put in the root grafts, the man to use the spade. Use a heavy spade for this, throw the spade pretty well down into the soil, and the width of the spade is just about the right distance apart to put the graft, putting a graft in each corner of the opening, then crowding the ground up hard against the graft. This puts it in firmly and we think that is as good a way as we have ever tried.

A Member: How deep do you get your union in the soil?

Mr. Coe: We use about a seven-inch sion and we put it down so that when it is first planted, the top is just about level with the top of the ground. We have found this, that after it seems to be about level with the top of the ground and we have begun to cultivate, the ground will settle an inch or two and we like to have one bud of the sion above the ground. This makes it probably about ten inches deep. We use, as Prof. Moore has stated, a short root with a long sion, believing that we get more roots from the sion than we would in any other manner. In fact, I have dug up one year old trees many times and found the original root dead, or nearly so, and nearly of not quite all the roots that had grown were from the sion. We begin cultivating just as soon as we finish planting. In tamping the soil around the grafts we do not like to leave it in that condition, because that leaves it in the best possible condition to lose the moisture and we want to hold the moisture, so we begin cultivating as soon as the planting is done, using a fine tooth cultivator, so as to make the surface fine and mellow. This leaves the surface in the best possible condition for plant growth. Throughout the summer, our practice has been to simply cultivate and keep the field perfectly clean from weeds. Keep the soil stirred after every rain so as to get the best possible condition for plant growth. The first summer we do very little, if any, pruning. In fact, we like to have them grow and we like to have as many leaves down at the bottom of the young tree as possible, because from the quantity of

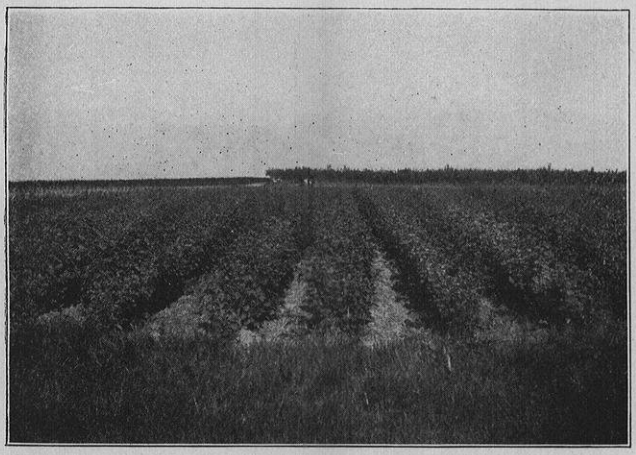
leaves that we have on the plant we get the stockiness of the tree. If we get a good growth we start out the next season and cultivate; cultivate throughout the season as we did the first season and here in Wisconsin, with us anyhow, we have to grow our trees three years in order to get a first class tree, and I am speaking only of Wisconsin conditions. After the second season's growth we do our first real pruning. If any sprouts that we do not want come up from the ground those are pruned off, but in the spring of the second season we do our first real pruning and at this time it is our practice to cut off all the branches smooth and cut off the top, leaving the tree about thirty inches. We have then a straight whip about thirty inches high and if it has been well grown the two year's before, we have a pretty stocky tree. You will find the tree starts out small branches all the way down the tree, that is what the nurserymen sometimes term feathering out and here we like to let those branches grow for some little time. In the South, I understand they glove-prune entirely, that is, lop off the branches, but with us we like to let the leaves grow and we go over it two or three times during the summer, cutting off the lower ones first but always leaving a good mass of foliage so as to get a good, stocky tree. This applies only to apple trees. We have grown a few pear trees, but not with very good success; we have grown some plum trees, but we have never grown any cherry trees, because we have not had very good success in Wisconsin with cherry trees.

Mr. Palmer: Would not you advise cutting off the crown after the first year's growth?

Mr. Coe: We have tried it, we have had better success the other way.

Mr. Palmer: I notice Dudley does it the other way.

Mr. Coe: Yes, a good many do. I am telling about our practice, we have had a better growth by not cutting back. There is one point in regard to the blackcap raspberry that Prof. Moore brought out that I should like to impress upon your mind. You will notice he told you to plant black raspberries deep and he also said to fill the hole only partly full. I want to bring out that point. We plant them deep, but we only put a little soil on, just a little bit until this sprout has started to grow.



Block of 2 year currant bushes in nursery.

Block of three year apples in nursery.

A Member: You spoke about setting out grafts the width of a spade apart. How long do you let them remain so close together? Do you take them out after the growth starts?

Mr. Coe: No, talking about apple trees, they remain where they are planted.

A Member: I should think if they are so close together they could not form a good root system.

Mr. Coe: Six or eight inches is about the right distance. We let them grow where they are planted, they have plenty of room to grow.

A Member: It seems to me you would get a better form of tree if they were set two feet apart.

Mr. Coe: If the nurserymen set them two feet apart, and took all chances of losses that we have, there would not be any profit in the nursery business.

Mr. Bassett: This is a little out of the question, but I wish to place here on the table some Hood river apples, fancy Spitzenberg, packed by the Hood River Association. I gave thirty cents for them. I wish you would come up after the meeting is over and examine them.

THE STRAWBERRY AND BUSH FRUIT NURSERY.

Mr. M. S. Kellogg: I shall take very little time and trust to the discussion to bring out the points that are necessary in a topic of this kind. First, you must have good soil and you must have that soil well prepared when you plant out your propagating beds. In growing the strawberry there is such a diversity of opinion amongst commercial growers as to which is the better method of growing the plants, whether to use the hedgerow system, or matted row system, or double hedgerow, that that is simply a matter of personal taste really and will not be very seriously considered. In the majority of cases, however, I think the commercial grower of strawberry plants uses the matted row system in the propagation of strawberry plants. Our practice has been to plant our propagating beds with the rows running four feet the wide way and two feet between plants the cross way. A great many use cross cultivation during the early part of the summer until the new runners begin to root and in this

way save a large amount of expense in hoeing the young plantation and we think we get a better stand and better plants by this method than we could by the simple method of cultivating one way. Where you are growing a large number of varieties in the same block that do not all grow with equal rapidity you will be forced to stop the cross cultivation by the rooting of the layers on some of the most vigorous kinds before the slow growing kinds have shown any indication of throwing out runners or roots at all. This, however, we cannot get away from and the matter of cultivation is simply a matter of conserving the moisture that there is in the soil, keeping down the weeds and putting the plants in good healthy condition for winter quarters. The sooner your plants are covered after the season's growth terminates, the better for the health of the plants. As soon as the ground begins to freeze it is time to put on the covering. Some growers advocate a light covering in the early part of the winter and a heavier covering later. This we do not advocate; the entire covering which is needed for the bed is applied at one operation. In talking of the bush fruit nursery, in the propagation of raspberries, as has been demonstrated here by Prof. Moore, the black raspberries need a little more room in the propagating row than do the red varieties and if we sandwich the red varieties in a plantation beween blackcaps, you interfere with cross cultivation, but unless your plantations are of considerable size, it perhaps is a better plan to divide the varieties into different plantations, although some advantage is gained by reduction of expense in hoeing, also keeping the ground well stirred and conserving the moisture. The time of putting down the tips of blackcaps is one of vital importance in the conduct of a bush fruit nursery, because if conditions are at all adverse, a difference of six hours sometimes between the times when the tips are in proper condition for layering, getting them down promptly means the difference between success and failure. If there is a high wind and the young shoots are in proper condition for layering they often will be damaged enough in six hours' time so that they refuse to root. If they are injured by rubbing on the ground or on one another, it is rarely you get a successful tip. That is one of the things the nurseryman has to watch. The point is to get the

tips down in the pink of condition so that you will be sure to get good roots during the coming season. Red raspberries in propagation practically take care of themselves. Suckers come up sufficiently thick and sometimes even so thick that the nurseryman is afraid to cultivate, but this is a mistaken idea and the cultivator must be kept running continually if you have the right kind of stock. Currants, gooseberries, blackberries and other bush fruits are cared for largely in the same way as raspberries. Black raspberries are propagated in a great many instances largely by rooting cutting plants in place of the sucker plants. In many nurseries they are propagated by both methods. Currants are grown in this latitude by the hardwood cutting method and the time for planting these cuttings is largely a matter of personal opinion and convenience, considering labor and other conditions, some putting them in in the fall and others in the spring. The one thing that must be kept in mind throughout the whole of the nursery work is clean cultivation and lots of it to conserve moisture and keep down the weeds.

Mr. Stevens: I should like to ask Mr. Kellogg if in starting a young apple orchard there would be any damage done to the growing trees by planting strawberries the first two or three years between the rows of apple trees and giving them thorough cultivation?

Mr. Kellogg: If your ground is in good condition, I do not think it would be any particular damage to the orchard to grow small fruits in that orchard for a short term of years, providing you do not crowd your trees. Give the trees plenty of room. The trees are what you have the ground devoted to permanently and the small fruit is simply a filler until the trees demand the ground.

A Member: Has Mr. Kellogg had any success in rooting the gooseberry from hardwood cuttings?

Mr. Kellogg: The gooseberry does not root as readily from hardwood cuttings as does the currant and other bush fruits. Under conditions that are right, they do root fairly well from cuttings, but there are probably more gooseberries throughout the country propagated by the layering method than any other method, unless you have a greenhouse in which to start your cuttings with both top and bottom heat, where you can

induce the callousing before putting them out in the nursery row.

A Member: In layering gooseberries, is it not better to bank right up to the layers?

Mr. Kellogg: That would simply be a matter of local conditions and convenience. In some soils we could probably do better work in layering by the banking method, while in other soils, we would put part of the bush or the entire bush down and have fully as good or better results that way. It depends largely on the condition of the ground and what the soil is and a great deal on the man behind the bush.

The President: In regard to planting strawberries in the young orchard, there is a point that has not been fully answered and that might leave a wrong impression. I should like to hear something more on that.

Mr. Coe: As I understand the gentleman's question it is whether it would be advisable to plant strawberries in the young orchard. I should say most decidedly no, and I give you my reason for it. The year that you plant your strawberries of course you do no harm, but we believe in the cultivation of the orchard, and the next year, the year that you get your fruit, you cannot cultivate your orchard until after the berries are harvested and the old plants taken out. This will take you beyond the period when the orchard should be cultivated. You have all the season's growth and all the weather conditions to contend with and all the drought and all the lack of cultivation while you are growing your crop of berries. You should not think of planting strawberries in the orchard.

Mr. Kellogg: I emphasize the fact that you should give your trees plenty of room. If you do not plant your strawberries closer to the row of apple trees than eight or ten feet, eight feet at least from the row of trees, then plant your first row of berries, I think you would get plenty of room for cultivation even in the season of fruiting of the berries. You would not suffer for lack of cultivation to the extent that a great many would think. Planting the ground entirely to strawberries would be a grave mistake.

Prof. Moore: I think Mr. Kellogg has covered that point in saying that in any kind of cropping of a young orchard no matter whether strawberries or anything else, you have got

to give your trees room enough. If you are going to crop your orchard to cultivated crops, which are the only crops that are permissible we must at the same time provide for returning plant food to the soil.

The President: There is one more point, and that is this: The gentleman asking this question I suppose wanted to know whether it will be practical as well as profitable. Then when you consider the point that you are taking eight feet from the trees, at the distance, orchard trees have to be apart, in order to make it profitable to plant strawberries under those conditions, it would hardly be a practical idea to plant one row only of strawberries. Where your trees are twenty feet apart, you would only get in two rows of strawberries.

Mr. Kellogg: If you have an orchard with trees twenty feet apart, do not set anything but apple trees. If you have your trees thirty feet apart, you will have room for three rows of strawberries and you would get a good, profitable crop of strawberries.

Mr. Richardson: If we were going to plant apple trees and not crop between, I am afraid we would have to go to the poorhouse, because the taxes would eat us up; the land is too valuable, if we only take one crop off. We would like to get four or five crops each season between our apple trees. In the short time the strawberry crop is taken off,—we plant in the same row—as soon as taken off we mulch around the apple trees. It kind of checks the growth so that we do not get too much wood. I do not see any objection.

A Member: What is the best cover for strawberries?

Mr. Kellogg: The ideal covering is wild hay. Where you cannot get that, any grass literally free from weed seed that is heavy enough to remain is a good cover. The idea is to keep the ground frozen. It is not the extreme cold that kills, it is the freezing and thawing that kills them. It pulls them up. The beds that are used strictly for propagation we rake off so that we can take the plants free from any interference by the cover. Wild hay is absolutely without weed seed. Straw, no matter how well threshed, has more or less grain in it that is bound to sprout and cause more or less trouble next year.

TOP WORKING TREES IN THE NURSERY.

E. A. SMITH, LAKE CITY, MINN.

PLANTING THE SEEDS.

We plant the apple seeds and at the end of one year dig the roots, then sort them and transplant those suitable in the spring of the following year. These we grow one year, at the close of which there will be a top varying in length from one to three feet, and in caliper from ¼ to ⅜ of an inch. The seedling root now has a two years growth and a one year top. The following spring we cut off this top somewhat close to the ground, then select a sion of such variety as we wish to propagate about the same size as the apple seedling. The root is cut slanting and the sion about the same slant so that they will fit somewhat closely, using the whip grafting method. We then wind soft grafting wax about the root and sion at the point of union so as to hold the sion firmly in place.

PREPARING THE GRAFTING WAX.

The wax is prepared in the following manner: 1 lb. beeswax, 1 lb. tallow, 6 lbs. resin. Put in a kettle, melt and thoroughly mix. Then take out in chunks about as large as a man's fist and cool. The wax can then be laid aside for an indefinite period. When it is used for grafting it must be heated. We have a small stove especially prepared for this purpose in the field. We set a pail of water on it to be heated, and put the grafting wax in this water to be softened. A man then puts grease upon his hands so that he can handle the wax without its sticking. We prefer wax to either waxed paper or cloth as it yields more readily to the growth of the tree, expanding and yet always fitting the growth so closely as to be air-tight, thus insuring a perfect union.

Soon after the wax is wound about the sion and root, it becomes cool and the wax is then very firm and becomes quite hard so that it will not readily dent with the finger nail, but in the warm rays of the sun the wax quickly softens and becomes smooth on the outside, almost as though it had been

polished. This helps in the shedding of rainfall so that the water which runs down the sion, as soon as it strikes the wax quickly runs over the surface and away from the point of grafting. The work must be done in the spring as early as possible.

RESULTS.

Where the union takes place an enlarged growth quite often occurs which is frequently so rough and large in appearance, it is sometimes mistaken for crown gall, but as the tree becomes older this enlargement disappears, the tree growth building up around it. The wax sticks tightly to the tree and frequently remains upon it either in a broken or crumbly condition for several years. In fact, we have seen traces of wax upon a tree five years after it was planted. It does no harm whatever to the tree, does not render it unsound, and is not put on the tree to cover a defect. Nurserymen unfamiliar with this method of propagation have been led to wonder what the wax is for, but the method is all right. To convince yourself of this fact you have only to try it. In southern countries it would not be a success for the reason that the extreme heat would melt the wax and it would run away from the point of union, but as far north as Minnesota there is very little danger of this occurring.

ADVANTAGES.

Now what is the advantage of using this method of grafting in the nursery field Under normal conditions a five to six or four to five foot tree, branched, can be grown in two years, while with the piece root system it often takes from three to four years to produce a good five to six foot tree.

COST.

The first cost is greater than in piece root grafting, but this is made up in the time saved in producing a tree ready for market. Two men with the assistance of a boy who handles the wax, can top-graft in the nursery, 1200 to 1400 trees in a day. Trees grown in this manner are healthy, vigorous, desirable and much sought after by those favoring the whole root method of propagation.

Budding with us has not proven a marked success, but this method of field top-grafting has. We grow about fifty thousand apple trees in this way each year and over one hundred and fifty thousand plum and Compass Cherry trees. We should grow more of our apple trees in the manner above described, but we do not have the time, men or facilities for doing the work properly in the comparatively short season when the work to be successful must be done.

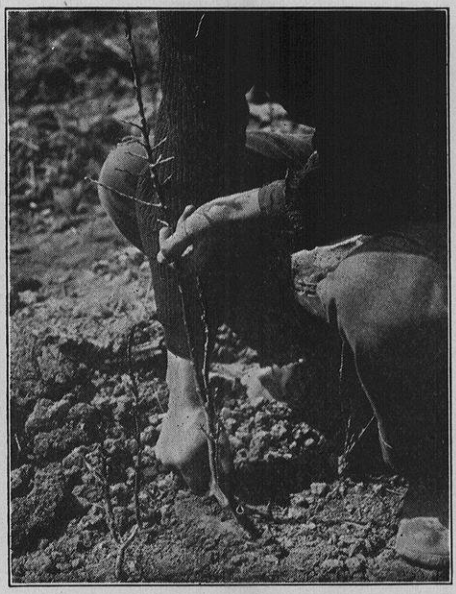
Some varieties of trees do better using the whole root system than on the piece root or in budding, and as you know, some seasons the growth will be much better than other seasons, but as a whole, this method is a success and well worth a trial.

Mr. Kellogg: I should like to ask Mr. Smith, if, in the propagation of the apple, particularly under the crown grafting method, do you produce a tree that will stand the rigors of a northern climate alongside the piece root on a common sion as commercially grown?

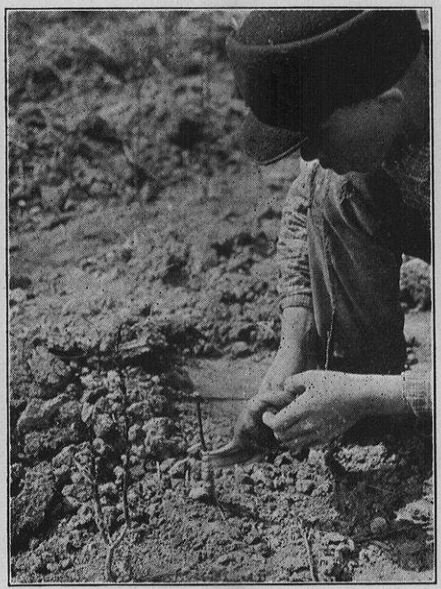
Mr. Smith: We do.

Mr. Bassett: If they stand it so well, why do they try to get rid of them by selling them so young?

Mr. Smith: Every nurseryman knows the sooner he can get a tree into the market, the more money he saves in doing it. If we carry it over another year, we have the expense of the ground, expense of cultivation, there is bound to be a certain per cent of injury to nursery stock, no matter how it is propagated, you have to take the risk in all trees, some risk, but in the method of the piece root grafting, the loss would be no greater.



Crown Grafting—Cutting off the top.



Crown Grafting—Waxing the graft.

THURSDAY AFTERNOON SESSION.

RATIONAL CARE OF STREET AND SHADE TREES.

BY ALFRED SENN, CITY FORESTER OF THE CITY OF MILWAUKEE.

Within the last four years a general interest in shade trees has aroused public attention, especially in the East where this interest is well illustrated by the amount of money expended in this particular line of work. The welfare of shade trees, which can only be maintained by systematic management and care, has created a demand for the establishment of a Shade Tree Department in the City Forestry Department. Brooklyn and Buffalo allow an annual appropriation of $65,000, for the exclusive care of their shade trees, Newark, N. J., $37,000.

The aim of such departments is to add to the number of street trees by setting out new plantations, to conserve and care for those and the older street trees, to awaken, sustain and stimulate enlightened interest in street trees and by these means to enlarge life's wholesome pleasure, to enhance the city's beauty, to encourage its healthfulness and advance its realty interest.

First of all, the street trees as well as the park trees should be controlled by the municipality or government and placed under the jurisdiction of a single head, a tree warden. Large cities can afford to have their own municipal shade and street tree department but for smaller towns, as we have in this state, we should have state laws as they have in New Jersey, Pennsylvania and Massachusetts, leaving it free to each town and city to supplement the statute by local ordinances, and I would suggest that this society take the first step towards enactment of a state law encouraging the protection of street and highway trees throughout the State of Wisconsin.

There ought to be a State Shade Tree Commission, and a State Tree Warden, a man trained in the science of forestry and arborculture, whose duty it shall be to give instructions

in planting, spraying, pruning and cultivating and promote public interest through lectures and writings.

The ordinary work of a city forester, arborculturist or tree warden consists in planting trees, exterminating insects and disease, protecting the street tree from accidental or willful injuries by man, from injuries by public service corporations, from gnawing horses, house movers, street graders, etc., however, it seems to me there are problems just as worthy of the attention of well trained foresters. There is the woodlot idea —a chance to establish a forest close to a city, town or village and to lay the principles of conservative forestry right at the threshold of every citizen. When we talk parks, we usually understand by this a display of elaborate buildings, ornamental cut stone and floral designs,—the ornamental but useless park. People overlook or don't think of having parks in their natural condition within city limits where they can find peace and restfulness.

Forests are the most beautiful ornaments of a landscape. A forest is the en masse of trees; remove the trees and you have nothing left, however, besides trees we have other inmates in the forest, such as grass, shrubs, flowers, ferns, animals, especially birds. Remove the trees and the rest of their natural building and you deprive the inmates of their homes. Strenuous efforts have been made to save wild birds from extermination, but the most radical remedy to accomplish that, is to restore and protect their secluded breeding places.

I was born and raised in Switzerland. My home, a small village of 600 families, has large municipal forests. Each family gets enough wood to last the whole year through, besides this the country is selling much wood annually and the taxes to be levied are small indeed. However, it must be understood that the city forests are not only to serve the financial purpose, on the contrary, they also serve the esthetical purpose, for the axe in the hands of a skillful forester with sense for the beautiful, is the same as the paint brush in the hands of an artist. Whether we establish and develop a formal or natural park, it will be a monument that will stand forth from generation to generation—a monument not carved out of a lifeless mass, but a monument of life that will continually add to its value of beauty if judicially managed.

A pleasure woodlot differs from a formal park both in object and method of treatment. The latter is characterized by its artistic elements, the former by its natural elements. In the forest or woodlot, Nature is to lead, yet if given the let alone policy, she will commit esthetic errors, and assistance with axe and spade have to follow her; in the formal, the art of the landscape architect must be positive.

The public often improperly criticises interference with Nature while on the other hand the park manager is assisting Nature too much. The mistake is often made that the conditions affecting trees in the woods are transferred to those on the lawn. A tree growing in the open differs widely from a tree of the same species growing in the forest. There the tree appeals to us by its individual form or symmetry for its individual development is not interfered with by its neighbors. But in the forest, where the trees are crowded, it is not the single tree we admire but the ensemble—the finest type.

The question now arises, in what shape or manner may a state have jurisdiction over woodlots and highway trees? In this connection I wish to refer to bulletin 125 of the Massachusetts Agricultural Experiment Station.

"In our country towns one of the most difficult questions arises from the cutting of woodlots having frontage on a public highway. Often it is desirable that a fringe of trees or at least a row of selected shade trees be preserved, while the lot owner, in too many cases, wishes to cut them and often does make a clean sweep to the roadway in defiance of the law. After the cutting is done, the only remedy is by prosecution or an action at law. If the warden knows what is going on, he can prohibit the cutting of any trees within the highway lines and should enforce his prohibition.

In either case his first step must be to determine the location of the highway line and this is the most difficult case. It is most important that every town in Massachusetts should have its public highways surveyed and their lines determined.

State highways form an exception to the jurisdiction of the tree warden as heretofore stated. The exclusive care and control of all trees, shrubs and growths within the limits of state highways, is given to the State Highway Commission, which has authority over all planting, trimming, cutting or removal on such highways. The provision in regard to defacement, in-

jury or disfigurement are to be enforced by the tree warden. However, should he fail to act in the case of a State Highway Commission within thirty days after the receipt of a complaint in writing from the Massachusetts Highway Commission, the commission may proceed through its own agents to enforce these provisions also."

Be it in the city or country it is useless to properly care for trees if they are not under municipal or governmental control, and in order to obtain the most impressive effect, the execution of highway planting must be in the hands of a special department created for that purpose, thus only the choice and proper species, the use of one variety on one street, the uniform and proper spacing and the protection and cultivation of the trees can be satisfactorily carried out.

My subject calls for rational care of street and shade trees. At first glance it would seem that I should give the different steps of operation in the care of street and shade trees. In view of the fact, however, that the members of the State Horticultural Society present here are engaged in tree culture I fear I could give you only such hints and suggestions as you already know. I therefore thought I would not make a direct address to you on the subject, but an indirect address through you to those not at this gathering, the citizens of the State of Wisconsin.

Mr. Senn: I think it would be a timely subject for this society to consider whether or not we should have a law concerning shade and street trees, and if this society feels that such a thing should be done, then I would recommend that the chairman appoint a committee which would frame a law within a year and when we meet again in a year from now, this law could be brought before this meeting and then turned over to the legislature which should be in session at the time. I move that the president appoint a committee to take the matter up and frame a law which would be suitable for the state of Wisconsin and submit it to us in a year from now.

Motion seconded and carried.

SEEDS AND SEED SELECTION.

DR. W. W. TRACY, BUREAU OF HORTICULTURE, U. S. DEPARTMENT OF AGRICULTURE.

The basic purpose of all cultivation of the soil is control of the character of the vegetative growth rather than a mere increase of its volume. At a cost of labor which it is hard for us to fully appreciate, our fathers cleared away the forests and broke up the prairies that the vitalizing energy of sun and soil might be directed to the production of the particular kinds of plants and in just the proportions they thought would be most useful. It is doubtful if there are more individual plants or those of better development growing within ten miles of Madison to-day than there were one hundred years ago, but there has been a gain and our orchards and fields make possible for us an incomparably broader, fuller—yes better life, than was possible for our parents on the prairies and amid the forests of the last century.

In the case of your orchards and vineyards you direct the productive energy of sun and soil to the growth, not only of fruit but to the particular variety of fruit, which you think would be most satisfactory. With perennial plants like those of the apple and strawberry, we secure uniformity as to the character of the crop by multiplying the vegetative parts of some plant of proven desirable character, and thus secure a large culture of what is in reality but a single plant which we distinguish by a varietal name that always stands for any vegetative part of that particular seedling, and so for a definite and unchanging varietal character. To accomplish this uniformity of product of a desired type we do not hesitate to expend a considerable amount of labor to multiply by grafting, by cutting, by runners and in other ways the vegetative parts of that desirable plant, and to set them by themselves in orchard or plantation. A ten acre orchard of healthy and productive apple trees, each bearing fruit of different form and color, though all good market quality, would not be very valuable. The fruit of a strawberry plantation which was a mixture of plants of one hundred or even

of twenty of the very best sorts, but of different size, shape, color and time of ripening would hardly be worth gathering.

It is true that the volume and character of the market product of such so-called different plants of the same sort may vary because of differing climatic and soil conditions. A Grimes Golden apple grown on your farm may be very different from one grown by your neighbor, or your strawberries ripen earlier and be sweeter than his, though his bed was set from yours, but such differences are most likely to be because of differing soils and cultural conditions. Were we to interchange conditons we would interchange the character of the fruit but you would not claim that such differences showed that varietal character of an apple tree or strawberry plant was of no importance.

In the case of grains and what are generally classed as farm crops which are propagated by seed, while there may be varietal differences which adapt sorts to different conditions of soil and climate or call for slightly different cultural methods in order to secure the best results, yet with possibly a few exceptions, such differences are not of such a character or so marked that a mixture of sorts in the same culture affects the cost of growing and harvesting or the value of the market product.

With garden vegetables, however, variations as to habit of growth, time of maturity, appearance and quality of market product, are much greater than in grains or even in many fruits and have a much greater affect upon the market values. In some cases different varieties of the same species require for their best development double the space, and do not reach edible maturity nearly as quickly as others and very generally a superior lot will bring double, triple or even five times the price of inferior offerings of the same varieties. Seed of the Champion of England and American Wonder peas are so near alike that even an expert cannot be certain as to which variety many individual peas in a mixed lot of seed really are, yet the two sorts differ so much in habit of growth and time of maturity that if mixed and planted together there will be practically a total loss of one or the other. As most vegetables are annuals at least as far as crop is concerned it is not generally practical to make plantations of vegetative parts of a single plant, the varietal character

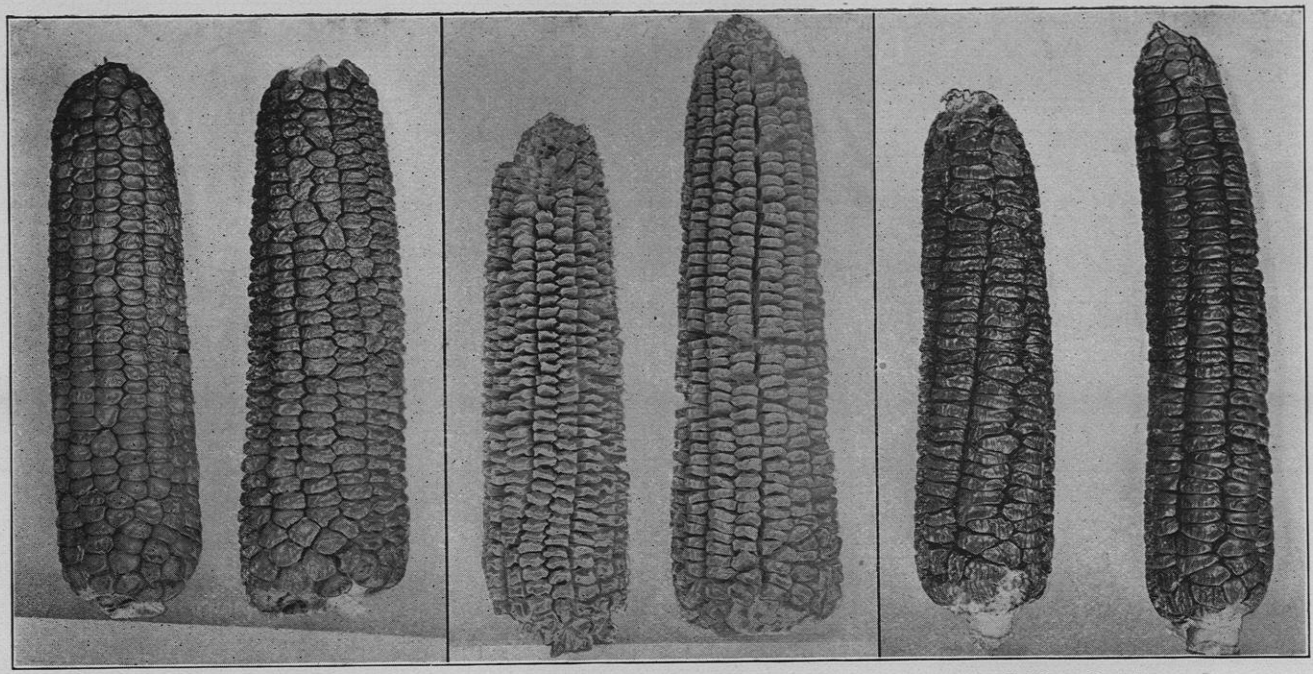
of whose market product under the same cultural conditions is unchangeable. Any crop of vegetables is the product of innumerable individuals, each distinct, and the problem of uniformity of product is not as in fruits one of multiplying vegetative parts of an individual of predetermined character but of multiplying individuals which shall be as like as possible in the character of their market product. In one case a varietal name stands for a certain immutable combination of the same varietal tendencies as developed in a single plant. In the other it stands for a mutable conception of a combination of different varietal tendencies as developed in innumerable plants; each the product of an individual seed which is simply a minute plant packed for transportation.

We will leave to wiser heads the discussion of the basic cause of plant variation; why no two plants or even no two leaves on the same plant are precisely alike, and will consider the fact as an element in our problem of how to secure seed which will develop into plants of any desired varietal character. First, the varietal character of every plant with all its limitations and potentialities of development was unalterably fixed in the seed from which it grew before that seed left the parent plant, carrying within itself a balanced sum of varient tendencies inherited in different relative strength from each of its ancestors of an unknown number of generations. We can predict the varietal character of the plant any seed will develop into only in proportion to the correctness of our knowledge of what their varient tendencies are and the shrewdness of our guess as to their relative strength. We have to depend upon a mere guess, for even the most perfect knowledge of the general working of Mendelia laws does not enable us to predict with certainty the exact proportionate strength of different inheritances and the resultant character of each seed, for every seed has an individual character and potentiality of development which may not be the same as other seeds from the same plant or even from the same fruit. I once had a very exceptionally fine plant of a certain variety of tomato; I rooted cuttings of this plant until I had enough for nearly an acre which was located where there was little probability of any of the flowers being fertilized from other flowers. Although the fruit product was comparatively small it was the most uniform lot

I ever saw, each fruit like every other. I saved a lot of seed, supposing it would be of exceptional value. I was disappointed, for cultures grown from this lot of seed showed much greater variation than those from ordinary stocks of seed of the variety. Why? Because my original plant was nearly perfect on account of a very fortunate combination of the proportionate influences inherited from each of many ancestors, while the seeds of that perfect plant though made up of the same inherited influences but in different proportionate strengths gave me varying results. Although by no means a perfect illustration, a suggestive one of the way the character of two plants made up of the same inherited tendencies but in different proportionate strength may vary, can be drawn from the digits—654 which in their relative positions always stand for six hundred and fifty-four—a number which cannot be expressed by the same digits in any other order or if we take away or add a single digit even if it be a one.

Variation in all plants is so often the result of conditions of soil and climate and so largely a matter of degree that it is easy for one to find instances where numbers seem to substantiate any claim of variation that may be made, but I will give an illustration from experience showing how the relative importance of the characteristics like the value of the digit does not lessen its importance in determining the value of the sum.

Some fifteen years ago there was developed a strain of a certain variety of watermelon in which an invisible but very desirable quality was correlated with one which was easily seen and shipments of this stock commanded extra prices because of quality. A block of about one-half acre was planted with this stock and about three-fourths of all of the fruits produced showed the peculiarity. Seed from the most perfect fruits of about forty of the plants in which this was best developed were saved separately and numbered in the order of the degree they showed the variations, although it was so well developed in all of these selected fruits that when the numbered melons were mixed those who had made the selection and given the numbers were unable to replace the fruits in the same order as before. The seed from each melon was saved separately and correspondingly numbered



No. 1. No. 2.
Crosby.
No. 1. As originally sent out by Josiah Crosby.
No. 2. As grown in 1911.

Stowell's Evergreen.
Ideal selections made by two brothers.

Golden Bantam.
Two ears as grown by two seed growers living within five miles of each other, Dec. 27, 1911.

and about one-fourth of each lot of seed was planted and labeled with the number given the fruit. The general uniformity of the crop of melons was noticeable, and most of the lots showed more or less of the desired peculiarity but in only three of the lots, those numbered 3, 7 and 11, was it well developed in *every* fruit. All the other lots contained more or less fruits in which it was absent or imperfectly developed; and strange to say the lots from the fruits which had been marked number one and number five in order of merit in our previous year's selection contained the greatest number of fruits in which the desired quality was lacking.

The next season the balance of the seed from the fruit which had been marked number 11, was planted where there was little liability of the blossoms being crossed from other melons and a critical selection made of the fruits which not only had this peculiarity well developed, but which were as uniform as possible as to other desirable qualities, and their seed product saved for stock. The next year this seed was used to plant a 40-acre field, and when this was in full fruit, a bright, observant young man and I spent over two hours hunting in vain through it for a single fruit in which the peculiarity upon which our original selection was largely based was not well developed. It is but fair to say, however, that when the time came to gather and seed the fruit, twenty of them were rejected because they did not show this variation. Further experience with this stock shows the necessity of continued selection. Some nine years later I visited three large fields which were planted with seed which was only the fifth generation from that nearly perfect stock, and in not more than half of the fruits was the desired variation noticeable. The growers had thought that the seed from the original field was so perfect that it needed no attention and it had gone the way of all neglected things.

The characteristic upon the more or less perfect development of which the selection was made was of itself of absolutely no value, but it was very generally correlated with invisible qualities of the greatest value. Very often one has to rely upon such correlations in making his selections. This calls for fullest acquaintance with varietal differences and their correlations. Thus the shape of the leaves of a strap-

leaved turnip or the shade of color in squash which might or might not be of importance of themselves may through correlation be the visible indication of invisible qualities which do most materially affect value. In the case of the watermelon referred to, the visible character was a peculiar yellow color where the melon rested on the ground. I learned of its importance from an old darkey living in the region where the variety originated, who told me that if I wanted a real sweet melon I must get a "Yellow belly" and the variety was generally known where it originated as the "Yellow belly." Yellow skin, however, does not always stand for quality. In some other sorts a white skin indicates the best stock. In a sort which at one time was a very popular shipping melon, the peculiar character of the blossom end depression was an indication of shipping quality, and its loss of the sort in favor as a shipper has kept pace with the disappearance of this character in the stocks offered by seedsmen. The value of varietal description is largely based on such sort of correlation of qualities,—a correlation which is rarely in accordance with any known general law and can only be learned by careful study of visible varietal differences and what they indicate. We think there is no branch of horticulture which offers such an open, and as yet, comparatively unworked field for profitable study as this. And it is an unworked field. I recently spent several days among growers of seed sweet corn in Connecticut and it was astonishing to see the want of uniformity as to the conception of what was the most desirable form for even our oldest and most widely grown varieties. I have here some sample ears of sweet corn which illustrate this.

Photograph 1. Two ears of Stowell's Evergreen as selected by two brothers of the same seed growing firm without consultation as to their ideals of the sort.

Photograph 2. 1. An ear of Crosby Corn as near as possible like one selected in 1887 by Josiah Crosby the originator, as representing his ideal of the variety. 2. An ear selected in 1911 by one of the best growers as the present ideal of the sort.

Photograph 3. Two ears of Bantam as selected for stock seed by two of our best growers living within five miles of each other.

The fact that such differences in the character of the seed corn do not of themselves affect the value of the market product does not lessen their importance, for one at all familiar with vegetative forms will recognize the possibility that they are correlated with invisible characteristics which do not materially affect market value. Nor are such differences in varietal forms of stocks offered under the same name peculiar to sweet corn, they are to be found in nearly all stocks of our common garden vegetables. With such differences as to the ideals of the sort existing among the seed growers who supply our dealers with stocks of the same variety, which are liable to say the least to be mixed together before they are offered to the public—is it surprising that the planter should find that his crops are so lacking in uniformity of varietal character as to increase the cost of growing and marketing and lessen profit?

Let us turn now from this general discussion of present conditions to that of how we may grow better strains of seed than those in general use. First, I want to refer to a condition not very generally recognized, and still less understood, and that is the adjustment of plants to local conditions, which adjustment in some genera at least is carried in the seed. The Office of Horticultural Investigations of the Department of Agriculture have carried on some experiments which make this seem evident. Starting with a certain strain of two varieties of Sweet Corn—there were grown for five generations in different locations, each year the seed grown in all locations was selected to a common type and the local grown seed planted in comparison with seed of the same original stock and varietal selection grown elsewhere, and in nearly every case in what was practically thirty different tests, the local grown seed gave larger and better yields. Trials made by others gave similar results with plants of certain genera. In our experience, however, plants of other genera, notably the Curcurbitaceae do not transmit such local adjustment through the seed. Enough has been proven, however, to show the general superiority of seed grown under the same environment as that of the crop desired. How then can we secure seed of the most uniform possible varietal character and which is adapted to our own conditions?

The first step in the securing of such a stock is to form a very clear and definite conception of the exact varietal form we desire. I think is is essential that this be written out and be frequently referred to in order to avoid the indefiniteness and change in the type selected, which I think is the cause of much of the variability now so common. It is a practical impossibility to write out a description which will enable the reader to recognize with certainty the exact type of plant the writer had in mind, but I also know by experience that the attempt to write such a description will always sharpen the writer's conception of the exact form he is after and be of great assistance to him in holding to that exact model from year to year, as it is essential that he should do in order to establish a strain of seed which will be of the exact character desired.

The second step is to select a score or more plants each of which come as near the exact ideal of the sort as possible, avoiding the temptation to include even superlative plants that differ in any way from the ideal of the variety. We should save the seed of each plant separately even where two or more of them are so near alike as to be indistinguishable.

The third step is to make growing tests of samples of each of these lots of seed, planting a liberal quantity of each under uniform conditions of soil and culture. As the plants develop they should be carefully studied and the lot in which each and every plant is the most like our ideal of the sort should be selected, resisting the temptation to take a lot which may contain superlative plants of the sort but also some which are inferior or which, though superior, are of a different varietal type from that aimed at.

In order to guard against the possibility of a hidden variant in our select plant and the many mishaps to which the seed grown is always liable, it is well to select one or more plants, as substitutes for our first selection. It is rarely worth while to save any seed of this trial planting, even that of our selected plants, at least not as a basis for stock seed.

The fourth step is to plant the reserved seed of the plant, which our trial has proved to be the best, and also when practical, some of the substitute plants where they will not be liable to cross-fertilization from other plants of the species. If

our first selection was as good as our trial indicated and we have in it a plant of the exact type desired, which did not carry a hidden tendency to variation inherited from some earlier generation, the battle is won, for all we need to do is to multiply the descendants of this pure plant without them being contaminated through pollen from some plant of a different varietal character.

Human control of conditions is imperfect. Man must still eat his bread in the sweat of his face and it is quite possible that, in spite of our failure to discover it in our trial, our foundation plant did carry a hidden variant which may crop out in some future generation so as to spoil our uniformity, in which case all we can do is to try one of the substitutes, or commence over again. Again it is generally impossible to avoid more or less crossing in succeeding generations so that sooner or later, we are likely to lose any pure strain we may have obtained, but in the case of most vegetables, we can secure several crops before this occurs and, in the meantime, we should have built up as good or a better strain to take its place.

I do not want it to be inferred from what I have said that I am in any way antagonistic to seedsmen for I am not, and believe that they are quite as well informed as to the real wants of their customers and fully as desirous of supplying just what they want and are as willing to pay for as any class of merchants, but they do and will continue to get their stocks where those which will best satisfy their customers as to quality and price can be secured at least cost, and will strive to furnish better and more uniform stocks as fast as their customers demand and are willing to pay for them. What I have tried to show is the importance of the use of seed of more uniformity as to varietal character than that which most growers are now satisfied with; that the great need and hope of betterment is not in wonderful "Burbankian creations" of fabulous productions and of hitherto unknown superlative quality, but in truer and better stocks of the sorts we now have.

DISCUSSION.

Mr. Toole: I suppose that each one of us who has listened to this valuable paper has been impressed with the importance of some particular point that has been brought out. I am im-

pressed with the importance of recognizing the value of the possibilities of the seeds of some particular plants. A few years ago I read before this society a paper on individual prepotency in plant breeding and each year in our pansy seed growing, I am more fully impressed with the value of that idea and if we are trying to improve one of the newer varieties we prepare them, several seeds from each plant separately that we are selecting from, if we have several that may be up to our standard, knowing that the result will be that some one plant for some reason that we do not know will have a larger proportion of what we aim for than will the progenitor of some other plant. My son has carried on experiments in corn breeding and that same result has been found, that for some reason that we do not know there are some plants that will give better results than others, that the progeny is more apt to be like the parent than are the results from some other plants, so it is of great value to you to carry out that when you are trying to improve any variety, or to keep up the standard of any variety. Because, if you save the seed of each plant separately and experiment with them, if you have found something that has a tendency to prepotency, you can take it up. If you save for a number of the best, and then try to get your best, your best plants are simply diluted with the others.

Mr. Tracy: May I speak of another illustration? When I was living in Grand Traverse county, I spent a half day writing out an examination of just what smut nose corn should be, that was the sort we had to grow. Then, after spending a half day, I went into a seven acre field close by and spent the whole afternoon trying to find ten plants which came up to my ideal, ten plants in which the stalk and leaf and the proportion of leaf to the stalk and the height of the stalk and the character of the ear were just right. Well, I had to quit, after spending the whole afternoon in that way I did not succeed in finding the ten plants that I desired that came up to my ideal, that scored as high as I thought they ought to. I could not find ten, I only had seven. I saved each of those plants separately and planted them by themselves and continued them for seven years, while I was at that place. The seventh year I exhibited at the State Horticultural Society, I took the same field and I tied sixteen stalks one to another and took it to the

County Fair, every stalk of those sixteen growing in consecutive order was as near to my ideal as the seven plants I had tried to pick out of that whole seven acres seven years before. I had secured that uniformity by simply that process, and I could give scores of such instances. I tell you, gentlemen, just as has been spoken of, there is a wonderful prepotency in certain plants to breed true and those are the ones which should be worked for and stuck to.

IMPROVE THE SMALL LOT.

WM. G. MCLEAN, PARK SUPT. MADISON.

This short paper is not prepared as a guide for horticulturists setting forth what or how to plant, but rather that it might encourage more of our small holders to improve their surroundings. Burbank says, "Environment is the architect of heredity." It is time we should appreciate this, and consider it a privilege to improve our environment.

The most neglected spots in every city are to be found on the small lots, and when we stop to consider what a small amount of work would do, and then begin to multiply the benefits, we naturally ask ourselves, why is this?

It often happens that professional people, of exceptional ability, fail to reach their desired goal, simply because they advocate methods, too advanced for understanding and appreciation of the masses.

This holds as true with the art of gardening as with other vocations and I find that in general, people don't want too much preaching. What is the use of going into exhaustive details, when usually a simple primary lesson of practical application, will be better understood and really must precede that which is of a higher grade. Every person who improves their grounds, by planting a shrub, tree or flower, is a public benefactor.

But why does the work of garden making languish? Is it because we do not fully realize the many benefits to be derived therefrom, or is it possible that we have been frightened out by some article, written at length, about planting effects,

where the writer speaks of the many detail considerations, with complex environments, etc., until we are confused as to the real purpose?

I do not want to belittle the artist, because he is the man to do the large things, and we all know, that to be a real landscape architect, requires ability, character and many years of preparation, but give unto Caesar, that which is Caesar's, and I am sure that it is not absolutely necessary to call on the services of an expert, to plant or maintain the average small lot, where the building usually occupies two-thirds of the grounds.

I am anxious to encourage this work by proving how simple it is, rather than by how complex. For example, the Chinese whom we consider as being uneducated, is nevertheless a good gardener, and then again there is the pleasure of learning and improving by experience. Many of our successful farmers have gained their experience right in the field, inside their own fence. A certain good gardener, in Chicago, who happens to be a good friend of mine once consented to teach a young lady the principles of cultivating plants. This lady was very anxious to learn—she had been studying at the University of Chicago—but she came to the conclusion that it would be a great help to receive some instructions from a man who actually made a living by raising plants. This lady was preparing to take care of a large country estate, and to this end she wished to qualify. Lessons were given twice a week, and included nearly everything, from preparing the soil and sowing the seed, to potting, transplanting, cultivating and pruning, but when spring arrived and he requested this young lady to come out into the garden and actually prepare a seedbed, he found that all of his lessons had been of little avail, in so far as their practical application was concerned,—so he began all over again—something like this; "This is a spade, it is a tool used to cultivate the ground, you grasp it by the handle with both hands—so fashion—set the blade upon the ground and with one foot you drive it in. Then by drawing the handle towards you, the soil is pried loose and it is easily turned over," etc., etc. All this simply proves how essential the practical lessons are. There are a few general rules to be observed, but it is safe to say, that nearly all are familiar with these, such as good soil, plenty of sunlight and

good cultivation. I might say that cultivation is neglected more than anything else and I would like to suggest that this work be done by the children, under the supervision of the parents. The children would be greatly benefited.

The next question is what to plant. There is no room upon the small lot for trees,—their place is out on the street,—because while half a dozen trees may grow well enough in your back yard while they are small, as they grow up it becomes necessary to trim off the side limbs, with the final result, that you have the effect of a yard full of crooked telephone poles.

Just plant a few native shrubs, up near the foundation of the house, and possibly a clump in the corner of your lot, or to hide some objectional view. Keep the lawn open as much as possible, that is, don't dot it all over with plants. If you would add flower beds, place them up against the shrub planting and see what a fine background the shrubs will make. These plants need not be expensive—what could be nicer than a few dogwood, elderberry or bittersweet, which abound in the woods in this locality? All that is needed is the willingness to do a little work. Do not plant for the sole purpose of hiding some old ash pile, but rather clear away the ash heap and plant a few grape vines in its place or any other worthy plant.

Possibly I should have mentioned the lawn first, because that which is most pleasing and refreshing about the home, is of most value, and this must be credited to a good lawn, well maintained. The following is a simple method of improving the lawn, that may be applied at any time of the year, when the ground is dry,—known as top dressing. This is a method that has been used successfully in Holland, for many years. From the bottom of the many ditches that convey the water to the pumps in Holland, they rake out the marl, which accumulates at the bottom, and allow this to lie upon the banks over winter. The following spring, this marl is of a better consistency to handle, and is then spread upon the lawn, about one inch in depth. Upon meadows, where cows are permitted to graze, for ten months of the year, this treatment is repeated every three years, and in this way good pastures are maintained for forty years or more, without re-seeding. I believe that most of our pastures run out in six or eight years.

It is a well known fact, that the frosts of winter lift the stools of grass each year, thereby weakening it by exposure. So this top dressing, not only benefits as a fertilizer, but by filling the concaves from one stool to another, it acts as a mulch, encouraging the grass to stool out stronger. If the lawn becomes weak or weedy, it needs a treatment of this kind. It is far better to choke out the weeds by a vigorous growth of grass and clover than to dig them out with a knife. You will find that just as soon as the lawn becomes weak, the weeds will get a start. We often see stable manure spread upon the lawn in winter as a means of feeding the lawn, but this is of little or no benefit because the spring rains wash the juices into the sewer, before the ground underneath has had a chance to thaw. It reminds me of giving a man a drink of whiskey when he doesn't need it.

A good top dressing for this purpose can be made by a body of prepared soil, composed of nine parts of top soil thoroughly mixed with one part of well rotted stable manure. This mixture spread over the lawn, and rubbed in with the back of a rake, will also produce a smoother surface than can be obtained in any other way. If your lawn is weedy, it will be well to sow a liberal sprinkle of white clover, before applying the top dressing. This will help to choke out the objectionable weeds, as well as to make a good foundation for the hard usage a lawn often receives.

The small lot with its usual up corners, is not an ideal place for the cultivation of vegetables and yet there are some varieties, such as lettuce, radish and green onions, that do well enough, but the larger varieties, such as tomatoes, cucumbers, melons, corn, cabbage and cauliflower, will need a more free and airy situation. I have mentioned vegetables, in connection with the small lot, because of the great returns realized, for the small amount of labor, properly applied,—and yet it is only good business principle, to recommend a cleaning-up first, in order to provide a fit place for the cultivation of any plant. It is well to remember that all vegetables do best when planted out in the open, free from the one-sided conditions of light and air, which are so harmful near buildings and fences. For this reason we shall endeavor to utilize all the vacant lots in the city for the purpose of raising vegetables. There are certain sections or districts in

every large city, where plant life will not exist, because of unhealthy conditions, such as too much gas, smoke and sour soil, but I hold this criterion, that where plant life will not exist, we should not establish a permanent home, nor attempt to raise our children under such adverse conditions.

It is not necessary to draw a hair line by saying that a certain plant must be planted here, or there. We all possess some individuality, and right here, in the planting effects, as well as in the architectural design of our house, is a chance for its expression. My hope lies in the child, and by improving the front and back of our lot, the child is benefited most.

To create higher real estate values, to relieve congestion, to improve sanitary conditions, and to teach the child some of the possibilities of nature, are a few of the benefits made possible by planting a very few shrubs or flowers and then directing the child in their maintenance.

PLANT DISEASE AND SANITATION.

PROF. L. R. JONES.

You ask me to tell you some of our conclusions as to what ought to be done to better control plant diseases. Not much can be said in the (15) minutes alloted me.

It must suffice therefore for me to emphasize the one most important thing. You probably expect me to say "more thorough spraying," but I am not going to do so. I do not minimize its importance, but you already understand this part better than the one I would emphasize which is "more attention to plant sanitation." You all know what is meant by sanitation in connection with human disease, it consists in keeping our bodies and our home surroundings clean and pure that they may be free from disease germs.

We are learning that it is easier and cheaper and more comfortable thus to keep our bodies healthy than it is to cure them after the disease germs have found lodgement, and we are gladly paying each year more for disinfectants and sanitation and less for internal medicines.

The same principles hold in the control of plant diseases. Our aim should be not to learn how to treat sick plants but

how to keep them healthy—how to keep disease germs away. When the germs or spores are abundant on some of the plants in the field or garden we must spray so as to keep them from passing from these to the healthy plants. This is right so far as it goes. But in too many cases we pay no attention to trying to keep the disease germs out of the field in the first place or to destroying the sick plants, which continue to harbor the disease and to breed the germs for further infection.

Were there time I would emphasize the importance of this in the control of some of the diseases for which we are commonly relying upon spraying alone, such as apple scab, brown rot of plums, potato blights, etc. Even for these the rule should be sanitation first, spraying second. But it is more important for me now to emphasize the fact that there are some other common diseases which cannot be controlled by spraying.

As examples I may cite crown gall and hairy root of fruit trees, recently shown to be a contagious bacterial disease; the wilt disease of cucumbers another bacterial disease; and certain parasitic diseases of pea, bean and cabbage, which are threatening to check the profitable culture of these important truck crops. Time will not permit us to discuss all of them in detail. I will therefore take the cabbage diseases as illustrative of the principles governing all. The cabbage thrives remarkably well on certain types of strong soils in Wisconsin especially when they are heavily manured. As a result it has proved a most remarkable crop. The growers, making more money out of that than from other crops, like to grow cabbage repeatedly on the same soil.

Unfortunately the cabbage is liable to four serious diseases; black rot, yellows, black-leg, and club root. None of these diseases are native in Wisconsin soil. Everyone of them are capable of persisting from year to year in the soil when introduced.

What has happened? All have appeared in Wisconsin cabbage fields in one or another place. The black rot has been widely scattered probably because it is carried on the seed. The yellows are becoming so prevalent in portions of the Racine—Kenosha district that cabbage can no longer be cultivated profitably, the other two diseases have been introduced in one or two places but are as yet local in their distribution.

None of these diseases can be controlled by spraying. The moral is or should be clear to every prospective cabbage grower who desires to develop this as a market crop. Cabbage seed should be disinfected by soaking it for 20 minutes in a solution of one ounce of formalin in eight quarts of water (1 to 250).

The crop should be rotated and if any diseased plants are seen, they should be removed and destroyed. If possible to turn sheep into the cabbage field in the autumn to eat up the refuse it is highly desirable. In other words strict attention should be given to sanitation; clean seed, clean soil with efforts to keep it clean, these are the things to be emphasized. Much the same points could be made with reference to the pea blight. The germs of the diseases, which are threatening the Wisconsin crop are perpetuated in the soil and carried over on seed and straw. Continuous culture on the same soil with inattention to source of seed are sure to bring trouble.

But instead of attempting further details I will, in closing, emphasize once more that for all of these communicable diseases of plants as of animals we should remember that sanitation is the thing of first and fundamental importance.

The President: We will have to continue the program and we will call on Miss Harper who has something to present to the convention.

Miss Blanche Harper: I have been a member of the Horticultural Society for several years. I am not interested in fruit at all and I have met a great many people who would join the Society, or have been members and then dropped out, because so little attention is paid to other topics. Commercial fruit and commercial fruit growing seem to monopolize most all the publications and almost monopolize the conventions entirely and leave those who are looking for help along the lines in which they are interested here in Wisconsin without aid. As I understand it, the Horticultural Society is founded for the benefit of the citizens of the state as a whole and not for the fruit growers alone, but yet there has very little been done for any of the other branches. The recent gradual changes which have come about in the conditions of

living in the past few years, the constant rise in prices, the cost and difficulty of getting what one needs, makes me feel that the society owes a duty to the citizens of the state, the poor man, the man who has only a little bit of ground, to come forward and show him how to use that ground, how to have a back yard and garden and make the most of it. I live in the suburbs, just outside the city, and all around me are working people, the men are teamsters or carpenters and they all have families, they are hardworking, plain people. Every one of those families has a garden and some of them get their entire vegetable supply for the year from that garden and some of them get only part of it. It is done largely by women. The men are gone a good part of the day, but they spade up the gardens in the spring and then they leave it for the women to finish. It is done pleasantly, it is done as if it were more of a recreation than a drudgery and yet it makes a very perceptible difference in their expenses. I have estimated from the gardens around me that they must save from two to three dollars a week, every one of those families, and some as much as five. I have a garden myself which is 60 by 60 feet and out of it I get all that I use the year around, except potatoes. I have enough to give away to my neighbors and in fact more than I need, and it has been my experience that has shown me the value in the domestic economy of the household of the back yard garden. Of course it is always easy for the society to go along the line of least resistance, fruit growing has a large following, the men are interested and this other work is going to be difficult to take up, because you have to interest a lot of people that are by education rather apathetic, they do not want to get out of their beaten track, they do not know which way to turn, but there is all the more need to help them. I did not think until very recently that I would say anything about this, or make any effort to stir up an interest in it, but when I did I went to one or two people who I thought would be interested in the matter and in fact saw the governor. I sent him a little protest that Mr. Cranefield published in the last number of the HORTICULTURIST, and I asked him what he thought of the idea, and in reply I had this letter: (Reads)

I do not ask that the society shall start out on a violent crusade in this matter. They would have to feel their way slowly and they could do it by publishing circulars, because the class of people that we are seeking to help are not going to read a government bulletin. I have tried loaning some of those people government bulletins and they do not read them. The only way you will get them to read anything is to give them something that is very short, very terse, not burdened with any kind of argument or scientific explanation. Give them absolute and somewhat dogmatic directions as to how to make a garden, have a series of circulars telling how to make a small garden only with as few square feet as possible, and then if they want something more, give them something for a little larger one. They will read anything less than four pages, and the solution then is to make the bulletins four pages. As to the distribution of these, it seems to me that if we were to send out through the factories, through the public libraries, even through the women's societies in churches, or through the Salvation Army, we might reach the people who need help in that way. You cannot mail those circulars to them and you cannot expect them to apply for them, but I think there is room there for an immense amount of work to be done if the society will only undertake it and then for the people who are better off, the people who have means and education and do read, there is very little done in the publications of the society to help them in flower gardening or vegetable gardening. I met several people in Milwaukee whom I asked to become members of this society and one man, a prominent banker said, "Why, I do not want to join that, I am interested in my back yard garden."

He has eighteen feet square and he spends his entire summer working there. I have asked other people the same thing, several members who dropped out recently, I said to them, "Why did you drop out?" "Well," they said, "They do not give us anything we want, it is all fruit. I am interested in gardening." The person who spoke has just built a big country place at Neshota, she was interested in landscape gardening and vegetable gardening, but she felt she got nothing, so she dropped out. I do not blame the fruit members and I do not blame the management, because they have

gone where the demand seemed the greatest, but now if there is a demand and a particular need in other directions, it does seem to me as if the funds given by the state for the development of horticulture in the state ought to be devoted to something that will be of assistance to everybody.

The President: You have heard this very ably presented protest, is there anything to be said on the subject?

Mr. Toole: I think we are all in accord with the spirit and intent and very clearly defined desire and plans for the betterment of a certain class and I am sure that we are all willing to boost them if they are willing to climb, but I do think we have no really definite idea as to how we can reach them. There is this one thing of preparing a bulletin for them, but it is in a line that most of us have not given very much thought to, and the best way will be to get somebody out to look over the field, get knowledge from the best of them and then fire it back to them. It comes to us as something of a duty in the way of missionary work, like so many other things. We find at this session that there are many other interests, even the greenhouse men and the commercial florist are thinking of forming an auxiliary society, realizing that this society has a great deal to do and it is possible an auxiliary society might take up the particular lines of interest. Our executive committee has to have the work plotted out and different ones assigned to the care of different interests. But there is this he must bear in mind, if any one will take hold of say half a dozen volumes of the reports of this society, it will be found that this society has done a great deal in the line presented, floriculture, lawns, parks, playgrounds, we really have done something besides giving attention to fruit culture. I feel myself like standing up somewhat in defense of the society, I think it is hardly fair to say that the fruit interests have overshadowed everything else. At the same time we all need to watch closely and see that all interests are represented.

Mr. Ovenden: I belong to a branch of horticulture that is not very well represented in this society and I have been a member of this society for about fourteen years. I am interested in all branches of horticulture as well and hope some day to become a horticulturist myself, but the society has done a wonderful lot in this state along the fruit line, apparently to

outsiders it appears to be a fruit and nurserymen's association. If I go out as a florist among florists and ask them why they do not belong to the State Horticultural Society, they say, "What good does it do us, we cannot get anything from it?" The same among greenhouses and vegetable growers. It seems to me the time has come now when the society ought to branch out and take up some of these other branches. The best way to do that would be to encourage them to organize societies of their own under the head of this society and if this society could have meetings and give each of these branches a special session and then at the end probably give them a session for amateur horticulturists it would be one step in the right direction. That thought has come to me this afternoon, I do not know whether it would be practical or not.

The Secretary: I would not say anything at all, except that I wish to approve most heartily everything Miss Harper has said. I am absolutely certain that she is right in all particulars and that there is no better and bigger work that we could undertake than to push this matter of home gardening if we could see our way clear to do it, and I have no doubt in the near future we may be able to take up some work of that kind. But lest the opinion should be accepted that this society gives attention only to apples and fruit growing I want to state that by just a hasty glance over our reports and proceedings and our magazine, I find that since the magazine was started in September, 1910, that thirty per cent of space has been devoted to other topics than fruit growing, that is very nearly one-third and I think the esthetic side of horticulture has the best end of it. I found forty-six per cent of the programs of the summer meetings have been devoted to other topics than those concerning commercial fruit growing, and almost wholly to the home, and I am well convinced that a careful scrutiny of our reports and proceedings would show even a higher percentage than that. I speak in this way because I have had the duty of making up the program and the society has left it largely to me for the past seven years, but I will say this, you can have anything you ask for if you will ask often enough and loud enough. I want you to keep that strictly in mind, it is the members of the society that control the society and it positively is not the secretary. I can go one step farther than that, although it is going a little bit outside of the subject,

that if anything has been accomplished by the society, it is due to the united attitude and the loyalty of the membership body. If you want this thing, you most certainly can have it. We will be immensely glad to get a larger increased membership in Milwaukee county and city, although we have the largest membership in the state today from Milwaukee county and constantly increasing. We have ten members from the city of Milwaukee where we had one five years ago, but we want a thousand more from the city. There is this danger, while I agree perfectly with all that has been said, that the State Horticultural Society, within its limited appropriation of eight thousand dollars, will spread itself out too thin so that you can stick a pin through anywhere. Is it not better to strike hard in one or two places and if we are going to strike hard, shall we not strike hard along those points that give the greatest returns to the people of the state? I can point to you where hundreds of thousands of dollars, approaching the millions, have been invested and the industries of the state have been developed, thousands of dollars for every dollar that has been spent. It is true it has been in orchard fruit growing, we are striking hard along that line, the time is ripe now. We are having a greater development in fruit growing than in any other line. Shall we not unite our forces and energies along that particular line to make, as we wish and we hope, Wisconsin the leading fruit growing state in the Union as it is the leading dairy state? Then when we get a little time, we will do all these other things. We will take up the matter of gardens as we are taking up the school grounds. Keep in mind, one of the leading lines of our work is the improvement of 7,500 rural school grounds. While we have only six of them started, mark you, we are going to do that thing, we are going to make the grounds of the rural schools in Wisconsin better than those of any other state in the United States. In the meantime, let us strike hard in one or two spots.

Miss Harper: May I suggest that the horticultural magazine published by the society should be divided in such a way that certain pages and a certain amount of space should be given every month to certain departments of horticulture? Or give a certain number every year, say, spring number for vegetable gardens; others to flower gardening and others to

truck gardening; others to greenhouses, then give the balance if you want to, to fruit.

THE COST OF PRODUCING SMALL FRUITS.

A THESIS SUBMITTED FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE.

(University of Wisconsin, 1911.)

BY ROBERT LEWIS POST.

OBJECT AND SCOPE

The purpose of this thesis is to determine the cost of producing certain small fruits. The fruits considered are the strawberry, red and black raspberries, the gooseberry, and grape. The plantation producing the fruit from which the estimates herein presented are taken is situated about three miles west of the market of the city of Madison, Wisconsin. It supplies a retail market, consequently, the culture is more intensive and the acreage more limited than that of similar plantations which supply a wholesale market. This fact, together with the high price of the land, serves to make the cost of production comparatively high.

METHODS OF CONDUCTING WORK

Most of the data relative to labor are based upon estimates made by persons intimately acquainted with the work. For such operations as uncovering strawberries or cultivating, where the work is not seriously interrupted, estimates were made for each piece of work and reduced to terms of each individual area in order to facilitate tabulation. For other operations, such as hoeing and pruning, in which the work is frequently interrupted, observations were made for one row, or a similarly limited portion, and this reduced to terms of each individual area. Wherever possible several estimates or observations were made, representing the probable average of a series of years or a variety of conditions. The cost is assumed to be 20 cents per hour for man labor, and 10 cents per hour for horse labor. Where the work was done by boys, allowance was made for the lower wages and the longer time required for doing the work.

In securing the data for returns from the various plantations access was had to records of production and price covering a series of seven or eight years, beginning with 1903.

The picking is done by boys and girls ranging from ten to eighteen years of age, most of whom are so situated that they do not take a direct interest in the work. For this reason at least one and often two persons are required to supervise the picking and care for the fruit. The fruit, if gathered in the forenoon, is hauled directly to market, that picked in the afternoon being held over night and placed on the market the next morning. The marketing requires the time of a man and a horse for the larger part of the day. The expense of the man in charge of the picking, and the time required to market the fruit is divided proportionately among the various crops in such a manner as to be approximately correct when reduced to terms of acres. For the raspberries, currants and gooseberries the time appears to be rather short, but this apparent discrepancy is due to the fact that these fruits are often handled in one operation. If some of the estimates appear high we must remember that many items, such as depreciation of buildings, wagons, and picking utensils, are not included.

The various fruits are grown in relatively small plots which are frequently rotated. Most of these plots are less than an acre in extent, but in the final estimate all the figures are reduced to the acre basis. The dimensions of the individual plots were secured either by measuring or by counting the number of rows and determining the distance by multiplying by the distance between the rows.

DEFINITION OF TERMS

In the discussion which follows, certain terms have been employed which require definition.

The term "picking" includes not only the work of the pickers, but also that of the overseer.

"Marketing" includes, besides the hauling of the fruit to market, the cost and making of the boxes.

THE STRAWBERRY

Since the strawberry is the most popular and the most extensively grown of the small fruits it probably deserves the major

consideration. The methods of culture and the length of rotation are comparatively uniform, consequently fairly accurate estimates are possible. The plots are kept in bearing either three or four years. In order to strike an average it is assumed that four calendar years of work, including the year of planting, will produce three crops.

In planting, the rows are set four feet apart, the ability of the particular variety to produce runners. Several varieties are included in the plantings, the most important being Senator Dunlap, Bederwood, Aroma, Brandywine, Jessie, and Pocomoke.

The returns are computed from records of production and price covering the period from 1903 to 1910 inclusive, all the fruit being placed upon the Madison market as previously described.

Four newly set plots and six bearing plots are used in determining the cost of planting and caring for the crops. These plots range from one-eighth to one-half acre in extent. *Table I shows the cost of caring for the newly set plots, while Table II gives the figures for the six bearing patches.

Summary of Table I. New plots	
Cost per acre—labor	$71.94
Cost hauling mulching	19.20
Interest and taxes	16.00
Total cost per acre	$107.14

Summary of Table II. Bearing plots	
Cost per acre—labor	$53.60
Picking overseer	14.00
Pickers	50.00
Marketing—man and horse	18.00
Boxes and making	14.66
Hauling mulching	19.20
Interest and taxes	16.00
Total cost per acre	$185.46

From the above figures it will be seen that the cost of producing a quart of strawberries under the above conditions is approximately 5.5 cents, which at the average price of 9 cents per quart yields a net profit of 3.5 cents per quart.

THE RASPBERRIES

With the raspberries accurate estimates are more difficult to make than with strawberries. The number of years of bearing

* Tables giving details omitted and only summary given in each case—ED.

and the time required to bring them into full bearing are both somewhat variable. The average period of bearing is assumed to be eight years for the blacks and seven for the reds. The blacks usually require but one year, that of planting, to come into bearing, while the reds require at least two years. About one acre of black and one-fourth to one-third acre of red raspberries are ordinarily maintained in bearing on the place under consideration.

The raspberries are planted about three feet apart in rows ranging from five to seven feet apart. Among the varieties of blacks are the Cumberland, Nemaha, Ohio and Kansas. The most important red varieties are the Cuthbert, Marlboro and Miller.

As for strawberries the returns are computed from records of production and price covering the period 1903-1910 inclusive, all the fruit being disposed of on the Madison market.

One newly set plot and four bearing plots are used in determining the cost of producing black raspberries. For the red raspberries one newly planted plot and one bearing plot are used. These plots range from one-tenth to two-thirds of an acre in area. Table IV shows the cost of caring for the new plot of black raspberries. Table VII shows the cost of caring for the new plot of red raspberries the first year, and table VIII the second year. Table V gives data for the bearing plots of black raspberries, and table IX for the bearing plot of red raspberries. Tables VI and X are brief statements of the cost and returns of the black and red raspberries respectively.

Summary of Table IV. New plot of black raspberries.

Cost of labor per acre	$47.34
Interest and taxes	16.00
Total cost per acre	$63.34

For the bearing plots the items making up this expenditure rank approximately as follows:—

Picking	30	per cent
Marketing	16	"
Pruning and training	16	"
Interest and taxes	11	"
Pruning	10	"
Miscellaneous	17	"

TABLE VI

Cost:	
1st year—not bearing	$63.34
8 years—bearing	1,116.56
Total	$1,179.90
Average cost per acre	131.10
Returns:	
8 crops—2000 qts. at 12 cents per quart	$1,920.00
Av. yearly return (9 yrs.)	213.33
Annual net return	82.23

From the above figures we find that the cost of producing a quart of black raspberries is approximately 7.4 cents which, at the average price of 12 cents per quart, yields a net profit of 4.6 cents per quart.

Summary of Table VII. New plot of red raspberries 1st year.

Cost of labor per acre	$44.93
Interest and taxes	16.00
Total per acre	$60.93

Summary of Table VIII. New plot of red raspberries 2nd year.

Cost of labor per acre	$22.93
Interest and taxes	16.00
Total per acre	$38.93

Summary of Table IX. Bearing plot red raspberries.

Cost of labor per acre	$27 62
Marketing—man and horse	22.50
Boxes and making	8.73
Picking—overseer	20.00
Interest and taxes	16.00
Total	$114.85

The items of expenditure for the red raspberries rank approximately as follows for the bearing plots:

Picking	35 per cent
Marketing	27 "
Pruning	14 "
Interest and taxes	14 "
Miscellaneous	10 "

TABLE X

Cost:	
1st year—not bearing	$60.93
2nd year—not bearing	38.93
Next 7 years—bearing	803.95
Total	$903.81
Av. cost per year	100.42
Returns:	
7 crops—1000 quarts each at 20 cents per quart	$1,400.00
Av. annual return	155.55
Annual net return	55.13

Tht above figures show that the cost of producing a quart of red raspberries is approximately 12.9. This, at the average price of 20 cents per quart, leaves a net profit of 7.1 cents per quart.

CURRANTS AND GOOSEBERRIES

Since no newly planted plots of these fruits were available for observation only the cost of maintenance is considered in this particular case. One-fourth acre of gooseberries and one-third acre of currants are maintained.

The bushes are planted about five feet apart each way. Of the currants such varieties as Red Dutch, Victoria, and Long Bunch Holland are grown. Only one variety of gooseberries, the Downing, is grown.

The returns are computed from records of production and price kept during the period 1903--1909 inclusive in the case of the currants, and 1904 to 1909 inclusive for the gooseberries.

Table XI shows the cost of caring for the two bearing plots of currants, which are counted as one plot in the estimate. Table XIII gives similar data for the gooseberries. Tables XII and XIV sum up briefly the cost and returns for these crops.

Summary of Table XI. Bearing plot of currants.

Cost of labor per acre	$43.00
Marketing—man and horse	24.45
Boxes and making	17.22
Picking—overseer	21.74
Pickers	58.75
Interest and taxes	16.00
Total	$181.16

The items of expenditure for maintenance of the currants, as shown by the above figures, rank approximately as follows:

Picking	44	per cent
Marketing	24	"
Hoeing	9	"
Pruning	9	"
Interest	9	"
Miscellaneous	5	"

TABLE XII

Gross returns—1 crop—4700 quarts at 9 cents	$423.00
Average cost per year	181.16
Annual net return	241.84

From these figures we find that the cost per quart for maintenance only is about 3.8 cents, which at the average price of 9 cents per quart yields a net profit of 5.2 cents per quart.

Summary of Table XIII. Bearing plot of gooseberries.

Labor—cost per acre	$33.33
Marketing—man and horse	23.88
Boxes and making	11.00
Picking—overseer	15.87
Pickers	30.00
Interest and taxes	16.00
Total	$130.00

For the cost of maintenance of the gooseberries, the items of expenditure rank approximately as follows, according to the above figures:

Picking	35	per cent
Marketing	27	"
Interest and taxes	12	"
Hoeing	12	"
Pruning	8	"
Miscellaneous	6	"

TABLE XIV

Gross returns—1 crop—3000 quarts at 8 cents	$240.00
Average cost per year	130.00
Annual net return	110.00

According to the above table the cost per quart for maintenance of gooseberries is about 4.3 cents. At the average price of 8 cents per quart the net profit per quart is 3.7 cents.

THE GRAPE

Although the grape, strictly speaking, is not a small fruit, it is interesting for study in this connection because it is not ordinarily considered a safe commercial venture in Wisconsin. In the case under consideration, however, it appears to be fairly remunerative when grown on a small scale, and for this reason it is included in this thesis. Only the cost of maintenance of the vineyard already established is considered, it being practically impossible to secure accurate estimates of the cost of starting the vineyard.

The vines are planted eight feet apart each way. The most important varieties grown are Moore's Early, Worden, Concord, Brighton, and Delaware.

The returns are computed from records of production and price kept during the period 1904—1909 inclusive.

Table XV shows the cost of caring for the one bearing plot, and table XVI is a brief summary of the cost and returns for the grapes.

Summary of Table XV. Bearing plot—Grapes.

Labor—cost per acre	$92.32
Picking and marketing	16.83
Interest and taxes	16.00
Total cost per acre	$125.15

The relative proportion of each of the various items of cost for grapes is somewhat different than for the other fruits, as shown in the following:

Pruning and training	32	per cent
Hoeing	16	"
Picking and marketing	13	"
Interest and taxes	13	"
Laying down and covering	11	"
Miscellaneous	15	"

TABLE XVI

1 crop—2600 pounds at 10 cents per pound	$260.00
Average cost per acre	125.15
Net annual profit	134.85

According to this table the cost of maintenance for each pound of grapes is about 4.8 cents. At the average price of 10 cents per pound the net profits per pound is 5.2 cents.

GENERAL DISCUSSION OF RESULTS

The cost per quart is appreciably less for the production of strawberries than for raspberries. We have seen that the cost per acre is greater, therefore we must conclude that the above mentioned difference is due to the greater yield of strawberries per acre. The currants and gooseberries cannot be compared directly with the above because only the cost of maintenance is considered. According to the figures showing this cost it appears that the actual cost of production per quart for these fruits is approximately equal to that for strawberries. The net return per quart for strawberries is also considerably less than for raspberries and currants, being about equal to that for gooseberries. The yield, however, is about double that of raspberries, making the net return per acre much greater. This difference in yield is due to the prevalence of anthracnose among the raspberries, also to the fact that some of the plots were far past their prime. The gooseberries show an annual net return per acre nearly if not quite equal to that of strawberries. The currants are by far the most profitable crop, showing a larger net return per quart, and producing a higher yield than strawberries, even though the cost of starting the plantation be considered. It must be remembered, however, that only a small fraction of an acre of either currants or gooseberries are maintained, while three and one-half acres of strawberries are usually in bearing.

The ratio of the cost of new patches to that of bearing ones is about 1:1.7 for strawberries and 1:2 on the average for raspberries. This difference in proportion is probably due to the large amount of hoeing and training of runners necessary for strawberries the first year.

The proportion of the cost of horse labor to the total cost is larger for the strawberries than for the other fruits. This is because horses are used for working over the strawberry beds after picking and also for hauling and mulching for winter covering.

SOURCES OF ERROR

Undoubtedly many errors have crept into our computations, their sources being various, and perhaps in some cases compensating. One of these is probably made because several estimates and observations are taken on a very small basis. The error,

for example, in finding the length of time required to hoe one row of strawberries is multiplied by the number of rows in one acre. With the exception of strawberries the larger number of estimates given are made for small fractions of an acre. The errors of course are multiplied two, three or four times in calculating on the acre basis. An accurate estimate of the yields also is difficult with strawberries and especially with raspberries, because the acreage has been variable. The figures for the yields of the currants, gooseberries and grapes may be considered as accurate because the acreage has been constant during the period in which the yields are recorded. The estimates for labor, although subject to error for the above mentioned reason, are based upon many years' experience and are probably fairly accurate. The figures for the yield of strawberries may be considered fairly accurate because the average planting is about equal to the amount plowed under, although the average area may be a little more or less than three and one-half acres. The errors in estimates for labor are probably compensating because many different areas or conditions are accounted for. The raspberries are probably the only fruits in which the figures given may be seriously questioned. Often a season may pass with no new planting or no plowing under of an old plot, producing a relatively large fluctuation in the area maintained. This is especially true of the red raspberries.

REVIEW OF PREVIOUS AND RELATED WORK

So far as the author is aware no careful study has been made of the cost of producing small fruits. Many persons, however, have made estimates, as follows:

At the New Hampshire Experiment Station H. F. Hall[1] in 1908 estimated the cost of production, with average yield and profit, from one acre of strawberries as shown below:

Interest and tax on land (2 years)	$4.00
Plowing	3.00
Harrowing	3.00
Fertilizer	50.00
Plants	30.00
Setting plants	10.00
Cultivation	50.00
Training and cutting runners	10.00
Fall mulch	10.00
Adjusting mulch for summer	10.00
Total cost of growing	$180.00

[1] New Hamp. Exp. Sta. Bul. 137.

Crates and baskets	30.00
Cost of picking (8000 quarts at 1½ cents)	120.00
Total outlay	$330.00
Value average crop—8000 quarts at 8 cents wholesale	$640.00
Net returns (2 years)	310.00
Annual profit	155.00

As the author of this estimate states, this profit seems rather low to one who sells to a retail market, but is good profit to the grower who has a wholesale market.

These figures are evidently based upon the assumption that there is but one bearing season. This indicates that the total outlay given represents the cost of producing the first and apparently the only crop. On the same basis my data would read about as follows:

Interest and taxes (2 years)	$32.00
Preparing land	2.01
Digging plants	3.92
Setting plants	14.35
Cultivating	3.15
Hoeing	39.20
Covering	9.18
Uncovering	3.06
Hauling mulch for covering	19.20
Weeding	11.43
Picking (overseer)	14.00
Pickers	50.00
Boxes and making	14.66
Marketing	18.00
Total outlay	$234.16
Average value crop—4000 quarts at 9 cents	360.00
Net return	125.84
Annual net return per acre	62.92

The chief reasons for the difference between this and the estimate previously mentioned are probably the higher value of the land, the lower yield, and the addition of the marketing item. We must remember, however, that in our case the plots are kept in bearing three years with an annual net profit of over $100 per acre for each of the four years during which the land is occupied. This is accomplished under average conditions, while Hall's estimate undoubtedly assumes a maximum yield.

From data obtained by L. H. Baily from representative growers in Oswego region of New York about 1900 the following results were obtained:

Cost of growing one acre of strawberries:[1]

Rent of land (2 years)	$11.00
Plowing and fitting	6.00
Plants	15.00
Setting plants	4.00
Cultivation	16.00
Straw for winter and fruiting mulch	15.00
Labor—hoeing, pulling weeds, etc	10.00
Total cost	$77.00

This evidently includes only the year of planting. The estimate is rather low as compared with ours which is $107.14 for the year of planting. The present higher prices of both land and labor are probably the chief modifying factors.

Mr. E. A. Richardson[2] of the Sparta Fruit Growers' Association states that the expense for preparing the ground, plants, planting, cultivating, hoeing, mulching, and rent for one acre of strawberries is approximately $45.00. This also includes only the year of planting, and is less than half of our estimate for that year. The wholesale market, resulting in less intensive cultivation, probably accounts in part for this low figure. The cost of labor also was no doubt placed at a lower rate. It is also stated that this estimate applies equally well to bush fruit, and that the net returns are about the same.

At the Colorado Station B. O. Longyear[3] obtained estimates from various parts of the state in 1909 regarding the cost of growing strawberries. One grower who kept records for one year stated that the total expense (excepting rental or interest) was $105.00. This is evidently for a bearing season. Another grower estimated that $125.00 to $150.00 would be required to grow an acre in the best manner. He does not state whether the year of planting or a year of bearing or both are included. Longyear concludes that the average annual expense is about $100.00 per acre. Assuming a yield of 300 crates per acre the cost of producing one crate ready for market is estimated at $1.15. The price is $2.00 per crate, leaving a profit of $0.85 per crate. The ratio of cost to net profit is therefore 1.36:1, somewhat lower than our computation of 1.59:1, although the net profit per acre is about two and one-half times as great as ours. Many growers in that region estimated roughly that one-half the price was profit.

[1] N. Y. Cor. Bul. 189.
[2] Bul. No. 17, Wis. State Hort. Society.
[3] Colo. Exp. Sta. Bul. 140.

The above figures, however, are probably more accurate, because the general tendency where records are not kept is to underestimate the cost of production.

Through the courtesy of Mr. E. E. Dunning of Milwaukee I was enabled to secure reliable estimates on the cost of producing currants and gooseberries. He states that the best varieties of currants would cost from $250.00 to $300.00 the year of planting. From these and other figures which he gives I presume that each of the next two years would cost $100.00 per acre. For each of the ten years of bearing the labor costs $125.00, and the picking, marketing and commission $131.25, making a total of $256.25. This does not include interest on the investment which would add $25.00 to $50.00 more. The average yield for good varieties is about 350 crates per acre. At the average market price of $1.50 per crate the selling price would be $525.00. If Mr. Dunning's minimum estimate of the interest be added to the cost, the net profit is $244.75 per acre, about equal to the profit arrived at in our investigation, only the cost of maintenance being considered in each case. The cost and profit for the gooseberries are approximately the same as for currants. The net profit is therefore more than double that which our figures indicate. It must be remembered that Mr. Dunning's estimates are based upon observations of the best varieties, given the most painstaking care.

CONCLUSIONS

1. Owing to the system employed in this investigation it is exceedingly difficult to make definite statements regarding the cost of production and the relative merits of the various small fruits. Consideration of the sources of error above mentioned will justify this assertion.

2. The currants are obviously the most profitable of the small fruits under our conditions. Even if the cost of starting them were taken into account we might safely count on a net profit of nearly, if not quite, $200.00 per acre, this acreage including the young plots as well as the bearing ones. The strawberries come next with about $104.00 per acre. The grapes and gooseberries probably rank next in the order named, although exact figures are not available, for the same reason as with currants. The black raspberries rank fifth and the red raspberries sixth, although the actual profit cannot be stated with certainty because of the above mentioned sources of error.

3. The cost per acre is greatest for the currants, probably amounting to $200.00. The strawberries are second with an average cost of $165.00 per acre. In all probability the cost of both gooseberries and grapes are each about equal to that of strawberries if the cost of starting them be considered. The black raspberries are fourth with a cost of $131.00 per acre, and the red raspberries last with a cost of $100.00 per acre.

4. A careful study of the cost of producing small fruits, if covering a series of years or even one year, might reveal some interesting facts. Many errors could be corrected, and the possibility of lessening the expense and increasing the net profit, or even of eliminating the least profitable crops, might be shown.

5. It should be remembered that on the place under consideration there are several sources of income other than the small fruits. The determination of the cost of production should include the other crops as well. If this were done a change more or less radical in the organization of the farm might be accomplished. Competing crops could be at least partially dispensed with and others substituted to the best interest of all concerned.

Annual Meeting of the Wisconsin Experiment Association, Agricultural Hall, Madison.

NINTH ANNUAL REPORT

OF THE

WISCONSIN

Agricultural Experiment Association

ANNUAL MEETING

Madison, Wis., January 13, 14, 1911.

ADDRESS OF PRESIDENT, SECRETARY'S REPORT WITH PAPERS AND ADDRESSES GIVEN BY MEMBERS OF THE ASSOCIATION AND OTHERS INTERESTED IN PROGRESSIVE AGRICULTURE

Compiled by

R. A. MOORE, Secretary.

MADISON
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1911

LETTER OF TRANSMITTAL.

WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION.

MADISON, WIS, 1911.

To His Excellency, FRANCIS E. MCGOVERN,

Governor of the State of Wisconsin:

SIR—I have the honor to submit for publication, as provided by law, the Ninth Annual Report of the Wisconsin Agricultural Experiment Association, showing the receipts and disbursements the past year, also outlines for experiments, and addresses and discussions given at the annual meeting at Madison, January 13, 14, 1911.

Respectfully submitted,

R. A. MOORE,

Secretary.

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OFFICERS, 1911.

President.....C. P. NORGORD, Madison
Vice President.....E. W. LEE, Granton
Secretary.....R. A. MOORE, Madison
Treasurer.....H. N. LONGLEY, Dousman
Clerk and Stenographer.....NELL W. LORIGAN, Madison

COMMITTEES.

Program: Officers of the association.

Executive: Presidents and Secretaries of the County Orders of the Wisconsin Experiment Association.

Resolutions:
J. B. Cheesman.....Racine
H. P. West.....Ripon
C. A. Lyman.....Sun Prairie

Co-operative Experiments:
Farm Crops.....R. A. Moore
Soils.....A. R. Whitson
Farm Engineering.....C. A. Ocock
Agricultural Chemistry.....E. B. Hart
Agricultural Extension.....K. L. Hatch

CONSTITUTION AND BY-LAWS.

CONSTITUTION

Article I.—Name.

This organization shall be known as the Wisconsin Agricultural Experiment Association.

Article II.—Object.

The object of this association shall be to promote the agricultural interests of the state.

1st. By carrying on experiments and investigations that shall be beneficial to all parties interested in progressive farming.

2d. To form a more perfect union between the former and present students of the Wisconsin College of Agriculture so as to enable them to act in unison for the betterment of rural pursuits in carrying on systematic experiments along the various lines of agriculture;

3d. By growing and disseminating among its constituency new varieties of farm seeds and plants;

4th. By sending literature bearing upon agricultural investigations to its membership, and

5th. By holding an annual meeting in order to report and discuss topics and experiments beneficial to the members of the association.

Article III.—Membership.

Section I. All former, present and future students and instructors of the Wisconsin College of Agriculture shall be entitled to become members of this association.

Sec. II. Honorary membership may be conferred upon any one interested in progressive agriculture by a majority vote at any annual or special meeting of the association.

Article IV.—Dues.

A fee of fifty cents shall be collected from each member annually.

Article V.—Officers.

The officers of this association shall consist of a president, vice-president, secretary, and treasurer, whose terms of office shall be one year or until their successors are elected.

Article VI.—Duties of Officers.

Section 1. It shall be the duty of the president to preside at all meetings of the society and enforce the observance of such rules and regulations as will be for the best interest of the organization; to appoint all regular committees as he may deem expedient for the welfare of the association.

Sec. II. In the absence of the president, the vice president shall preside and perform all duties of the president.

Sec. III. It shall be the duty of the secretary to keep all records of the association; to report the results of all co-operative experiments carried on by its membership and the experiment station, plan the experimental work for the members of the association, and labor for the welfare of the society in general.

Sec. IV. The treasurer shall collect fees, keep secure all funds of the association and pay out money on the written order of the secretary signed by the president. He shall furnish bonds in the sum of two thousand dollars with two sureties, for the faithful performance of his duties.

Article VII.—Amendments.

This constitution may be amended at any annual meeting by a two-thirds vote of the members of the association present.

Amendment No. 1.—Adopted Feb. 9, 1906.

Any person residing within the state having completed a course in agriculture in any college equivalent to that given by the Wisconsin University may become a member of this association under the same regulation as students from the Wisconsin College of Agriculture.

Amendment No. 2.—Adopted Feb. 11, 1909.

Any County Agricultural School within the state may be admitted to membership of the Experiment Association upon request by the principal of such school and the payment of an annual fee of $1.00.

BY-LAWS.

Article I. The officers of this association shall be elected by ballot at the annual meeting.

Art. II. The president and secretary shall be ex-offico members of the executive committee.

Art. III. This association shall be governed by Robert's Rules of Order.

Art. IV. All members joining at the organization of this association shall be known as charter members.

Art. V. The time and place of the annual meeting shall be determined by the executive and program committees.

Constitution adopted and organization effected Feb. 22, 1901.

MEMBERSHIP, 1911.

(Arranged in alphabetical order.)

Names.	Post Office Address.
Aarness, O. C.	Cashton.
Aavang, H. A.	Barneveld.
Abbott, A. W.	Fairchild.
Aberg, Jacob	De Sota.
Accola, J. F.	Prairie du Sac.
Adams, Alvin W.	Lowell.
Adams A. E.	Eden.
Adams, Richard F.	Campbellsport.
Aderhold, Herman	Athens
Adland P. H.	North Cape
Ahlers, Walter	Grafton.
Akins, Clyde	E. Warren, Illinois.
Alberts, Will	New Richmond.
Alexander Chas.	Viroqua.
Allen, C. L.	Eau Claire.
Almon Perry	Weyauwega
Alprecht H. C.	Ohio, Illinois.
Amacher Fred	Stetsonville.
Anderley, Louis	Kendall.
Anderson, H. C.	Cambridge.
Anderson, Henry	Mt. Horeb.
Anderson, Solomon	Green Bay.
Anderson J. R.	Mt. Horeb
Anderson, L.	Highland.
Anderson Adolph W.	Portage, R. F. D. 5
Anderson, Theo	Waterville, Ia.
Anderson Ubbe	North Bend.
Anderson, Edwin	Morrisonville.
Anderson, A. F.	Monroe.
Anderson, H. C.	Cambridge, R. F. D.3
Andrews, Arthur L.	South Wayne.
Angvick Lars	Cottage Grove.
Annear, Rolland	Richland Center.
Anthes. Henry	Jefferson.
Anthony, David C.	Oregon.
Arms, Edw.	Fountain City.
Arnold, Arthur	Kiel.
Arnold Philip	Edgar.
Arnott, Grace	Stevens Point.
Arnquist, J. F.	New Richmond.
Arries. B. M.	Augusta, R. F. D. 1
Athorp. Willie	Sheboygan, R. F. D.1
Atwood. P. M.	Waupun.
Austin, A.	Janesville.
Austin, A. G.	Janesville, R. F. D. 6
Austin, C. P.	Janesville, R. F. D. 6
Austin, W. D.	Janesville, R. F. D. 6
Austin, Elmer E.	Brodhead.
Axley, Walter	Cleveland.
Babcock, Chas. L.	Milwaukee, 404 Colby Abbot Bldg.
Backus, Franklin G.	Kewaskum.
Baden, Robt. J.	Milwaukee, 1088 10th St.
Baehr, Harry	Withee.
Baertlein, Wm. A.	South Germantown.
Baertlein, V. J.	South Germantown.
Baesemann, Otto	Edgar.
Baggot, Thos.	Kilbourn, R. F. D. 2.
Bailey, Earl	Elroy.
Baird, Bert	Fox Lake.
Baird, R. L.	Waukesha.
Baird, Jas. W.	Waukesha.
Baker, Oliver E.	Madison.
Bancroft, Benj.	Rio.
Bannan, R. E.	Boscobel.
Barker, E. S.	Janesville.
Barker, W. H.	So. New Lynne, O.
Barstow, Jas. E.	Randolph.
Bartlett, Ray	Barron.
Barrett. Joseph	Casco.
Basse, Wm. H.	West Allis, R. F. D. 5
Batho, Lester	Plum City.
Bauer, A. H.	Manitowoc.
Bechtolt, A. B.	Brownstown.
Bechtolt, Jas. D.	Brownstown.
Behrens, Barhnard	Grafton.
Beihm, W. H.	Manitowoc.
Beilke, Walter	Fairwater.
Beimer, Geo.	Salem.
Beitel, P. A.	Rochelle, Illinois.
Belda, Wm. D.	De Forest.
Belz. Frank A.	Visalia, California.
Bender, Fred. Jr.	Cleveland.
Bendickson, I. E.	Cambridge.
Benedict, E. L.	Beloit.
Bennett, H. J.	Cherry Valley, Ill.
Bennett, W. L.	Stanton.
Bennett, C. S.	Somers, Montana.
Bennett, Orin J.	Platteville.
Bennett, Clarence	Platteville.
Bennett, Anson J.	Platteville.
Benrud, Martin A.	Cashton.
Benson. Ed. E.	Mt. Horeb.
Berg, Carl J.	Tigerton.
Berg, J. S.	Stoughton.
Berge, Otis	Valders.
Berge, Oscar A.	Valders.
Berger, John H.	Oconto Falls, R. F. D. 2.
Bergum, P.	De Forest.
Bergum, Albert.	De Forest.
Besecker, Howard F.	Delavan.
Bestul, Martin	Scandanavia.
Beule, E. A.	Beaver Dam.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.
Bewick, W. W.	Madison.
Bewick, W. M.	Madison.
Bickler, Nic J.	Belgium.
Biglow, L. F.	Brooklyn.
Bilderbach, W. T.	Mondovi.
Bilkey, J. W.	Madison, "Monona Farm."
Bille, J.	Waupaca.
Bingham, E. L.	Milton.
Bingham. Howard L.	Milton.
Bishop, W. E.	Arcadia.
Bittner, John A.	Saukville.
Blake. Wm. G.	Black Creek.
Blakely, A. J.	Neenah.
Blankensee. Clarence.	Riley.
Bleck, Walt. A.	Black Creek.
Block, A. F.	Lomira, R. F. D. 1.
Blood, Ike	Mukwonago.
Blumer, Ezra, Jr.	Monroe.
Boardman, F. H.	New Richmond.
Boardman, P. H.	New Richmond.
Bohl, Anton	Beaver Dam, R. 1.
Bohonek, John F.	Prairie du Chien.
Boldt, Henry C.	Calhoun.
Bollig, F. A.	Black Earth.
Bollig, A. N.	Black Earth.
Boners, C. J.	Belleville.
Bonsack, Ed.	Bangor, R. 3.
Bonzelet, J. P.	Eden.
Borck, Sam	North Freedom.
Borhaven, Fred C.	De Sota.
Boss, Sam. J.	Oshkosh, R. 7.
Boss, U. C.	Oshkosh, R. 7.
Boshard, Eugene	Bangor.
Boudnick, John	Kewaunee, R. 7.
Boyd, J. T.	Waukesha, R. 7.
Boyd, R. A.	Waupun.
Boyd, Henry J.	Forestville.
Boyle, Wm.	Calamine.
Bradey, Job	Pickett.
Bradley, Roy	Randolph.
Bradley, J. Frank.	Somers.
Braun, John A.	South Germantown.
Brekke, Anton	Rosholt.
Bremer, Felix E.	Hustisford.
Bremer, Emil	Hustisford.
Brennan. Joseph	Cato.
Briggs, Lynn	Peebles.
Brigham. Chas. I.	Blue Mounds.
Brodt. Clarence D.	Bridgeport.
Brokoepp, Ernest.	Kendall.
Bromley, Fred G.	Whitewater.
Brooks, Homer H.	Hopkinton. Ia.
Brotherton, Alvin	Colby. R. 1.
Brown, R. P.	Hartland, R. 21.
Brown, William A.	Monroe.
Brown, Monro	Bay City.
Brown, Wm.	Spring Valley.
Brown. A. Abbott.	Waterloo.
Brue, N. H.	De Forest.
Brueckner, H. C.	Fort Atkinson.
Brueckner. Justus	Jefferson.
Bruhn, John	Tonaz, Mich.
Brunker, Jos. A.	Ridgeway.
Bruning, Jacob	Shermanville, Ill.
Brunner, Fred F.	Hudson.
Brunner, R. W.	Hudson.
Brunner, Ed. Z.	Monroe, R. 4.
Buckley, Lawrence	Kilbourn.
Bullock. James P.	North Bend.
Burce, Ruth E.	Eau Claire.
Burris, F. E.	Kendall.
Busch, Albert	Reedsburg.
Bussey, W. P.	Omro, R. 4.
Bush, C. W.	Waupun.
Buss, Arch	Mineral Point.
Bussewitz, Ray H.	Reeseville.
Bussewitz, W. E.	Juneau.
Butler, G. C.	Templeton.
Cade, Jos. M.	Viroqua.
Caldo, Leslie	Janesville.
Cannon, E. A.	Pardeeville.
Cardenas, F. F.	Ocampo, Coah., Mex.
Carey, Jas. E. L.	Fruitland, Utah.
Carlson, J. M.	Spooner.
Carlson, John E.	Luck.
Carlson, Nels	Hudson.
Carlson, A. T.	Augusta, R. 4.
Carman, Edw. G.	Mishawaka, Ind.
Carmody, P. J.	Mt. Ida.
Carmody, Daniel	Mt. Ida.
Carncross. J. E.	Okee.
Capener, W. R.	Baraboo.
Capener, Clifford C.	Baraboo.
Carpenter, W. H.	Lampson.
Carpenter, F. W., Jr.	Spring Valley.
Case, Harry J.	Lancaster.
Chambers, O. Q.	Union Grove.
Chase, J. P.	Sun Prairie.
Chatterton, Ray W.	Basco.
Chatterton, W. E.	Basco.
Cherrier, Percy	Chippewa Falls.
Cherveny, Wenzel	Kewaunee, R. 2.
Chetlain, L. A.	Galena, Ill.
Chipman, W. R.	Morrisonville.
Chrisler, Harley	Lodi.
Chrisler. Alvin A.	Lodi.
Christoph, Theo. F.	Chilton.
Christensen, Emil	Chicago, Ill.
Christensen, W. O.	Chippewa Falls.
Church. W. H.	Lodi.
Chynoweth, H. E.	Madison.
Clark, Jas. E.	Greenleaf, R. 1.
Clark, J. J.	Berlin.
Clark. W. F.	Stevens Point.
Clausing. Adolph	Thiensville.
Clingmann, E. S.	Reedsburg.
Clusen. Reinhold	Manitowoc.
Cockerill. H. L.	Berlin.
Coffin. Russell H.	Rockford, Ill., R. 7.
Coit. Henry	Evansville.
Coldwell. John	Mazomanie.
Cole, Allen, Mrs.	Kenosha, 567 Durke.
Cole, Allen	Kenosha, 567 Durke.
Colenso, J. E.	Monroe, N. Y.
Colladay, W. F.	McFarland.
Colladay, C. M.	Madison.
Collentine, Arthur	Monroe.
Collin. D. W.	Luxemburg.
Connell, C. J.	Menomonee Falls.
Connell, Wm. A.	Menomonee Falls.
Convey. Thos.	Ridgeway.
Cook, S. C.	Portage.
Cook, Winfred	Deer Park.
Cook, Albert	Deer Park.
Cook, Oscar M.	Apple River, Ill.
Cook, A. E.	Boaz.
Cook, Geo. L.	Burlington, R. 21.
Cook, Joe C.	Burlington.
Coon, Elam P.	Milton Junction.
Cooper, Archie H.	Franksville.
Cooper, Joe	Pewaukee.
Cotton, Lloyd	Chippewa Falls.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.
Cotton, B. L.	Chippewa Falls.
Coulter, Harry	Randolph.
Craig, Charley W. ..	Oconomowoc.
Craig, Orlin P.....	Mukwonago.
Cramer, Joe	Menomonie, R. 10.
Cropley, W. R.	Kenosha.
Cross, A. J.....	Allenville.
Cubela, Jos. M.....	Muscoda.
Cull, Jas., Jr.....	Mt. Hope.
Curphey, John R.....	Ixonia.
Curran, W. F.....	Taylor.
Curtis, Frank	Burlington, R. 31. 24 Roosevelt Ave.
Curtiss, W. R.....	Trevor.
Daebel, F. W., Jr....	Waukesha, R. 3.
Daellenbach, Chris ..	Abbotsford.
Dahl, A. J.....	Edgerton.
Daly, Richard E.....	Washburn, R. 1.
Damler, Walter	Sun Prairie.
Damp, De Witt.....	Dane.
Dance, James	Brookfield.
Dance, George	Brookfield.
Danner, Chas. F.....	Janesville.
Davidson, W. L.....	Verona, R. 2.
Davies, Llewellyn	Mineral Point.
Davis, L. H.....	Bangor.
Davis, J. C.....	Oshkosh.
Davis, W. A.....	Patteville.
Davison, R. W.....	Sun Prairie.
Defnet, Jule J.....	Casco.
De Forest, Theo K...	Ann Arbor, Mich.
Delwiche, E. J.....	Ashland.
Dennerlein, A. J.....	Plymouth.
Derr, Gilbert E.....	Columbus.
Dettinger, Wm.	Hixton, R. 1.
Dettwiler, John	Monroe.
Dewire, M. E.....	Hamilton, Ind.
Dexheimer, Geo.	Kiel.
Dexheimer, Henry ...	Kiel.
Dexter, Walter S.....	Kenosha, R. 34.
Dibble, R. A.	Menomonie Falls, R. 18.
Diderich, Nicholas ...	North Milwaukee.
Dienst, A. H.....	Hinckley, Ill.
Dieter, Bert	Montfort.
Dietrich, John	Black River Falls.
Dillon, James	De Pere, R. 2.
Dillon, Austin	De Pere, R. 2.
Di Vall, W. F.....	Montfort.
Dobbertin, Samuel R.	Hartland, R. 21.
Donaldson, E. A.....	Eau Claire, R. 6.
Donaldson, H. A.....	Eau Claire.
Donnelly, J. P.....	Rice Lake.
Donovan, Frank	Vandyne.
Dougan, W. J.....	Beloit.
Douglas, Robt.	Juda.
Dousman, Louis	Prairie du Chien.
Doyle, Wm. E.....	Cobb.
Doyle, Henry	Oconto.
Dow, Everett J.	Whitewater, R. 4.
Dreger, Emil	Madison.
Duerr, H.	Wauwatosa, 210 8th Ave.
Dunbar, Harry D. ...	Elkhorn.
Durand, Grace, Mrs..	Lake Bluff, Ill.
Dustrude, Geo. O. ...	Oconomowoc.
Duve, Henry F.....	West Allis, R. 5.
Dyreson, Carl.....	McFarland.
Eagan, J. J.	Wautoma.
Eastman, J. S.....	Madison, 511 State.
Ebert, F. E.....	Tomah.
Eggert, Gust	Two Rivers.
Egre, John	Cambridge.
Einfeldt, Albert	Greenwood.
Eisenmann, Harvey .	Mishicot.
Ellickson, A. C.	Arlington.
Elliott, D. P.	Westfield.
Ellis, E. J.....	Evansville, R. 19.
Ells, F. W.....	Elkhorn.
Ells, R. H.....	Darien.
Ellsworth, R. W.....	Tavera.
Elver, E. E.....	McFarland.
Emmert, H. L.....	Johnson Creek.
Emmert, O. J.....	Johnson Creek.
Enge, Eugene	Prairie du Sac.
Engel, Geo.	Fountain City.
Engel, Geo. H.....	Fountain City.
Engleman, John	Hixton.
Erbe, George	Caledonia.
Erdaw, M. N.....	Rice Lake, R. 1.
Erickson, Clarence....	South Wayne, R. 1.
Erickson, Robert	Galesville.
Errickson, Henry	Cashton.
Eskil, Odin	Escanaba, Mich.
Evans, Wm. D.....	Fisk, R. 26.
Ewers, Forest	Boaz.
Faast, Ben. F.	Eau Claire.
Farwell, R. R.....	Ridgeway.
Fay, R. E.....	New Richmond.
Fay, Albert	New Richmond.
Ferguson, W. F.....	Fond du Lac.
Ferris, L. S.....	St. Croix Falls.
Fetting, Elmer	Cochrane.
Fetting, Romeo	Cochrane.
Finder, Fred C.....	VanDyne.
Finstad, Frank	Beldenville.
Fischer, Louis	Haven.
Fisher, Leslie	Viroqua.
Fleek, L. H.....	Benoit.
Fleishauer, Chas.	Arkansaw.
Florsheim, Isaac S...	Neving, Minn.
Flynn, John W.....	Hartford.
Foley, Jas. A.	Muscoda.
Follstad, Anton	Elcho.
Ford, J. F.....	Mazomanie.
Forehand, W. C.	Platteville.
Forester, M. F.....	Whitewater.
Foth, Frank D.....	Norwalk.
Fowell, L. D.....	Sylvan.
Fox, Chas. M.....	Platteville.
Foxwell, L. D.....	Sylvan..
Foxwell, Everett	Union Grove.
Frane, Victor	Colby.
Frank, Dismas	Phillips.
Frauenheim, O. R. ..	Random Lake.
Fredrick, William	Lampson.
Freehoff, Wm.	Coon Valley, R. 1.
Freeman, G. A.....	Sparta.
Freese, Edw.	Cornell.
Fried, Willie J.....	Fountain City.
Fritsch, John F.....	Clarno.
Fuiten, B. H.	New Richmond.
Fuller, Robt. M.....	Mishawaka, Ind.
Fuller, Horace	North Lake.
Fuller, Albert A.....	North Lake.
Fuller, Roland	North Lake.
Garey, James	Grimms.
Gasser, Benj. C.....	Plain.
Gay, John	Madison.
Gehrand, Arthur A...	Rochester.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.
Geigel, John	Monroe.
Geller, Henry Wm.	Woodbine, N. J.
Geraldson, M.	Manitowoc, R. 4
Gergen, John M.	Beaver Dam.
Gerking, F. J.	Elk Mound.
Gerner, Ed.	Barton.
Gerner, John.	Barton.
Getschmann, Willie	North Freedom.
Ghastin, Floyd L.	Twin Bluffs.
Ghastin, Wm. J.	Twin Bluffs.
Gibbard, P. J.	Ripon, R. 7.
Gierke, Edwin A.	Waukesha, R. 1.
Gilberts, Clarence E.	Darlington.
Gilbertson, C. P.	Arcadia, R. 5
Gile, Fred.	Sharon.
Gilmore, Everett H.	Randolph.
Gillette, Rufus A.	Verona.
Gimler, Frank.	Calhoun.
Glandt, R. C.	Kewaunee.
Glindinning, H. L.	Shullsburg.
Gloe, August L.	Two Rivers.
Gloeckler, Theo.	Portage.
Gloeckler, Louis P.	Portage.
Goetsch, A. A.	Juneau.
Godfrey, Allen.	Milton Junction.
Gonsolin, Fred.	Reedsburg.
Gorsege, M. E.	Haven.
Gottschalk, Chas.	Lake Mills.
Gourlie, Forrest A.	Oconomowoc.
Graber, Lawrence F.	Mineral Point.
Grady, Geo.	Oregon.
Graper, A. F.	Helenville.
Graper, E. J.	Helenville.
Grandine, Lester D.	North Crandon.
Grandine, M. D.	North Crandon.
Grass, C. F.	Prairie du Sac, R. 2.
Graul, Geo.	Independence.
Graves, D. W.	Baraboo.
Grebe, Fred P.	Fox Lake.
Greeley, Helen R.	Chicago, Ill., 4833 Woodlawn Ave.
Green, Everett.	Durand, Ill.
Grengo, A. L.	Menomonee Falls.
Grimstad, William.	Blue Mounds.
Griswold, H. W.	West Salem.
Groom, Harvey L.	Cassville.
Groth, Hugo.	Cedarburg.
Groth, Louis.	Cedarburg.
Grove, Albert.	Columbus.
Grove, Christian.	Columbus.
Guenther, Nelson W.	South Milwaukee.
Gullickson, Horace	Eau Claire.
Gunderson, Gehard	Duluth, Minn., 117 First St.
Gunderson, Forrest	Oconomowoc.
Gunderson, Lea.	Oconomowoc.
Gustafson, Theo.	Stockholm.
Gustaveson, Chas.	Manitowoc, R. 4.
Gutscenritter, F. J.	West Bend.
Guttenberg, Frank.	Jefferson, R. 1.
Haag, Henry.	Melrose.
Haag, Frank.	Melrose.
Haevers, Martin.	Luxemburg.
Hagestad, A. C.	Ettrick.
Hagnard, Ed. C.	South Easton, Mass.
Hale, Clayton T.	Tunnel City.
Hall, Lester.	Oconomowoc, R. 24.
Hall, John.	Hartland, R. 21.
Hall, Frank.	Hartland, R. 21.
Halvorson, Theo.	Duluth, Minn.
Hamilton, T. S.	Westfield.
Hamlyn, Windsor W.	West Bend.
Hans, Joe.	Jefferson.
Hansen, Henry T.	Sparta.
Hansen, Carl F.	Sparta.
Hansen, Henry.	Camp Douglas, R. 1.
Hanson, Fred.	Chippewa Falls.
Hanson, Warner.	Eau Claire.
Hanson, Albert.	Whiehall.
Hanson, C. H.	Elk Mound.
Hanson, Henry.	Spring Valley.
Hanson, N. P.	Amherst Junction.
Hargrove, W. E.	Roberts.
Harker, Irving G.	Dodgeville.
Harker, John J.	Linden.
Harms, Ben. F.	Platteville.
Harr, Ernest.	Bangor.
Harrington, Myron	Waupaca, R. 6.
Harrington, Forest F.	Waupaca, R. 23.
Harris, A. M.	Plainfield.
Harris, R. E.	Warrens.
Harrison, Geo.	Chippewa Falls.
Harvey, Caleb B.	Wonewoc.
Hart, Wm. C.	Brookfield.
Hasheider, Hubert G.	Plain.
Haskins, Leon O.	Montello.
Hatch, L. M.	Big Bay, Mich.
Hatz, J. A.	Prairie du Sac.
Haugen, S. O.	Stoughton.
Hawley, Merton	Oconto Falls.
Hayes, Carl.	Campbellsport.
Heebink, Wm.	Baldwin.
Heebink, Henry.	Baldwin.
Hegge, Julius.	Galesville.
Heidemann, Otto.	Kiel, R. 2.
Heinke, Alvin E.	Stratford.
Heinze, Louis.	Prescott.
Helmke, Theo. J.	Hamburg, R. 1.
Hemker, Fritz H.	West Salem, R. 2.
Henden, Carl.	Viroqua.
Hendry, James	Chicago, Ill., 2458 Hamilton Court.
Hendry, Robert D.	Chippewa Falls.
Hendricks, L. E.	Campbellsport.
Hendricks, J. H.	Campbellsport.
Hengel, Geo.	Fountain City.
Henke, Louis A.	Lowell.
Henry, Ernest E.	Viroqua.
Herold, Rudolph, Jr.	Stoddard.
Herr, John	Waukesha, care of Wm. Jones.
Herwig, Theo. E.	Delton.
Hesse, John	Milwaukee, 636 Frederick Ave.
Hetts, M. B.	Fort Atkinson.
Hetts, M. E.	Fort Atkinson.
Hetzel, Gilbert.	Cleveland.
Hickcox, J. Gilbert	Whitefish Bay.
Hicken, Alfred B.	Waukesha.
Hildeman, Alex E.	Belle Plaine.
Hill, Chas. T.	Brookfield.
Hill, J. T.	Brookfield.
Hill, Chas. O.	Brookfield.
Hill, Otto O.	Mt. Horeb.
Hillier, H. B.	Brownsdale, Minn.
Hills, Lucien.	Waupun, R. 25.
Hinrichs, Ernest.	Reedsburg.
Hintz, Geo. E.	Oakfield.
Hinz, A. F.	Markesan.
Hirsch, B.	Washburn, R. 1.
Hitchcock, Clarence E	Sparta.
Hitchcock, H. R.	Pecatonica, Ill.
Hjelle, Ole K.	Soldiers Grove.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.
Hoard, Harry	Waupun.
Hodge, Roy	Lake Beulah.
Hoefner, Herbert	Manitowoc, R. 1.
Hoelz, Jac, Jr.	Rockfield.
Hoesly, M. J.	New Glarus.
Hofman, Carlie	Mendota.
Hoffman, Conrad	Phillips.
Hogan, Ed.	New Richmond.
Hogan, E. J.	New Richmond, R. 4.
Hollien, David	Westby.
Holcomb, W. R.	Excelsior, Minn.
Holliday, Edw.	New Richmond.
Holloway, John W.	Union Grove.
Holloway, Ed. M.	Union Grove.
Holmen, O.	Belleville.
Holscher, A. C.	Madison.
Hood, D. L.	Spring Green.
Hopkins, J. W.	Morrisonville.
Hopkins, B. F.	Morrisonville.
Hopkins, A. W.	Madison.
Hoppe, Frank	Omro.
Hoppe, A. M.	Algoma, R. 2.
Hoppert, Martin	Sheboygan, R. 4.
Horswill, W. K.	Black River Falls.
Hoterman, D. W.	Waupun.
Hougan, O. O.	Stoughton.
Houghton, F. T.	Reedsburg.
Householder, G. M.	Richland Center.
Houslet, Neal	Packwaukee.
Howe, W. C.	Boscobel.
Howitt, Chas. H.	Randolph.
Hubbard, W. E.	Norwalk.
Hulburt, Henry	Barron.
Hughes, John W.	Columbus.
Hughes, Daniel	Columbus.
Hutchinson, Wm. D.	Rubicon, R. 1.
Ihrig, J. J.	Oshkosh.
Illian, W. L.	Adell.
Imholt, B. A.	Beardsley, Minn.
Imrie, David	Roberts, Wis.
Indermuehle, Felix A.	Beaver Dam.
Ingalls, Howard	Walworth.
Ingwell, Albert	Blanchardville.
Inoldenhauer, Fred.	Oconomowoc.
Irle, Henry	New Richmond.
Jacobs, A. F.	Coloma, R. 1.
Jacobs, S. M.	Janesville, R. 3.
Jacobson, Arthur	Burlington.
Jacobson, Clarence	Waterford, R. 2.
Jacobson, Chas. O.	Spring Valley.
Jahn, Chas.	Cream.
Jahnke, J. F.	Pepin.
Jaquish, J. E.	Twin Bluffs.
Jamison, Albert	Appleton.
Jamison, Clarence	Appleton.
Jamison, Harvey	Appleton.
Jamison, Howard	Appleton.
Jamison, Stanley	Appleton.
Jamison, W. G.	Appleton.
Janecek, C. M.	Bloom City.
Jasperson, Alfred	Viroqua, R. 4.
Jarosh, Ben	Westfield.
Jeffery, F. D.	Monroe.
Jeffery, H. B.	Menomonee Falls.
Jennings, Earl	Pigeon Falls.
Jennings, Edwin	Pickett.
Jennings, Roy	Hixton.
Jerabek, Frank	Kewaunee.
Jerdee, Perry S.	Deronda.
*Jirtle, Geo. B.	Algoma.
Johannes, Albert	Two Rivers, R. 2.
Johnson, Billie	Strongs Prairie.
Johnson, Glenn	Baraboo, R. 2.
Johnson, Hanford	Fremont.
Johnson, L. M.	Ashland, R. 2.
Johnson, Roy M.	De Sota.
Johnston, Frank R.	Waupaca.
Johnston, R. M.	Hancock, Michigan.
Jones, Garfield	Griendville, Indiana.
Jones, Howard	Wild Rose.
Jones, E. F.	Sun Prairie.
Jones, E. D.	Rockland.
Jones, Earl F.	Columbus.
Jones, Ira P.	Hinckley, Ills.
Jones, John G.	Beaver Dam.
Jones, O. R.	Beaver Dam.
Joos, Frank B.	Fountain City.
Jorenby, Carl O.	Blanchardville.
Jorenby, Harold	Blanchardville, R. 3.
Jorgensen, John	River Falls, R. 2.
Jorstad, Ed.	Cameron.
Jung, J. W.	Randolph.
Jungbluth, W. J.	West Allis, R. 6.
Juve, Oscar	Stoughton.
Kaiser, Eldo D.	Garnavillo, Iowa
Kaltenberg, Jacob	Waunakee.
Kaltenberg, Peter	Waunakee.
Kaltenberg, Jos.	Waunakee.
Kaltenberg, A.	Waunakee.
Karcher, Gilbert A.	Burlington.
Karsten, Leo. M.	De Pere.
Kaste, Alfred H.	Cream.
Kaste, Arthur	Alma.
Katel, W. C.	Kewaunee, R. 1.
Kaul, E. H.	Waukesha.
Kavanaugh, John	Kaukauna.
Keebaugh, Oliver	Poynette.
Keenan, Wm. M. Jr.	McFarland.
Keenan, M. L.	Leeman.
Kelly, A. N.	Mineral Point.
Kendall, Geo. W.	Sun Prairie.
Kendall, Myron	Iola.
Kennedy, P. H.	Nelson.
Kennedy, Larry J.	Nelson.
Kennedy, Bernard	Nelson.
Kent, J. S.	Rusk.
Kent, H. W.	Rusk.
Keyes, Glenn C.	Richland Center.
Klassy, H.	Monticello, R. 3.
Kieffer, Mike	Fredonia.
Kielsmeier, Hugo C.	Cleveland, R. 3.
Kiley, Walter	Darien.
Kimble, N. G.	Milton Junction.
Kindschi, Edwin	Prairie du Sac.
Kiner, E. E.	Marseilles, Illinois.
Kings, Benj. J.	Reedsville.
Kinney, O. G.	Colfax.
Kinstler, C. L.	Washburn.
Kirby, Jas.	Grimms.
Kirch, T. A.	Madison.
Kirst, Alfred E.	Tomah.
Kiteley, Leonard W.	Sharon.
Kittleson, Wm.	Mt. Horeb.
Kittleson, Knudt	Mt. Horeb.
Kissinger, Henry	Grand Rapids.
Klann, Adolph	Reedsville.
Klassy, Henry	Monroe.
Klassy, H.	Monticello, R. 3.
Klatt, Fred.	Beaver Dam.
Klaus, C. S.	Colesburg, Iowa.

* Deceased.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.
Klemm, L. J.	Welcome.
Klessig, Otto	Cleveland.
Klessig, Edwin	Cleveland.
Klinka, John S.	West Bend, R. 5.
Klinka, Jos.	West Bend, R. 5.
Klofanda, Royal	Racine.
Klofanda, Reuben	Racine.
Klovdahl, John	Wittenberg, R. 1.
Klumb, Arthur L.	Rockfield.
Klumb, Albert	Rockfield.
Klumb, Oscar	Rockfield.
Klumb, Hugo G.	Kewaskum.
Klussendorf, Fred E.	Waukesha.
Klussendorf, Arthur	Waukesha.
Kneeland, Peter.	Windsor.
Kneip, Wm.	Weyauwega.
Knoene, G. C.	Plymouth.
Knoke, Henry	Readfield.
Knudson, Ed. A.	Manitowoc, R. 4.
Knutson, E. L.	Wautoma.
Koch, Chris	Waunakee.
Koehler, John P.	Hayton.
Koenecke, A. E.	Reedsburg.
Koenecke, Ewald	Reedsburg.
Koenecke, E. H.	Cleveland.
Kolb, Ed.	Reedsburg.
Koll, C. A.	Eau Claire.
Koller, Wm.	Kewaunee, R. 2.
Kolte, O. P.	Stoughton.
Koltes, Joseph F.	Dane.
Konz, John	Fairchild, R. 2.
Korth, Leo R.	Neillsville.
Kracht, R. E.	Jefferson.
Kramer, Henry F.	Bloomer.
Krause, Wm.	Thorp.
Kreul, August	Fennimore.
Krofta, Randolph	Kewaunee.
Kronholm, E.	Grand Rapids.
Kronholm, V. E.	Grand Rapids.
Krueger, Alex.	Watertown, R. 2.
Krueger, H. E.	Beaver Dam.
Kruschke, Alvin	New Richmond.
Kruschke, Geo. H.	New Richmond.
Kuehn, Chas. A.	Brandon.
Kuehn, Herbert	Spring Valley.
Kuhlman, A. H.	Lowell.
Kuhlman, Fred	Lowell.
Kuhtz, Harvey A.	Thiensville.
Kunkel, Arthur	Manawa.
Kurtze, Otto C.	West Allis, R. 4.
Kutchin, Victor	Green Lake.
Lachmund, Rolt	Sauk City.
Lake, Clifford	Viroqua.
Lambert, Edw.	Taylor.
Lane, Orie J.	Hixton.
Larson, Chas.	Gladwin, Michigan.
Larson, J. M.	Wautoma, R. 1.
Larson, Theodore	Hudson.
Larson, John A.	Valders.
Larson, Leroy	Iola.
Larson, Eli	Sawyer.
Lawrence, Floyd M.	Bangor.
Lawrence, W. J.	De Sota.
Lawson, Andrew	Luck.
Lean, Ivan, F.	Elkhorn.
Lean, G. A.	Palmyra.
Lebeis, F. J.	Bloomer.
Lee, L.	Leon.
Lee, Peter A. G.	Deerfield.
Lee, Oliver	Amery, R. 2.
Legrid, Henry F.	Deer Park.
Lehman, Theo.	Watertown, R. 1.
Lehman, Edwin	Ripon.
Lehner, Philip, Atty.	Princeton.
Leinberger, Ralph	Warren, Illinois.
Leith, B. D.	Madison.
Leith, Ray H.	Van Dyne.
Le Jeune, Ernest	Rice Lake.
Lemke, L. C.	Onalaska.
Leonard, Geo. H.	Jefferson.
Leonard, Wm. R.	Jefferson.
Letts, Edwin	Appleton, R. 4.
Leverich, J. W.	Sparta.
Leverich, E. S.	Sparta.
Lewis, E. H.	Whitewater.
Lewis, Lester M.	Monticello.
Ley, John	Dodgeville.
Ley, Nick	Dodgeville.
Leykom, Wallace	Antigo.
Libby, J.	Madison, R. 4.
Lien, Lars O. Sr.	Cambridge, R. 4.
Lindas, Theo. A.	Marshall.
Lindberg, Clinton H.	Dresser Jct.
Lindenman, J. H.	South Bend, Ind. R. 6
Lindevig, Oscar	Viola.
Linse, Chas.,	La Crosse. ,Deceased.
Linse, Edward	Mondovi.
Livingston, E. C.	Randolph.
Lloyd, E. B.	Cambria.
Loberg, Almer	Nelsonville.
Loesel, Wm.	Alma.
Loether, E. J.	Eau Claire, 411 Eddy St.
Loewe, Arthur	Milwaukee, R. 8.
Longley, H. N.	Dousman.
Lovejoy, Hiram D.	West Salem.
Lowell, Lloyd	Sharon.
Lukken, Peter	Mt. Horeb.
Lund, Geo. S.	Arcadia.
Luther, Ernest L.	Madison, 36 So. Mills St.
Lutz, Edward	Appleton.
Lutze, Geo.	Cleveland.
Lyman, Chas.	Sun Prairie.
McAdams, Cecil	Schofield.
McBride, Harold	Chicago, Ills. 5700 Drexel Ave.
McClurg, W. F.	Viroqua.
McDermid, G. A.	Eau Claire.
McGeachie, E. P.	Rockford, Ills. R. 8.
McGinnis, Chas.	Baraboo.
McIntyre, Ivan	Ft. Atkinson.
McKenzie, Will	Mukwonago, R. 39.
McNab, A. J.	Black River Falls, R. 6.
McNown, J. H.	Mauston.
Machimura, Keiki	West Allis, c-o Rust Bros.
Machoven, Jos. A.	Mauston.
Macomber, S. D.	New Lisbon.
Madoche, Leo	Sawyer.
Maeder, J. W.	Belleville.
Magee, Ellis	Coleman.
Mahler, Eugene H.	Milwaukee, 3216 Chestnut St.
Mahler, Jacob	Wauwatosa.
Mahoney, David	Juneau.
Maier, Wolfgang	De Forest.
Malde, O. J.	Grand Rapids.
Margoles, N.	Milwaukee, 700-11th St.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.
Marken, Otis A.....	Valders.
Markham, F. C.....	Independence.
Markle, S. P.....	La Crosse, R. 1.
Marshall, W. S.....	Delton, R. 1.
Marshall, A. C.....	Omro.
Marston, Albert E...	Beloit.
Martin, Carl.....	Madison, R. 7.
Martin, Walter I.....	Barrington, Illinois.
Marty, Matthias.....	Monticello.
Mathews, Milton D...	Helenville.
Matthews, Ralph.....	Livingston.
Matthys, Matt.....	Barron.
Mattison, Thos.....	Blair.
Mau, H. G.....	Brodhead.
Maug, A. J.....	Ripon.
Mayo, John H. Jr...	Eau Claire.
Mead, R. E.....	New Lisbon.
Meekin, H. W.....	Fond du Lac.
Meier, Edw. F.....	Eden.
Meisner, L. R.....	Merrill.
Mejnis, Chas.....	Baraboo.
Melby, Dan.....	Spooner, R. 2.
Merlahn, Wm. O.....	Kewauskem.
Merkel, Henry.....	Appleton, R. 3.
Merriam, Leslie.....	Darlington.
Messrschmidt, S.....	Madison, R. 1.
Meurer, Paul.....	Genoa Jct.
Meyer, Alf. J.....	Oakwood.
Michels, Henry.....	Malone.
Mickelson, A. W.....	Walsh.
Mielke, F. L.....	Windsor.
Mielke, J. E.....	Basco.
Mikkelson, W. J.....	Arkdale.
Miller, L. A.....	Sparta.
Miller, A. H.....	Waupun.
Miller, Homer.....	Pickett.
Miller, Ralph B.....	Antioch, Illinois.
Miller, Henry C.....	Allenville.
Miller, Oren.....	Pickett.
Millis, T. H.....	Whitewater.
Mills, Stanley.....	Walden, New York.
Mills, Roscoe C.....	Appleton, R. 2.
Miritz, O. F.....	Fond du Lac, R. 7.
Mistele, Wm.....	Kendall.
Mitchell, Chas. J.....	Brookfield.
Mitchell, Geo. F.....	Cottage Grove.
Mitchell, Dean S.....	Brookfield.
Mitchell, J. T.....	Cottage Grove.
Mitwede, Henry.....	Waukesha.
Mlsna, Thos.....	Cashton.
Moen, Gilbert T.....	Eleva.
Moen, Herman.....	Cambridge.
Moldenhauer, W. C...	Manitowoc.
Moore, R. A.....	Madison.
Moore, Fred W.....	Beloit, R. 30.
Moore, J. F.....	Loyd.
Moore, A. B.....	Campbellsport.
Moore, Henry G.....	Mauston.
Moore, Harry G.....	McFarland.
Morey, Reuben.....	Cable, Wis.
Morgan, W. P.....	Victory.
Morgan, Chas.....	Albany.
Morley, Edwin.....	Prairie du Sac.
Morris, Geo. C.....	Madison.
Morse, Edwin H.....	Edgerton.
Morrissey, J. H.....	Arena.
Mower, Arba.....	Wauwatosa.
Muehleissen, Gottlieb.	Alma.
Mueller, Rudolph.....	Forestville.
Mueller, Harry.....	Platteville.
Mueller, M. J.....	Edgerton.
Mulloy, John B.....	Wayside.
Murphy, J. H.....	Kewaunee, R. 7.
Myrick, M. O.....	Bristol.
Nace, F.....	Iola.
Naedler, Edw.....	Neillsville.
Napier, J. M.....	Clemson College, So. Carolina.
Nathen, Paul K.....	Kendall.
Nauberger, Wm. F...	Reeseville.
Nate, Geo. B.....	Grimms.
Nellen, W. A.....	De Forest.
Nellen, Jac.....	De Forest.
Nellen, P. J.....	De Forest.
Nellen, Joe.....	De Forest.
Nelson, Ralph.....	Union Grove.
Nelson, John A.....	Port Wing.
Nelson, Harvey	Union Grove.
Nelson, Fred	River Falls.
Nelson, Carl	Greenwood.
Nemetz, Frank	Kewaunee, R. 1.
Neprud, Selmer	Westby.
Neprud, N. O.....	Coons Valley.
Newhouse, K. K.....	Clinton.
Neystrom, Archie.....	Maiden Rock.
Nicolaus, D. C.....	Mukwonago.
Nicolaus, Chas.	Cudahy.
Niemer, Frank	Cassville.
Niere, Stuart P.....	Watertown.
Nies, Peter	Greenleaf, R. 3.
Niesen, H. P.....	Carbondale, Pa., 45 Scott St.
Niles, Milo	Mauston.
Nolan, J. H.....	Eldorado.
Nordlie, C. K.....	Rockdale.
Nordman, Edward....	Polar.
Norgord, C. P.....	Madison.
Norrbom, C. G.	Eland, R. 1.
Norsman, Jerome	Madison, R. 7.
Northup, H. R.....	New York, N. Y., 437 West 22d St.
Notseler, Otto	Deerfield.
Nuttleman, Adolph ..	West Salem.
Nuttleman, Fred	West Salem.
Nuttleman, Alfred	West Salem.
Nyeggen, Henry	Spring Valley.
O'Connor, Edw. F...	Lodi, R. 1.
Odell, Wm. G.....	Lake Beulah.
Ogle, Jas.	Waldo.
Ohnstad, K. O.....	Stoughton.
Oimoen, Otto.....	Barneveld.
Oleson, Jas. P.....	Ripon.
Olson, A. H.....	Grantsburg.
Olson, Malvin A.....	Chetek.
Oman, Carl	Tavera, R. 1.
Omann, Holger	Nashotah.
Orth, A. F.....	Muscoda.
Orvis, L. C.....	Salem.
Oschner, Arthur	Plain.
Osterday, E. G.....	Stockton, Ill.
Otterholt, Henry	Chetek.
Outhouse, Roy J.....	Madison, R. 5.
Owens, H. C.....	Fox Lake.
Owens, Edwin	Wild Rose.
Paddock, Alvin	Salem.
Paddock, Ray M.....	Salem.
Paddock, A. D.....	Salem.
Pafke, Arthur J.....	Plymouth.
Page, G. F.....	Berlin.
Paine, Allen	Arcadia.
Palfrey, John	Elkhorn.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.
Palmer, Earl	Lake Geneva.
Parsch, Gust A.	Wausau.
Parrish, J. O.	Plymouth.
Parrott, Geo.	Merrill.
Parsons, Harry	Portage.
Parsons, Wm. A.	Fort Atkinson, R. 2.
Patterson, Harley J.	Cottage Grove.
Patterson, Harvey J.	Melrose.
Patterson, John D.	Melrose.
Patterson, J. L.	Glen Haven.
Pattison, H. A.	Durand, R. 2.
Paulson, P. A.	Hudson.
Paulson, H. E.	Hollandale.
Payne, Ed. H.	Prairie du Sac.
Peacock, Ray Jos.	Lima.
Pederson, Peter	Eleva.
Peebles, John	Oconomowoc.
Peerson, Alf.	Bryant.
Peik, Arthur	Chilton.
Pelisek, Frank W.	Kewaunee, R. 2.
Pengelly, R. L.	Loyal.
Pement, F. A.	Rosendale.
Penn, Joseph, Jr.	South Kaukauna.
Perner, Fred	Sugar Bush, R. 26.
Perry, J. H.	Fort Atkinson.
Perry, R. D.	Columbus.
Perry, Will H.	Gratiot.
Persons, M. B.	Plum City.
Peters, Ezra	Sharon.
Peterson, Perry	Amherst, R. 2.
Peterson, B. A.	Blair.
Peterson, Carl	Black River Falls.
Peterson, Einar	Milladore.
Peterson, Anton	Milladore.
Peterson, Arthur W.	Roberts.
Peterson, Chas. A.	Rosendale.
Peterson, Walter F.	Pulaski.
Peterson, Hy. N.	New Holstein.
Peterson, E. M.	Amery, R. 4.
Phillips, Jesse	Elizabeth, Ill.
Pierce, Ross	Stockton, Ill.
Pierce, S. W.	Randolph.
Pierner, Fred.	North Milwaukee.
Pierner, John W.	Thiensville.
Pierstorf, H. H.	Madison, R. 7.
Pinkerton, Fred	Waupaca.
Pinkerton, A. J.	Waupaca.
Piper, Harry	Sharon.
Pirner, John, Jr.	Manawa.
Plenty, Robert J.	Rice Lake.
Pokfuss, Edward.	Waukesha.
Popp, Arthur.	Jefferson, R. 2.
Post, H. L.	Sextonville.
Pratt, Vernon.	Cataract.
Pratt, Ross.	Cataract.
Preston, Geo.	Montfort.
Pritzl, John A.	Cato, R. 1.
Price, H. Howard.	Waukesha.
Price, Robt.	Bristol.
Pritchard, J. T.	Conrath.
Puls, John.	Hartford.
Purinton, C. G.	Monticello.
Quale, John H.	Mondovi, R. 2.
Radcliffe, Arthur E.	Casco.
Radermacher, John.	Middleton.
Raftery, Agnes.	Windsor.
Ralph, Will H.	Cuba City.
Ramsey, R. C.	Peshtigo.
Randall, Tracy E.	Baraboo.
Raonholt, Ausgar.	Milltown.
Rather, Armand.	Peebles.
Ratz, Herman.	Fountain City.
Rauchenstein, John.	Rice Lake.
Reddin, Thomas E.	Cato.
Reed, Burt.	Elizabeth, Ill.
Reesey, E. L.	Beloit.
Rehbein, A. E.	St. Croix Falls.
Reiberg, Max.	Chicago, Ill.
Reineking, Rudolph.	Sheboygan Falls.
Reindahl, A. K.	Madison.
Reinhardt, R. F.	Nelson.
Remington, Merl O.	Mauston, R. 2.
Renak, Ed.	Racine, R. 2.
Renk, Wm. F.	Sun Prairie.
Reyer, Walter R.	Templeton, R. 20.
Rex, Edgar.	Beaver Dam.
Richards, Roy E.	Lodi.
Richards, W. M.	Lodi.
Richardson, Geo. J.	Spring Grove, Ill.
Riederer, B.	Cato.
Riek, Anthony.	Plain.
Ritchard, Fred.	Monroe.
Ritchart, Roy C.	New Lisbon.
Ristau, E. O.	Osseo.
Ristow, Harry.	Onalaska.
Ristow, C. S.	Black River Falls.
Robers, Wm. J.	Burlington, R. 20.
Roberts, R. E.	Corliss, R. 5.
Roberts, T. W.	Woodworth.
Roberts, Wm. E.	Randolph, R. 3.
Rockhill, W. E.	Waupun.
Rodewald, Walter C.	Baraboo.
Roethel, Herman.	Kiel, R. 2.
Roffers, John	Green Bay, R. 4.
Rohde, Henry	Kewaunee, R. 1.
Rolfson, C. E.	Waterford.
Root, Alvin.	Fond du Lac, R. 5.
Rorge, A. J.	Stoughton.
Rosenow, Arthur	Oconomowoc.
Rosenow, H. E.	Oconomowoc.
Roser, Wm. H.	Mt. Gretina, Pa.
Roy, Julius.	Sparta.
Rued, Axel.	Curtiss.
Ruhrman, B. J.	Cross Plains.
Runde, August.	Sinsinawa.
Runke, Rufus.	Algoma.
Rupp, Herman.	Malone.
Rusch, E. W.	Reedsburg, R. 2.
Russell, E. Allen, Jr.	Lake Forest, Ill.
Russell, A. C.	Augusta.
Rust, S. H.	Mukwonago.
Ruste, C. O.	Blue Mounds.
Ruste, C. E.	Blue Mounds.
Rylander, Ed.	Shell Lake.
Ryan, Gerald.	Sun Prairie.
Ryan, Wm.	South Kaukauna.
Ryan, Malachi.	South Kaukauna.
Salter, Milo P.	West Bend.
Sanborn, Eugene H.	Middleton.
Sandman, W. D.	Holmen.
Sattler, James H.	Rosendale.
Savage, Albert.	Fremont, Mich.
Sayre, Chas.	Jefferson, R. 5.
Schaefer, Geo.	Appleton.
Schaefer, R. J.	Appleton.
Schafer, Chas.	Waukesha, R. 7.
Schaller, Frank.	Holmen.
Schaller, Geo.	Holmen.
Schelling, Jerome.	Racine.
Schemak, J. F.	Muscoda.
Schermerhorn, G. B.	Keeseville, N. Y.

MEMBERSHIP LIST—continued.

Post Office Address.	Names.
Schield, John	Fall Creek.
Schilling, Harry W.	Onalaska.
Schlaegel, Victor V.	Platteville.
Schlotthauer, G. P.	Madison.
Schmit, Geo.	Greenville.
Schmit, Wm. T.	Appleton, R. 2.
Schmit, A. W.	Appleton, R. 2.
Schmit, Albert	Appleton, R. 2.
Schmitz, Edw. H.	Lone Rock.
Schmitz, Hubert	Lone Rock.
Schmoldt, Paul C.	Whittlesey.
Schneider, G. P.	Walsh.
Schnoeder, Herman	Marshfield.
Schoedel, Arthur	Barton.
Schoeneck, Gust	Enterprise.
Schottler, C. J.	South Germantown.
Schowatter, Alvin	Jackson.
Schreiner, Alf.	Westby.
Schroeder, Herman	Jim Falls.
Schueller, L. B.	Sauk City.
Schuette, Herman W.	Reedsburg.
Schuler, John	New Glarus.
Schultz, R.	Lake Mills.
Schultz, Gerhard	Randolph.
Schultz, Otto	Eden.
Schultz, Arthur	Mauston.
Schumann, Hugo W.	Beaver Dam.
Schwandt, Wm.	Stanton.
Schwartz, John	Antigo.
Sebion, Cornelius	Westby.
Sebion, Tennis	Westby.
Sevenich, Tony	Hilbert.
Sette, O. E.	Juneau.
Setts, Everett A.	Juneau.
Seitz, Adam	Waukesha.
Sharpee, P. A.	Rio.
Sharpee, Carl S.	Columbus, R. 1.
Sharpee, E. A.	Rio.
Sharpee, Johanes	Rio.
Sheen, C. J.	Salem.
Sheen, Wray J.	Trevor.
Shelburne, Arthur H.	Bancroft.
Sheldon, Ben F.	Brandon.
Sherwood, C. B.	Spring Green.
Shuman, Chas. F.	Koshkonong.
Shuster, Chas.	Manitowoc, R. 7.
Siepert, F. N.	Chippewa Falls.
Sikhart, J. G.	Muscoda.
Silver, C. R.	Belleville.
Simpson, Lloyd L.	Edgerton.
Skewes, Edwin	Union Grove.
Smelcer, Fred C.	Lone Rock.
Smith, C. B.	Edmund.
Smith, Elden J.	Taylor.
Smith, Geo. J.	Nashotah.
Smith, Guy W.	Bottineau, N. D.
Smith, L. E.	Beloit.
Smith, Carroll	Delavan, R. 3.
Smith, H. E.	Viroqua.
Smith, Fred	River Falls.
Smith, Seymour	Oshkosh, R. 5.
Smithback, Marvin	Cambridge.
Smithwick, M. W.	Chicago, Ill. (Com. Nat. Bank Bldg.)
Soholt, O. S.	Madge.
Soholt, Gustav L.	Madge.
Someville, John	Black River Falls.
Sorenson, Hilbert	Franksville.
Sorenson, John	Greenwood.
Spalding, Earl	Windsor.
Spartz, N. A.	Union Grove.
Spink, L. O.	Platteville, R. 10.

Names.	Post Office Address.
Spletter, Oscar	Manawa.
Sprecher, Elias B.	Plain.
Stacy, John	Palmyra.
Staley, Leo	Hillsboro.
Staley, Orlo	Hillsboro.
Stamm, G.	Mt. Horeb.
Stanchfield, Sam C.	Fond du Lac.
Stangel, Richard	Kewaunee, R.
Stanley Bros.	Hillsboro.
Stauffacher, A. J.	Monroe.
Steele, John, Jr.	Oconomowoc.
Stegne, Chris	Viroqua, R. 5.
Steidmann, Edwin	Merrimac.
Steimand, Theo.	Colby.
Steiner, W. H.	Brownsville.
Steinhoff, Walter J.	Platteville.
Stephens, L. M.	Platteville.
Stephens, A. C.	Platteville.
Stevens, Ernest A.	Eau Galle, R. 5.
Stevenson, Carl	Soldiers Grove.
Stewart, Elmer	Wales.
Stewart, Geo. L.	Lodi.
Stewart, Joe H.	Wales.
Stienstra, Samuel J.	Keams Canon, Ariz.
Stiles, W. F.	Lake Mills.
Stivarius, Geo. A.	Fennimore, R. 4.
Stone, Riley	Reedsburg.
Stone, A. L.	Madison.
Stork, Fred G.	Rockfield.
Strauss, Norbert	Sheboygan, R. 1.
Strowig, Wm.	Cleveland.
Strutt, A. J.	Ridgeway.
Stubley, Floyd	Black Earth.
Stuessy, Jacob E.	Monroe.
Sturtevant, Robt. H.	Delavan.
Suhr, Otto A.	Cochrane.
Suhr, A. A.	Cochrane.
Suhs, John	Waupaca.
Svacina, Jacob, Jr.	Rice Lake.
Swan, Erling	Milwaukee.
Swan, Robert G.	Milwaukee.
Swan, N. J.	Wauwatosa.
Swanton, Ray	Madison.
Swanton, John	Oconomowoc.
Swart, Witt	Plymouth.
Swartz, P.	Waukesha.
Swenson, Earl	Kenosha, 660 Pleasant St.
Swenson, Olin	Hollandale.
Swift, M. Earl	Waterman, Ill.
Swiggum, N.	Monroe.
Swoboda, F. G.	Dousman.
Sveul, S. O.	Stoughton.
Sydow, Wm.	Waukesha.
Tanner, Archie	San Jacinta, Calif.
Taylor, Lewis	Glen Haven.
Taylor, Orlo L.	Glen Haven.
Temple, T. R.	Glens Falls, N. Y.
Tempero, R. J.	Menomonee Falls.
Thacher, Ed. F.	Zenda.
Thibodeau, Elmer F.	Kewaunee, R. 6.
Thielke, M.	Madison, R. 6.
Thielke, Ed.	Kiel.
Thiers, Louis M.	Kenosha, 426 Park Ave.
Thomas, Willie	Ridgeway.
Thomas, Roy E.	Dodgeville.
Thomas, Ernest	Sugar Bush.
Thomas, Edw. J.	Ridgeway.
Thompson, T.	Wadena, Ia., R. 2.
Thompson, Ingvald	Eleva.

MEMBERSHIP LIST—continued.

Names.	Post Office Address.	Names.	Post Office Address.
Thompson, Geo. H...	Quarry.	Webbe, W. E.....	Barrington, Ill.
Thompson, Ben.....	Blair.	Webster, W. E.....	Hudson.
Thompson, Adolph H.	Black Riv. Falls, R.6.	Wedgwood, R. E.....	Shawano.
Thompson, Melvin ..	Mt. Horeb.	Wehrwein, Walter ...	Manitowoc, R. 2.
Thompson, Theo.....	Curtis.	Weinreich, Fred C....	Fredonia, R. 2.
Thorp, Eugene B.....	Monroe.	Weirich, Martin J.....	Baraboo.
Thorpe, J. R.....	Tavera.	Weiss, Glen C.....	West Bend.
Thorpe, Geo. E.....	Monroe.	Welz, Chas.....	Clarno.
Thorpe, Henry	Stanley.	Wendt, Reinhold.....	Cream.
Thorstad, Clarence ..	Wautoma.	Wendt, August L.....	Lake Mills, R. 2.
Tibbetts, Wm.....	North Bend.	Wernich, Wm. H.....	De Forest.
Tifft, J. Ringland....	Wauwatosa.	Wesener, Wm.....	Cleveland.
Tobie, E. P.....	Amherst Junction.	West, H. P.....	Ripon.
Tochtermann, C.....	Monroe.	West, Ray N.....	Ripon.
Toepfer, Otto.....	Madison, R. 6	Westerhouse, J.....	Onalaska.
Toole, W. A.....	Baraboo.	Westerhouse, G.....	Onalaska.
Trachte, Cornelius ...	Watertown, 831 3d.	Whelan, John.....	Mondovi.
Treleven, Guy.....	Omro.	Whiting, F. H.....	Lake Mills.
Trumpy, Fred.....	Clarno.	Whiting, Alfred.....	Jefferson, R. 2.
Tschudy, Fred.....	Monroe.	Whittaker, Horace...	Fond du Lac.
Tschudy, B. O.....	Monroe.	Wichern, C. H.....	Baraboo.
Tubbs, Herbert.....	Seymour.	Wichern, Wm.....	Baraboo.
Turgasen, J. H.....	Richland Center.	Wieckert, Walter.....	Appleton.
Tyler, Jas. G.....	Valders.	Wiegand, O. R.....	Cleveland.
		Wielinga, Yeppe.....	Midway.
Ubbelohde, Frank.....	Sheboygan Falls.	Wiker, N. H.....	Mabel, Minn.
Uhrenholdt, Jens.....	Leonard.	Wilk, H. F.....	Alma.
Uhrenholdt, S. J.....	Leonard.	Wilkins, Lee.....	Platteville.
Umlauft, Rudolph....	Dorchester, R. 1.	Wilkinson, Ed.....	Wilton.
Underwood, L. C.....	Avoca.	Wilkowske, Hugo.....	Mishicot.
Unger, Ernest F.....	No. Milwaukee, R. 9.	Willey, Loy.....	Cuba City.
Unger, Edw.....	No. Milwaukee, R. 9.	Willey, Leslie.....	Burlington.
Usher, Earl.....	South Wayne.	Willmarth, E. E.....	Sun Prairie.
Usher, J. M.....	South Wayne.	Williamson, Boyd.....	Amherst Junction.
Utgaard, Peter.....	Cylon.	Winker, Harold.....	Antioch, Ill.
Utter, Delwin H.....	Lake Beulah.	Wipperman, Wm., Sr.	Chilton.
		Wise, John H., Jr....	Platteville.
Van Buren, E. W.....	Waukesha, R. 2.	Wiseman, Paul.....	Bridgeport.
Vamstad, Brady.....	Blanchardville.	Woelffer, Herbert.....	Waterloo.
Van Loon, John.....	La Crosse.	Woelpel, Fred J.....	Waukesha, R. 6.
Van Zandt, L.....	Sparta.	Wolkoff, S. G.....	Madison.
Vaughan, John M....	Unity.	Wollin, C. W.....	Johnson Creek.
Veers, Ernest.....	New Holstein.	Wollin, H. B.....	Johnson Creek.
Vein, Even.....	Stoughton.	Wollin, Albert.....	Johnson Creek.
Verbeck, Chas. W....	Lodi.	Wood, Calvin D.....	Oshkosh, R. 4.
Voelker, Ed.....	Farmersburg, Iowa.	Woodward, John L...	Madison, R. 1.
Voight, A.....	Oconomowoc, R. 26.	Wright, W. C.....	Eau Claire.
Vonder Ohe, Wm. H..	Reedsburg.	Wright, John.....	Whitewater.
Vroman, H. E.....	Verona.	Wunsch, Alfred J. C..	Haven.
		Wunsch, Hugo E.....	Haven.
Waegli, John.....	Kewaunee.	Wusson, Chas. A.....	Seymour.
Waelti, John.....	Monroe.	Wyatt, Ernest.....	Tomah, R. 6.
Walker, Geo. B.....	Elgin, Ill.		
Walters, Herman.....	Alma.	Yates, Willard N.....	Burnett.
Wagner, A. L.....	Haven.	Yderstad, Thoralf....	Mason.
Wagner, A. G.....	Waukesha.	Young, Rudolph T....	Beaver Dam, 321 Maple Ave.
Wagner, J. M.....	Union Center.		
Ward, Chas. E.....	Fort Atkinson.	Young, W. D.....	Galesville.
Ward, H. D.....	Beloit.		
Ward, Harold L.....	Fort Atkinson, R. 1.	Zachar, Milton R.....	Racine.
Ward, Robt. W.....	Fort Atkinson.	Zahrt, F. H.....	Hortonville.
Ward, Theo. S.....	Fort Atkinson.	Zenz, John P.....	Lancaster.
Warzyn, Arthur	Oakwood.	Zenz, Arthur.....	Lancaster.
Waterworth, W. A...	Randolph.	Zerbel, L. R.....	Madison.
Watrud, H. O.....	Blanchardville.	Zerbel, Paul.....	Humbird.
Watt, Chas., Jr.....	Grimms.	Ziemer, Paul.....	Jackson, R. 2.
Watt, Thos., Jr.....	Grimms.	Zill, Bruno.....	Cleveland.
Webb, W. H.....	Superior.	Zintz, Willis.....	Gays Mills.

MEMBERSHIP, 1911.

(Arranged by Counties.)

ADAMS COUNTY.

Buckley, Lawrence ..... Kilbourn
Elliot, D. P. ..... Westfield
Jacobs, A. F. ..... Coloma, R. 1
Jarosh, Ben ..... Westfield
Johnson, Billie ..... Strongs Prairie
Mikkelson, Wilheim J. ..... Arkdale

ASHLAND COUNTY.

Delwiche, E. J. ..... Ashland
Johnson, L. M. ..... Ashland, R. 2

BARRON COUNTY.

Bartlett, Ray ..... Barron
Donnelly, J. P. ..... Rice Lake
Erdaw, M. N. ..... Rice Lake
Hulburt, Henry ..... Barron
Jorstad, Ed ..... Cameron
Le Jeune, Ernest ..... Rice Lake
Matthys, Matt ..... Cameron
Olson, Nalvin A. ..... Chetek
Otterholt, Henry ..... Chetek
Plenty, Robt. J. ..... Rice Lake
Rauchenstein, John ..... Rice Lake
Svacina, Jacob, Jr. ..... Rice Lake

BAYFIELD COUNTY.

Daly, Richard E. ..... Washburn, R. 1
Fleek, L. H. ..... Benoit
Hirsch, B. ..... Washburn, R. 1
Kinstler, C. L. ..... Washburn
Morey, Reuben, ... Cable
Nelson, John A. ..... Port Wing
Yderstad, Thoralf ..... Mason

BROWN COUNTY.

Anderson, Solomon, ... Green Bay
Dillon, Jas. ..... De Pere, R. 2
Dillion, Austin, ... De Pere, R. 2
Clark, Jas. E. ..... Greenleaf, R. 1
Karsten, Leo M. ..... De Pere
Kings, Benj. J. ..... Reedsville
Mulloy, John B. ..... Wayside
Nies, Peter ..... Greenleaf, R. 3
Roffers, John ..... Green Bay, R. 4
Peterson, Walter F. ..... Pulaski

BUFFALO COUNTY.

Arms, Edw. ..... Fountain City
Bilderbach, W. T. ..... Mondovi
Engel, Geo. ..... Fountain City
Engel, Geo. H. ..... Fountain City
Fetting, Romeo ..... Cochrane
Fetting, Elmer ..... Cochrane
Fried, Willie J. ..... Fountain City
Hengel, George ..... Fountain City
Jahn, Chas. ..... Cream
Joos, F. B. ..... Fountain City
Kaste, Arthur ..... Alma
Kaste, Alfred H. ..... Cream
Kennedy, P. H. ..... Nelson
Kennedy, Larry ..... Nelson
Kennedy, Bernard ..... Nelson
Linse, Edw. ..... Mondovi
Loesel, Wm. ..... Alma
Muehleissen, Gottlieb, ... Alma
Pattison, H. A. ..... Durand, R. 2
Quale, John H. ..... Mondovi, R. 2
Reinhardt, R. F. ..... Nelson
Ratz, Herman ..... Fountain City
Suhr, Otto A. ..... Cochrane
Suhr, A. A. ..... Cochrane
Wendt, Reinhold ..... Cream
Whelan, John ..... Mondovi
Walters, Herman ..... Alma

BURNETT COUNTY.

Olson, A. H. ..... Grantsburg
Rvlander, Ed. ..... Shell Lake
Wilk, H. F. ..... Alma

CALUMET COUNTY.

Christoph, Theo, F. ..... Chilton
Koehler, John P. ..... Hayton
Peik, Arthur ..... Chilton
Peterson, Hy. N. ..... New Holstein
Sevenich, Tony ..... Hilbert
Veers, Ernest ..... New Holstein
Wipperman, Wm. Sr. ..... Chilton

CHIPPEWA COUNTY.

Baehr, Harry ..... Withee
Daellenbach, Chris ..... Abbotsford
Einfeldt, Albert ..... Greenwood

MEMBERSHIP LIST—continued.

Frane, Victor ..... Colby
Krause, Wm. ..... Thorp
Korth, Leo R. ..... Neillsville
Naedler, Edw. ..... Neillsville
Nelson, Carl ..... Greenwood
Pengelly, R. L. ..... Loyal
Rued, Axel ..... Curtiss
Sorenson, John ..... Greenwood
Steimand, Theo. ..... Colby
Thompson, Theo ..... Curtiss
Umlauft, Rudolph ..... Dorchester, R. 1
Zerbel, Paul ..... Humbird

CLARK COUNTY.

Cherrier, Percy ..... Chippewa Falls
Christianson, W. O. . Chippewa Falls. R. 6
Cotton, Lloyd ..... Chippewa Falls
Collentine, Arthur ..... Monroe
Freese, Edw. ..... Cornell
Hansen, Fred ..... Chippewa Falls
Harrison, Geo. ..... Chippewa Falls
Hendry, Robt. D. ..... Chippewa Falls
Kramer, Henry F. ..... Bloomer
Lebeis, F. J. ..... Bloomer
Schroeder, Herman ..... Jim Falls
Siepert, F. N. ..... Chippewa Falls
Thorpe, Henry ..... Stanley

COLUMBIA COUNTY.

Anderson, Adolph W. ... Portage, R. 5
Baggott, Thos. S. ..... Kilbourn, R. 2
Bradley, Roy ..... Randolph
Cannon, E. A. ..... Pardeville
Carncross, J. E. ..... Okee
Chrisler, Harley ..... Lodi
Chrisler, Elvin A. ..... Lodi
Church, W. H. ..... Lodi
Cook, S. C. ..... Portage
Coulter, Harry ..... Randolph
Ellickson, A. C. ..... Arlington
Gilmore, Everett H. ..... Randolph
Gloeckler, Theo ..... Portage
Gloeckler, Louis, P. ..... Portage
Grove Christian ..... Columbus
Gorve, Albert..... Columbus
Hughes, John W. ..... Columbus
Hughes, Daniel ..... Columbus
Jones, Arthur ..... Randolph
Keebaugh, Oliver ..... Poynette
Livingston, E. C. ..... Randolph
Lloyd, E. B. ..... Cambria
O'Connor, Edw. F. ..... Lodi, R. 1
Richards, Roy E. ..... Lodi
Richards, W. M. ..... Lodi
Sharpee, P. A. ..... Rio
Sharpee, Carl S. ..... Columbus, R. 1
Sharpee, Alfred A. ..... Rio
Sharpee, E. A. ..... Rio
Sharpee, Johannes ..... Rio
Stewart, Geo. L. ..... Lodi
Verbeck, Chas. W..... Lodi

CRAWFORD COUNTY.

Anderson, Edwin ..... Morrisonville
Bohonek, John F. ..... Prairie du Chiene
Brodt, Clarence D. ..... Bridgeport
Dousman, Louis ..... Prairie du Cheine
Hjelle, Ole K. ..... Soldiers Grove, R. 5
Lawrence, W. J. ..... De Sota
Stevenson, Carl ..... Soldiers Grove
Wiseman, Paul ..... Bridgeport

DANE COUNTY.

Anderson, Henry ..... Cambridge
Anderson, H. C. ..... Cambridge
Anderson, Henry ..... Mt. Horeb
Anderson, H. C. ..... Cambridge, R. 34
Angvick, Lars ..... Cottage Grove
Anthony, David C. ..... Oregon
Baker, Oliver E. ..... Madison
Belda, Benj. ..... De Forest
Bendickson, I. E. ..... Cambridge
Benson, Ed. E. ..... Mt. Horeb
Berg, J. S. ..... Stoughton
Bergum, Andrew ..... De Forest
Bergum, P. .....De Forest
Bergum, Albert ..... De Forest
Bewick, W. W. ..... Madison
Bewick, W. M. ..... Madison
Bilkey, J. W. .. Monona Farms, Madison
Blankensee, Clarence ..... Riley
Bollig, F. A. ..... Black Earth
Bollig, A. N. ..... Black Earth
Boners, C. J. ..... Belleville
Brigham, Chas. I. ..... Blue Mounds
Brue, N. H. ..... De Forest
Chase, J. P. ..... Sun Prairie
Chatterton, Ray W. ..... Basco
Chatterton, W. E. ..... Basco
Chipman, W. R. .....Morrisonville
Chynoweth, H. E. ..... Madison
Coldwell, John ..... Mazomanie
Colladay, W. E. ..... McFarland
Colladay, C. M. ..... Madison
Damler, Walter ..... Sun Prairie
Damp, De Witt ..... Dane
Davidson, W. L. ..... Verona. R. 2
Davison, R. W. ..... Sun Prairie
Derr, Gilbert E. ..... Columbus
Dreger, Emil ..... Madison
Dyreson, Carl ..... McFarland
Eastman, J. S. ..... Madison
Egre, John ..... Cambridge
Elver, E. E. ..... McFarland
Ford, J. F. ..... Mazomanie
Gay, John ..... Madison
Gillette, Rufus ..... Verona
Grady, Geo. ..... Oregon
Haugen, S. O. ..... Stoughton
Hill, Otto C. ..... Mt. Horeb
Hofman, Carlie ..... Mendota
Holmen, O. ..... Belleville
Holscher, A. C. ..... Madison
Hopkins, J. W. ..... Morrisonville
Hopkins, B. F. ..... Morrisonville
Hopkins, A. W. ..... Madison
Hougan, O. O. ..... Stoughton, R. 2
Jones, E. F. ..... Sun Prairie
Juve, Oscar ..... Stoughton
Kaltenberg, Jacob ..... Waunakee
Kaltenberg, Peter ..... Waunakee
Kaltenberg, Joseph ..... Waunakee
Kaltenberg, A. ..... Waunakee
Keenan, Wm. M. Jr. ..... McFarland
Kendall, Geo. W. ..... Sun Prairie
Kirch, T. A. ..... Madison
21 No. Main
Kittleson, Wm. ..... Mt. Horeb
Kittleson, Knudt ..... Mt. Horeb
Kneeland, Peter ..... Windsor
Koch, Chris ..... Waunakee
Kolte, O. P. ..... Stoughton
Koltes, Jos. F. ..... Dane
Lee, Peter A. G. ..... Deerfield
Leith, B. D. ..... Madison
Libby, John ..... Madison, R. 4

MEMBERSHIP LIST—continued.

Lien, Lars O. ..... Cambridge
Lindas, Theo A. ..... Marshall
Lukken, Peter ..... Mt. Horeb
Luther, Ernest L. ..... Madison
36 S. Mills
Lyman, Chas. A. ..... Sun Prairie
Maeder, J. W. ..... Belleville
Maier, Wolfgang ..... De Forest
Martin, Carl ..... Madison, R. 7
Messerschmidt, Samuel .... Madison, R. 1
Mielke, F. L. ..... Windsor
Mielke, J. E. ..... Basco
Mitchell, J. T. ..... Cottage Grove
Moen, Herman ..... Cambridge
Moore, R. A. ..... Madison
Moore, Harry G. ..... McFarland
Morris, Geo. C. ..... Madison
Morse, Edwin H. ..... Edgerton
Nellen, W. A. ..... De Forest
Nellen, Jac ..... De Forest
Nellen, P. J. ..... De Forest
Nellen, Joe ..... De Forest
Nordlie, C. K. ..... Rockdale
Norgord, C. P. ..... Madison
Norsman, Jerome ..... Madison, R. 7
Notseler, Otto ..... Deerfield
Ohnstad, K. O. ..... Stoughton
Outhouse, Roy J. ..... Madison, R. 5
Patterson, Harley J. ..... Cottage Grove
Pierstorf, H. H. ..... Madison, R. 7
Radermacher, John ..... Middleton
Raftery, Agnes ..... Windsor
Reindahl, A. K. ..... Madison
Renk, Wm. F. ..... Sun Prairie
Rorge, A. J. ..... Stoughton
Ruhrman, B. J. ..... Cross Plains
Ruste, C. O. ..... Blue Mounds
Ruste, C. E. ..... Blue Mounds
Ryan, Gerald ..... Sun Prairie
Sanborn, Eugene H. ..... Middleton
Schlotthauer, G. P. ..... Madison
Spalding, Earl ..... Windsor
Smithback, Marvin ..... Cambridge
Stamm, G. ..... Mt. Horeb
Stone, A. L. ..... Madison
Swanton, Ray ..... Madison
Stubley, Floyd ..... Black Earth
Sveul, S. O. ..... Stoughton
Thielke, M. ..... Madison, R. 6
Thompson. Melvin ..... Mt. Horeb
Toepfer, Otto ..... Madison, R. 6
Vein, Even ..... Stoughton
Vroman, H. E. ..... Verona
Wernich, Wm. H. ..... De Forest
Willmarth. E. E. ..... Sun Prairie
Woelffer, Herbert ..... Waterloo
Woodward. John L. ..... Madison, R. 1
Wolkoff, S. G. ..... Madison
1822 Westlawn Ave.
Zerbel, L. R. ..... Madison

DODGE COUNTY.

Adams, Alvin W. ..... Lowell
Baird, Bert ..... Fox Lake
Barstow, Jas. E. ..... Randolph
Beule. E. A. ..... Beaver, Dam
Block, A. F. ..... Lomira, R. 1
Bohl, Anton ..... Beaver Dam
Bremer, Emil ..... Hutisford
Bremer, Felix E. ..... Hustisford
Brown, A. Abbott, ... Waterloo
Bussewitz, Ray H. ..... Reeseville
Bussewitz, W. E. ..... Juneau
Bush, C. W. ..... Waupun
Craig, Charley W. ..... Oconomowoc
Curphey, John R. ..... Ioxonia
Gergen, John M. ..... Beaver Dam
Goetsch, A. A. ..... Juneau
Gourlie, Forrest A. ..... Oconomowoc
Grebe, Fred P. ..... Fox Lake
Gunderson, Lea ..... Oconomowoc
Henke, Louis A. ..... Lowell
Hoard, Harry ..... Waupun
Howitt, Chas. H. ..... Randolph
Hutchinson, Wm. D. ..... Rubicon, R. 1
Indermuehle, Felix ..... Beaver Dam
Jones, Earl F. ..... Columbus, R. 2
Jones, John G. ..... Beaver Dam
Jones, O. R. ..... Beaver Dam
Jung, J. W. ..... Randolph
Klatt, Fred ..... Beaver Dam
Kreuger, H. E. ..... Beaver Dam
Kuhlman, A. H. ..... Lowell
Kuhlman, Fred ..... Lowell
Lehman, Theo. ..... Waterloo, R. 1
Mahoney, David ..... Juneau
Miller, A. H. ..... Waupun
Nauberger, Wm. F. ..... Reeseville
Owens, H. C. ..... Fox Lake
Pierce S. W. ..... Randolph
Rex, Edgar ..... Beaver Dam
Roberts, Wm. E. ..... Randolph, R. 3
Rockhill, W. E. ..... Waupun
Schultz, Gerhard ..... Randolph
Schumann, Hugo W. ..... Beaver Dam
Sette, Everett A. ..... Juneau
Sette, O. E. ..... Juneau
Steele, John Jr. ..... Oconomowoc
Steiner, W. H. ..... Brownsville
Swanton, John ..... Oconomowoc
Waterworth, W. A. ..... Randolph
Yates, Willard ..... Burnett
Young, Rudolph T. ..... Beaver Dam

DOOR COUNTY.

Boyd, Henry J. ..... Forestville
Larson, Eli ..... Sawyer
Madoche, Leo ..... Sawyer
Mueller, Rudolph ..... Forestville

DOUGLAS COUNTY.

Webb, W. H. ..... Superior

DUNN COUNTY.

Cramer, Joe ..... Menomonie, R 10
Gerking, F. J. ..... Elk Mound
Hanson, C. H. ..... Elk Mound
Kent, J. S. ..... Rusk
Kent, H. W. ..... Rusk
Kinney, O. J. ..... Colfax
Stevens, Ernest A. ..... Eau Galle, R. 5

EAU CLAIRE COUNTY.

Allen, C. L. ..... Eau Claire
Arries, B. M. ..... Augusta, R. 1
Burce, Ruth ..... Eau Claire
Carlson, A. T. ..... Augusta R. 4
Cotton, B. L. ..... Chippewa Falls
Donaldson, E. A. ..... Eau Claire, R. 6
Donaldson, H. A. ..... Eau Claire
Faast, Ben F. ..... Eau Claire
Gullickson. Horace ..... Eau Claire
Hanson, Warner ..... Eau Claire
Koll, C. A. ..... Eau Claire

MEMBERSHIP LIST—continued.

Konz, John ..... Fairchild, R. 2
Loether, E. J. ..... Eau Claire
McDermid, G. A. ..... Eau Claire
Mayo, John H. Jr. ..... Eau Claire
Russell, A. C. ..... Augusta
Schield, John ..... Fall Creek
Thompson, Ingvald ..... Eleva
Wright, W. C. ..... Eau Claire

FOND DU LAC COUNTY.

Adams, A. E. ..... Eden
Adams, Richard F. ..... Campbellsport
Atwood, P. W. ..... Waupun
Beilke, Walter ..... Fairwater
Boyd, R. A. ..... Waupun
Bonzelet, J. P. ..... Eden
Briggs, Lynn ..... Peebles
Donovan, Frank ..... Vandyne
Ferguson, W. F. ..... Fond du Lac
Finder Fred C. ..... Fond du Lac
Gibbard, P. J. ..... Ripon, R. 7
Hayes, Carl ..... Campbellsport
Hendricks, J. H. ..... Campbellsport
Hendricks, L. E. ..... Campbellsport
Hills, Lucien ..... Waupun, R. 25
Hintz, Geo. E. ..... Oakfield
Hoterman, D. W. ..... Waupun
Kuehn, Chas. A. ..... Brandon
Lehmann, Edwin ..... Ripon
Leith, Ray H. ..... Vandyne
Maug, A. J. ..... Ripon
Meekin, H. W. ..... Fond du Lac
Michels, Henry ..... Malone
Miritz, O. F. ..... Fond du Lac, R. 7
Meier, Edw. F. ..... Eden
Moore, A. B. ..... Campbellsport
Nolan, J. H. ..... Eldorado
Oleson, Jas. P. ..... Ripon
Pement, F. A. ..... Rosendale
Peterson, Chas. A. ..... Rosendale
Rather, Armand ..... Peebles
Rupp, Herman ..... Malone
Root, Alvin ..... Fond du Lac, R. 5
Sattler, Jas. H. ..... Rosendale
Schultz, Otto ..... Eden
Sheldon, Ben F. ..... Brandon
Stanchfield, Sam C. ..... Fond du Lac
West, H. P. ..... Ripon
West, Ray N. ..... Ripon
Whittaker, Horace ..... Fond du Lac

FOREST COUNTY.

Grandine, Lester D. ..... North Crandon
Grandine, M. D. ..... North Crandon

GRANT COUNTY.

Bannen, R. E. ..... Boscobel
Bennett, Orin J. ..... Platteville
Bennett, Clarence ..... Platteville
Bennett, Anson J. ..... Platteville
Carmody, P. J. ..... Mt. Ida
Carmody, Daniel ..... Mt. Ida
Case. Harry J. ..... Lancaster
Cubela, Jos. M. ..... Muscoda
Cull, Jas. Jr. ..... Mt. Hope
Davis, W. A. ..... Platteville
Dieter, Bert ..... Montfort
Di Vial, W. F. ..... Montfort
Foley, Jas. A. ..... Muscoda
Forehand, W. C. ..... Platteville
Fox, Chas. ..... Platteville.
Groom, Harvey L. ..... Cassville
Harker, John J. ..... Linden
Howe, W. C. ..... Boscobel
Kreul, August ..... Fennimore
Matthews, Ralph ..... Livingston
Mueller, Harry ..... Platteville
Niemer, Frank ..... Cassville
Orth, A. F. ..... Muscoda
Patterson, J. L. ..... Glen Haven
Preston, Geo. ..... Montfort
Ralph, Will H. ..... Cuba City
Runde, August ..... Sinsinawa
Schemak, J. F. ..... Muscoda
Schlaegel, Victor ..... Platteville
Sikhart, J. G. ..... Muscoda
Spink, L. O. ..... Platteville, R. 10
Steinhoff, Walter J. ..... Platteville
Stivarius, Geo. A. ..... Fennimore
Stephens, L. M. ..... Platteville
Stephens, A. C. ..... Platteville
Taylor, Orlo L. ..... Glen Haven
Wilkins, Lee ..... Platteville
Willey, Loy ..... Cuba City
Wise, John H. Jr. ..... Platteville
Zenz, John P. ..... Lancaster
Zenz, Arthur, ... Lancaster

GREEN COUNTY.

Anderson, A. F. ..... Monroe
Austin, Elmer E. ..... Brodhead
Bechtolt, A. B. ..... Browntown
Bechtolt, A. B. ..... Browntown
Biglow, L. F. ..... Brooklyn
Blumer, Ezra Jr. ..... Monroe
Brown, William A. ..... Monroe
Brumer, Ed. Z. ..... Monroe, R. 4
Dettwiler, John ..... Monroe
Douglas, Robt. ..... Juda
Fritsch, John F. ..... Clarno
Geigel, John ..... Monroe
Hoesly, M. J. ..... New Glarus
Klassy, H. ..... Monticello. R. 3
Klassy, Henry ..... Monroe
Lewis, Lester M. ..... Monticello
Marty, Matthias, ... Monticello
Mau, H. G. ..... Brodhead
Morgan, Chas. ..... Albany
Puriton, C. G. ..... Monticello
Ritschard, Fred ..... Monroe
Schuler, John ..... New Glarus
Silver, C. R. ..... Belleville
Stauffacher, A. J. ..... Monroe
Stuessy, Jacob E. ..... Monroe
Swiggum, N. ..... Monroe
Thorpe, Eugene, B. ..... Monroe
Thorpe, Geo. E. ..... Monroe
Tochtermann, C. ..... Monroe
Trumpy, Fred ..... Clarno
Tschudy, Fred ..... Monroe
Tschudy, B. O. ..... Monroe
Waelti. John ..... Monroe
Welz, Chas. ..... Clarno

GREEN LAKE COUNTY.

Clark, J. J. ..... Berlin
Cockerill, H. L. ..... Berlin, R. 7
Hinz. A. F. ..... Markesan
Kutchin, Victor, ... Green Lake
Lehner, Philip, Atty. ..... Princeton
Page, G. F. ..... Berlin

MEMBERSHIP LIST—continued.

IOWA COUNTY.

Aavang, H. O. ..... Barneveld
Anderson, L. ..... Highland
Brunker, Jos. A. ..... Ridgeway
Convey, Thos. ..... Ridgeway
Davies, Llewellyn, ... Mineral Point
Doyle, Wm. E. ..... Cobb
Farwell, R. R. ..... Ridgeway
Graber, Lawrence, ... Mineral Point
Grimstad, William, ... Blue Mounds
Harker, Irving G. ..... Dodgeville
Harker, John J. ..... Linden
Kelly A. N. ..... Mineral Point
Ley, John ..... Dodgeville
Ley, Nick ..... Dodgeville
Morrissey, J. H. ..... Arena
Oimoen Otto ..... Barneveld
Paulson, H. E. ..... Hollandale
Smith, C. B. ..... Edmund
Strutt, A. J. ..... Ridgeway
Swenson, Olin ..... Hollandale
Thomas, Roy E. ..... Dodgeville
Thomas, Edw. J. ..... Ridgeway
Thomas, Willie ..... Ridgeway
Underwood, L. C. ..... Ovoca

JACKSON COUNTY.

Anderson, Ubbe ..... North Bend
Bullock, Jas. P. ..... North Bend
Curran, W. F. ..... Taylor
Dettinger Wm. ..... Hixton R. 1
Dietrich, John ..... Black River Falls
Engleman John ..... Hixton
Haag, Henry ..... Melrose
Haag, Frank ..... Melrose
Horswill, W. K. ..... Black River Falls
Jennings, Earl .....Pigeon Falls
Jennings, Roy ..... Hixton
Lambert, Edw. ..... Taylor
Lane, Orie J. ..... Hixton
McNab A. J. ..... Black River Falls R. 6
Patterson Harvey J. ..... Melrose
Patterson, John D. ..... Melrose
Peterson, Carl ..... Black River Falls
Ristow, C. S. ..... Black River Falls
Someville, John ..... Black River Falls
Thompson, Adolph H. ... Black River Falls R. 6
Tibbett, Wm. ..... No. Bend

JEFFERSON COUNTY.

Anthes, Henry ..... Jefferson
Brueckner, H. C. ..... Fort Atkinson
Brueckner, Justus ..... Jefferson
Emmert, O. J. ..... Johnson Creek
Emmert, H. L. ..... Johnson Creek
Gottschalk, Chas. ..... Lake Mills
Graper, A. F. ..... Helenville
Graper, E. J. ..... Helenville
Guttenberg, Frank, ... Jefferson, R. 1
Hans, Joe ..... Jefferson
Hetts, M. B. ..... Fort Atkinson
Hetts, M. E. ..... Fort Atkinson
Kracht, R. E. ..... Jefferson
Kreuger, Alexander ..... Watertown
Leonard, Geo. H. ..... Jefferson
Leonard, Wm. R. ..... Jefferson
Longley, H. N. ..... Dousman
McIntyre, Ivan ..... Fort Atkinson
Matthews, Milton D. ..... Helenville
Niere, Stuart P. ..... Watertown
Parsons, Wm. A. ..... Fort Atkinson, R. 2
Perry, J. H. ..... Fort Atkinson
Popp, Arthur ..... Jefferson, R. 2
Sayre, Chas. .....Jefferson, R. 5
Schultz, R. ..... Lake Mills
Stacy, John, ... Palmyra
Stiles, W. F. ..... Lake Mills
Trachte, Cornelius ..... Watertown 831-3rd St.
Ward, Chas. E. ..... Fort Atkinson
Ward, Harold L. ..... Fort Atkinson
Ward, Robt. W. ..... Fort Atkinson
Ward, Theo. S. ..... Fort Atkinson
Wendt, Aug. L. ..... Lake Mills, R. 2
Whiting F. H. ..... Lake Mills
Wollin, C. W. ..... Johnson Creek
Wollin, H. B.....Johnson Creek
Wollin, Albert ..... Johnson Creek

JUNEAU COUNTY.

Bailey, Earl ..... Elroy
Hansen, Henry ..... Camp Douglas, R. 1
McNown, J. H. ..... Mauston
Machovec, Jos. A. ..... Mauston
Macomber, Stephen D. ..... New Lisbon
Mead, R. E. ..... New Lisbon
Moore, Henry G. ..... Mauston
Niles, Milo ..... Mauston
Remington, Merlo O. ..... Mauston
Ritchart, Roy C. ..... New Lisbon
Schultz, Arthur ..... Mauston
Wagner, J. M. ..... Union Center

KENOSHA COUNTY.

Beimer, Geo. .....Salem
Bradley, J. Frank.....Somers
Cole, Allen..Kenosha, Wis., 567 Durke Ave.
Cole, Mrs. Allen.....
.....Kenosha, Wis., 567 Durke Ave.
Cropley, W. R. .....Kenosha
Curtiss, W. R.....Trevor
Dexter, Walter S.....Kenosha, R. F. D. 34
Myrick, M. O.....Bristol
Orvis, L. C.....Salem
Paddock, Alvin.....Salem
Paddock, Ray M..... Salem
Paddock, A. D.....Salem
Price, Robt.....Bristol
Roberts, T. W.....Woodworth
Sheen, C. J.....Salem
Sheen, Wray J.....Trevor
Swenson, Earl.....Kenosha
Thiers, Louis M.....Kenosha, 426 Park Ave.

KEWAUNEE COUNTY

Barrett, Joseph.....Casco
Boudnick, John.....Kewaunee, R. F. D. 7
Cherveny, Wenzel....Kewaunee, R. F. D. 7
Collin, D. W.....Luxemburg
Defnet, Jule J.....Casco
Glandt, R. C.....Kewaunee
Haevers, Martin.....Luxemburg
Hoppe, A. M.....Algoma, R. F. D. No. 2
Jerabek, Frank.....Kewaunee
*Jirtle, Geo. B.....Algoma
Katel, W. C.....Kewaunee, R. F. D. 1
Koller, Wm.....Kewaunee, R. F. D. 2
Krofta, Randolph.....Kewaunee
Murphy, J. H.....Kewaunee, R. F. D. No. 7
Nemetz, Frank....Kewaunee, R. F. D. No. 1
Pelisek, Frank W..Kewaunee, R. F. D. No.2
Prochnow, Frank F.....Luxemburg

*Deceased.

MEMBERSHIP LIST—continued.

Radcliffe, Arthur E.....Casco
Rohde, Henry....Kewaunee, R. F. D. No. 1
Runke, Rufus.....Algoma
Stangel, Richard..Kewaunee, R. F. D. No. 2
Thibodeau, Elmer..Kewaunee, R. F. D. No.6
Waegli, John .....Kewaunee

LA CROSSE COUNTY.

Bonsack, Ed.....Bangor, R. F D. No. 3
Bosshard, Eugene.....La Crosse
Davis, L. H.....Bangor
Freehoff, Wm..Coon Valley, R. F. D. No. 1
Griswold, H. W.....West Salem
Harr, Ernest.....Bangor
Hemker, Fritz H..West Salem, R. F. D. 2
Jones, E. D.....Rockland
Lawrence, W. J.....Bangor
Lemke, L. C.....Onalaska
Lovejoy, Hiram D..... .West Salem
Markle, S. P.....La Crosse
Nuttleman, Adolph.....West Salem
Nuttleman, Alfred.....West Salem
Nuttleman, Fred.....West Salem
Restow, Henry.....Onalaska
Sandman, W. D.....Holmen
Schaller, Frank.....Holmen
Schaller, Geo. .....Holmen
Schilling, Harry W.....Onalaska
Van Loon, John.....La Crosse
Westerhouse, J.....Onalaska
Westerhouse, G.....Onalaska
Wielinga, Yeppe.....Midway

LAFAYETTE COUNTY.

Andrews, Arthur L.....South Wayne
Boyd, Henry J.....Forestville
Buss, Arch.....Mineral Point
Erickson, Clarence..So. Wayne, R. F. D. 1
Glindinning, H. L.....Shullsburg
Gilberts, Clarence .....Darlington
Ingwell, Albert.....Blanchardville
Jorenby, Carl O.....Blanchardville
Jorenby, Harold.....Blanchardville
Merriam, Leslie.....Darlington
Perry, Will H.....Gratiot
Usher, Earl.....South Wayne
Usher, J. M.....South Wayne
Vamstad, Brady.....Blanchardville
Watrud, H. O.....Blanchardville

LANGLADE COUNTY.

Follstad, Anton.....Elcho
Leykom, Wallace.....Antigo
Nordman, Edward.....Polar
Peerson, Alf.....Bryant
Schwartz, John .....Antigo

LINCOLN COUNTY.

Parrott, Geo.....Merrill
Meisner, L. R.....Merrill

MANITOWOC COUNTY.

Arnold, Arthur.....Kiel
Axley, Walter.....Cleveland
Bauer, A. H.....Manitowoc
Bender, Fred, Jr.....Cleveland
Beihm, W. H.....Manitowoc
Berge, Otis.....Valders
Berge, Oscar A.....Valders
Brennan, Jos.....Cato
Clusen, Reinhold.....Manitowoc
Dexheimer, Geo.....Kiel
Dexheimer, Henry.....Kiel
Eggert, Gust.....Two Rivers
Eisemann, Harvey.....Mishicot
Garey, James.....Grimms
Geraldson, M.....Manitowoc, R. F. D. No. 4
Gustaveson, Chas...Manitowoc, R. F. D. 4
Heidemann, Otto.....Kiel, R. F. D. 2
Hetzel, Gilbert.....Cleveland
Hoefner, Herbert....Manitowoc, R. F. D. 1
Johannes, Albert....Two Rivers, R. F. D. 2
Kielsmeier, Hugo C.....
.....Cleveland, R. F. D. No. 3
Kirby, Jas.....Grimms
Klann, Adolph.....Reedsville
Klessig, Otto.....Cleveland
Klessig Edwin.....Cleveland
Knudson, Ed. A...Manitowoc, R. F. D. No.4
Kolb, Ed.....Cleveland
Larson, John A.....Valders
Lutze, Geo.....Cleveland
Marken, Otis A.....Valders
Moldenhauer, W. C.....Manitowoc
Nate, Geo. B.....Grimms
Pritzl, John A.....Cato
Reddin, Thos. E.....Cato
Riederer, B.....Cato
Roethel, Herman.....Kiel, R. F. D. No. 2
Shuster, Chas...Manitowoc, R. F. D. No. 7
Strowig, Wm.....Cleveland
Thielke, Ed. .....Kiel
Thompson, Geo. H.....Quarry
Tyler, Jas. G.....Valders
Watt, Thos., Jr.....Grimms
Watt, Chas., Jr.....Grimms
Wehrwein, Walter .....
.....Manitowoc, R. F. D. No. 2
Wesener, Wm. .....Cleveland
Wiegand, O. R.....Cleveland
Wilkowski, Hugo.....Mishicot
Zill, Bruno.....Cleveland

MARATHON COUNTY.

Aderhold, Herman.....Athens
Arnold, Philip.....Edgar
Baesemann, Otto.....Edgar
Brotherton, Alvin....Colby, R. F. D. No. 1
Heinke, Alvin E.....Stratford
Helmke, Theo. J...Hamburg, R. F. D. No. 1
McAdam, Cecil.....Schofield
Parsch, Gust A.....Wausau
Vaughan, John M.....Unity

MARINETTE COUNTY.

Mickelson, A. W.....Walsh
Ramsey, R. C.....Peshtigo
Schneider, G. P.....Walsh

MARQUETTE COUNTY

Hamilton, T. S.....Westfield
Haskins, Leon O.....Montello
Houslet, Neal.....Packwaukee

MILWAUKEE COUNTY.

Babcock, Chas. L.....
.....Milwaukee, 404 Colby Abbot Bldg.
Baden, Robert J...Milwaukee, 1088 10th St.
Basse, Wm. H...West Allis, R. F D. No. 5

MEMBERSHIP LIST—continued.

Diderich, Nicholas.....North Milwaukee
Duerr, H.....Wauwatosa, 210 8th Ave.
Duve, Henry F...West Allis, R. F. D. No. 5
Guenther, Nelson W.....South Milwaukee
Hesse, John.....Milwaukee
Hickcox, J. Gilbert.....Whitefish Bay
Jungbluth, W. J...West Allis, R. F. D. No. 6
Kurtze, Otto C...West Allis, R. F. D. No. 4
Loewe, Arthur..Milwaukee, R F. D. No. 8
Machimura, K...care Rust Bros., West Allis
Mahler, Eugene H.....Milwaukee
Mahler, Jacob.....Wauwatosa
Margoles, N.....Milwaukee
Meyer, Alf. J.....Oakwood
Mower, Arbo.....Wauwatosa
Nicolaus, Chas.....Cudahy
Pierner, Fred.....North Milwaukee
Pierner, John W.....Thiensville
Swan, Erling.....Milwaukee
Swan, Robert G.....Milwaukee
Swan, N. J.....Wauwatosa
Tifft, J. Ringland.....Wauwatosa
Unger, Ernest F.....
.....North Milwaukee, R. F. D. No. 9
Unger, Edw.....No. Milwaukee, R. F. D. 9
Warzyn, Arthur.....Oakwood

MONROE COUNTY.

Aarness, O. C.....Cashton
Anderley, Louis.....Kendall
Benrud, Martin A.....Cashton
Brokopp, Ernest.....Kendall
Ebert, F. E.....Tomah
Erickson, Henry.....Cashton
Freeman, G. A.....Sparta
Foth, Frank D.....Norwalk
Hale, Clayton T.....Tunnel City
Hansen, Henry.....Sparta
Hansen, Carl F.....Sparta
Harris, R. E.....Warrens
Hitchcock, Clarence E.....Sparta
Hubbard, W. E. .....Norwalk
Jeffery, F. D.....Monroe
Kirst, Alfred.....Tomah
Lee, L.....Leon
Leverich, J. W.....Sparta
Leverich, E. S.....Sparta
Miller, L. A.....Sparta
Mistele, Wm.....Kendall
Misna, Thos.....Cashton
Nathen, Paul K.....Kendall
Pratt, Vernon.....Cataract
Pratt, Ross.....Cataract
Roy, Julius.....Sparta
Van Zandt, L.....Sparta
Wilkinson, Ed.....Wilton
Wyatt, Ernest.....Tomah, R. F. D. No. 6

OCONTO COUNTY.

Berger, John H...Oconto Falls, R. F. D. 2
Doyle, Henry.....Oconto
Hawley Merton.....Oconto Falls
Magee, Ellis.....Coleman

ONEIDO COUNTY.

Schoeneck, Gust.....Enterprise

OUTAGAMIE COUNTY.

Blake, Wm. G.....Black Creek
Bleek, Walt A.....Black Creek
Jamison, A.....Appleton
Jamison, Clarence.....Appleton
Jamison, Harvey.....Appleton
Jamison, Howard.....Appleton
Jamison, Stanley.....Appleton
Jamison, W. G.....Appleton
Kavanaugh, John.....Kaukauna
Keenan, M. L.....Leeman
Klemm, L. J.....Welcome
Letts, Edwin.....Appleton, R. F. D. No. 4
Lutz, Edward.....Appleton
Merkel, Henry.....Appleton
Mills, Roscoe C.....Appleton
Penn, Joseph, Jr.....South Kaukauna
Perner, Fred..Sugar Bush, R. F. D. No. 26
Ryan, Wm.....South Kaukauna
Ryan, Malachi.....South Kaukauna
Schmit, Geo. .....Greenville
Schmit, Wm. T.....Appleton
Schmit, A. W.....Appleton, R. F. D. No. 2
Schmit, Albert..Appleton, R. F. Do. No. 2
Schaefer, R. J.....Appleton
Schaefer, Geo. .....Appleton
Tubbs, Herbert.....Seymour
Wickert, Walter .....Appleton
Wusson, Chas. A.....Seymour
Zahrt, F. H.....Hortonville

OZAUKEE COUNTY.

Ahlers, Walter.....Grafton
Behrens, Barhnard.....Grafton
Bickler, Nic. J.....Belgium
Bittner, John A.....Saukville
Clausing, Adolph.....Thiensville
Groth, Hugo.....Cedarburg
Groth, Louis.....Cedarburg
Kieffer, Mike.....Fredonia
Kuhtz, Harvey A.....Thiensville
Weinreich, Fred C.....
.....Fredonia, R. F. D. No. 2

PEPIN COUNTY.

Fleishauer, Chas. .....Arkansaw.
Gustafson, Theo.....Stockholm
Jahnke, J. F.....Pepin

PIERCE COUNTY.

Batho, Lester.....Plum City
Brown, Monro.....Bay City
Brown, Wm.....Spring Valley
Carpenter, F. W., Jr.....Spring Valley
Finstad, Frank.....Beldenville
Hanson, Henry.....Spring Valley
Heinze, Louis.....Prescott
Jacobson, Chas. O.....Spring Valley
Jorgensen, John.....
.....River Falls, R. F D. No. 2
Kuehn, Herbert.....Spring Valley
Nelson, Fred.....River Falls
Neystrom, Archie.....Maiden Rock
Nyeggen, Henry.....Spring Valley
Persons, M. B.....Plum City
Smith, Fred.....River Falls

POLK COUNTY.

Carlson, John E.....Luck
Cook, Winfred.....Deer Park
Cook, Albert.....Deer Park
Ferris, L. S.....St. Croix Falls
Holliday, Edw.....New Richmond
Jerdee, Perry S.....Deronda
Lawson, Andrew C.....Luck

MEMBERSHIP LIST—continued.

Lee, Oliver.....Amery, R. F. D. No. 2
Legrid, Henry E.....Deer Park
Lindberg, Clinton H.....Dresser Junction
Peterson, E. M.....Amery, R. F. D. No. 4
Raonholt, Ausgar.....Milltown
Rehbein, A. E.....St. Croix Falls

PORTAGE COUNTY.

Arnott, Grace.....Stevens Point
Brekke, Anton.....Rosholt
Clark, W. E.....Stevens Point
Hanson, N. P.....Amherst Junction
Loberg, Almer.....Nelsonville
Parsons, Harry .....Portage
Peterson, Perry.....Amherst
Tobie, E. P.....Amherst Junction
Williamson, Boyd.....Amherst Junction

PRICE COUNTY.

Frank, Dismas.....Phillips
Hoffman, Conrad.....Phillips

RACINE COUNTY.

Adland, P. H.....North Cape
Chambers, O. Q.....Union Grove
Cook, Joe C.....Burlington
Cook, Geo. L.....Burlington
Cooper, Archie.....Franksville
Erbe, George.....Caledonia
Foxwell, Everett.....Union Grove
Gehrand, Arthur A.....Rochester
Holloway, John W.....Union Grove
Holloway, Ed. M.....Union Grove
Jacobson, Clarence.....
.....Waterford, R F. D. 25
Jacobson, Arthur.....Burlington
Karcher, Gilbert A.....Burlington
Klofanda, Royal.....Racine
Klofanda, Reuben.....Racine
Nelson, Ralph.....Union Grove
Nelson, Harvey.....Union Grove
Odell. Wm. G.....Lake Beulah
Renak, Ed.....Racine, R. F. D. 2
Robers, Wm. J...Burlington, R. F D. No. 20
Roberts, R. E.....Corliss, R. F. D. No. 5
Rolfson, C. E.....Waterford
Schelling, Jerome.....Racine
Skewes, Edwin.....Union Grove
Sorenson, Hilbert.....Franksville
Spartz, N. A.....Union Grove
Willey, Leslie.....Burlington
Zachar, Milton, R.....Racine

RICHLAND COUNTY.

Annear, Rolland.....Richland Center
Cook, A. E.....Boaz
Ellsworth, R. W.....Tavera
Ewers, Forest.....Boaz
Fowell, L. D.....Sylvan
Ghastin, Wm. J.....Twin Bluffs
Ghastin, Floyd L.....Twin Bluffs
Householder, Glen M.....Richland Center
Janecek, C. M.....Bloom City
Jaquish, J. E.....Twin Bluffs
Keyes, Glenn C.....Richland Center
Lindevig, Oscar.....Voila
Moore, J. F.....Loyd
Oman, Carl.....Tavera, R. F. D. No. 1
Post, H. L.....Sextonville
Schmitz, Edw. H.....Lone Rock
Schmitz, Hubert.....Lone Rock
Smelcer, Fred C.....Lone Rock
Thorpe, J. R.....Tavera
Turgasen, J. H.....Richland Center

ROCK COUNTY.

Austin, A.....Janesville
Austin, A. G.....Janesville, R. F D. No. 6
Austin, C. P.....Janesville, R. F. D. No. 6
Austin, W. D.....Janesville, R. F D. No. 6
Barker, E. S.....Janesville
Benedict, E. L.....Beloit
Bingham, E. L.....Milton
Bingham, Howard L.....Milton
Caldo, Leslie.....Janesville
Coit, Henry.....Evansville
Coon, Elam P.....Milton Junction
Dahl, A. J.....Edgerton
Danner, Chas. D.....Janesville
Dougan, W. J.....Beloit
Ellis, E. J.....Evansville, R F. D. No. 19
Godfrey, Allen.....Milton Junction
Jacobs, S. M.....Janesville, R. F D. No. 3
Kimble, N. G.....Milton Junction
Marston, Albert E.....Beloit
Moore, Fred W.....Beloit, R. F. D. No. 30
Mueller, M. J.....Edgerton
Newhouse, K. K.....Clinton
Peacock, Ray Jos.....Lima
Reesey, E. L.....Beloit
Shuman, Chas. F.....Koshkonong
Smith, L. E.....Beloit
Simpson, Lloyd L.....Edgerton
Ward, H. D.....Beloit

RUSK COUNTY.

Pritchard, J. T.....Conrath

ST. CROIX COUNTY.

Alberts, Will.....New Richmond
Arnquist, J. F.....New Richmond
Bennett, W. L.....Stanton
Boardman, F. H.....New Richmond
Boardman, B. H.....New Richmond
Brunner, Fred F.....Hudson
Brunner, R. W.....Hudson
Carlson, Nels.....Hudson
Fay, R. E.....New Richmond
Fay, Albert.....New Richmond
Fuiten, B. H.....New Richmond
Hargrove, W. E.....Roberts
Heebink, Wm.....Baldwin
Heebink, Henry.....Baldwin
Hogan, Ed.....New Richmond
Hogan, E. J.....New Richmond, R. F. D. 4
Irle, Henry.....New Richmond
Imrie, David.....Roberts
Kruschke, Alvin.....New Richmond
Kruschke, Geo. H.....New Richmond
Larson, Theodore.....Hudson
Paulson, P. A.....Hudson
Peterson, Arthur W.....Roberts
Schwandt, Wm.....Stanton
Taylor, Lewis.....Glen Haven
Utgaard, Peter.....Cylon
Webster, W. E.....Hudson

SAUK COUNTY.

Accola, J. F.....Prairie du Sac
Borck, Sam.....North Freedom

MEMBERSHIP LIST—continued.

Capener, W. R.....Baraboo
Capener, Clifford C.....Baraboo
Clingman, E. S.....Reedsburg
Enge, Eugene.....Prairie du Sac
Gasser, Benj. C.....Plain
Getschmann, Willie.....North Freedom
Gonsolin, Fred.....Reedsburg
Grass, C. F., Prairie du Sac, R. F. D. No. 2
Graves, D. W.....Baraboo
Hasheider, Hubert G.....Plain
Harvey, Caleb B.....Wonewoc
Hatz, J. A.....Prairie du Sac
Herwig, Theo. E.....Delton
Hinrichs, Ernest.....Reedsburg
Hood, D. L.....Spring Green
Houghton, F. T.....Reedsburg
Johnson, Glen....Baraboo, R. F D. No. 2
Kindschi, Edwin.....Prairie du Sac
Koenecke, A. E.....Reedsburg
Koenecke, Ewald.....Reedsburg
Koenecke, E. H.....Reedsburg
Lachmund, Robt.....Sauk City
McGinnis, Chas. .....Baraboo
Marshall, W. S.....Delton
Mejnis, Chas.....Baraboo
Morley, Edwin.....Prairie du Sac
Oschner, Arthur.....Plain
Owens, Edwin.....Wild Rose
Payne, Ed. H.....Prairie du Sac
Randall, Tracy E.....Baraboo
Riek, Anthony.....Plain
Roderwald, Walter C.....Baraboo
Rusch, E. W.....Reedsburg
Schueller, L. B.....Sauk City
Schuette, Herman W.....Reedsburg
Sherwood, C. B.....Spring Green
Sprecher, Elias B.....Plain
Steidtmann, Edwin.....Merrimac
Stone, Riley.....Reedsburg
Toole, W. A.....Baraboo
Vonder Ohe, Wm. H.....Reedsburg
Weirich, Martin J.....Baraboo
Wichern, Wm.....Baraboo
Wichern, C. H.....Baraboo

SAWYER COUNTY.

Uhrenholdt, Jens.....Leonard
Uhrenholdt, S. J.....Leonard

SHAWANO COUNTY.

Berg, Carl J.....Tigerton
Hildemann, Alex. E.....Belle Plaine
Klovhahl, John..Wittenberg, R. F. D. No. 1
Norrborn, C. G.....Eland, R. F. D. No. 1
Wedgewood, R. E.....Shawano

SHEBOYGAN COUNTY.

Athorp, Willie..Sheboygan, R. F. D. No. 1
Dennerlein, A. J.....Plymouth
Fischer, Louis.....Haven
Frauenheim, O. R.....Random Lake
Gafke, Arthur J.....Plymouth
Gorsage, M. E.....Haven
Hoppert, Martin, Sheboygan .....
.....R. F D. No. 4
Illian, W. L.....Adell
Knoener, G. C.....Plymouth
Ogle, Jas.....Waldo
Parrish, J. O.....Plymouth
Reineking, Rudolph.....Sheboygan Falls
Strauss, Norbert.Sheboygan, R. F. D. No. 1
Swart, Witt.....Plymouth
Ubbelohde, Frank.....Sheboygan Falls
Wagner, A. L.....Haven
Wunsch, Hugo E.....Haven
Wunschalf, J. C.....Haven

TAYLOR COUNTY.

Amacher, Fred.....Stetsonville
Schmoedt, Paul C.....Whittlesey

TREMPEALEAU COUNTY.

Bishop, W. E.....Arcadia
Erickson, Robert.....Galesville
Gilbertson, C. P., Arcadia, R. F. D. No. 5
Graul, Geo.....Independence
Hagestad, A. C.....Ettrick
Hanson, Albert.....Whitehall
Hegge, Julius.....Galesville
Lund, Geo. S.....Arcadia
Markham, F. C.....Independence
Mattison, Thos.....Blair
Moen, Gilbet T.....Eleva
Paine, Allen.....Arcadia
Pederson, Peter .....Eleva
Peterson, B. A.....Blair
Ristau, E. O.....Osseo
Thompson, Ben.....Blair
Young, W. D.....Galesville

VERNON COUNTY.

Aberg, Jacob.....De Sota
Alexander, Chas.....Viroqua
Borhaven, Fred C.....De Sota
Burris, F. E.....Kendall
Cade, Jos. M.....Viroqua
Fisher, Leslie .....Viroqua
Henden, Carl.....Viroqua
Henry, Ernest E.....Viroqua
Herold, Rudolph, Jr.....Stoddard
Hoilien, David.....Westby
Jasperson, Alfred.....Viroqua
Johnson, Roy M.....De Sota
Lake, Clifford.....Viroqua
McClurg, W. F.....Viroqua
Morgan, W. P.....Victory
Neprud, Selmer.....Westby
Neprud, N. O.....Coons Valley
Schreiner, Alf. .....Westby
Sebion, Tennis.....Westby
Sebion, Cornelius.....Westby
Smith, H. E.....Viroqua
Staley, Orlo.....Hillsboro
Staley, Leo.....Hillsboro
Stanley Bros.....Hillsboro
Stegne, Chris.....Viroqua, R. F. D. No. 5

WALWORTH COUNTY.

Besecker, Howard F.....Delavan
Bromley, Fred G.....Whitewater
Dow, Evert J...Whitewater, R. F. D. No. 4
Dunbar, Harry D.....Elkhorn
Ells, F. W.....Elkhorn
Ells, R. H.....Darien
Forester, M. F.....Whitewater
Gile, Fred.....Sharon
Hodge, Roy.....Lake Beulah
Ingalls, Howard.....Walworth
Kiley, Walter.....Darien
Kiteley, Leonard W.....Sharon

MEMBERSHIP LIST—continued.

Lean, Ivan F.....Elkhorn
Lewis, E. H.....Whitewater
Lowell, Lloyd.....Sharon
Meurer, Paul.....Genoa Junction
Millis, T. H.....Whitewater
Palfrey, John .....Elkhorn
Palmer, Earl.....Lake Geneva
Peters, Ezra.....Sharon
Piper, Harry.....Sharon
Smith, Carroll....Delavan, R. F. D. No. 3
Sturtevant, Robt. H.....Delavan
Thacher, Ed. F.....Zenda
Utter, Delwin H.....Lake Beulah
Wright, John.....Whitewater

WASHBURN COUNTY.

Carlson, J. M.....Spooner
Carpenter, W. H .....Lampson
Melby, Dan.....Spooner, R. F. D. No. 2
Soholt, Gustav L.....Madge
Soholt, O. S..... ....Madge

WASHINGTON COUNTY.

Backus, Frank G.....Kewaskum
Baertlein, Wm. A.....South Germantown
Baertlein, V. J.....South Germantown
Braun, John A.....South Germantown
Connell, C. J.....Menomonee Falls
Connell, Wm. A.....Menomonee Falls
Flynn, John W.....Hartford
Gerner, Ed.....Barton
Gerner, John.....Barton
Gutschenritter, F. J.....West Bend
Hamlyn, Windsor W.....West Bend
Hoelz, Jac., Jr.....Rockfield
Klinka, Jos.....West Bend, R. F. D. No. 5
Klinka, John S.....West Bend
Klumb, Arthur L.....Rockfield
Klumb, Oscar.....Rockfield
Klumb, Albert.....Rockfield
Klumb, Hugo G.....Rockfield
Merlahn, Wm. O.....Kewaskum
Puls, John.....Hartford
Salter, Milo P.....West Bend
Schoedel, Arthur.....Barton
Schottler, C. J.....South Germantown
Schwatter, Alvin.....Jackson
Stork, Fred G.....Rockfield
Weiss, Glen C.....West Bend
Ziemer, Paul.....Jackson

WAUKESHA COUNTY.

Baird, R. L.....Waukesha
Baird, Jas. W.....Waukesha
Blood, Ike.....Mukwonago
Boldt, Henry C.....Calhoun
Boyd. J. T.....Waukesha, R. F. D. No. 7
Brown, R. P.....Hartland, R. F D. No. 21
Butler, G. C.....Templeton
Cooper, Joe.....Pewaukee
Craig. Orlin P.....Mukwonago
Daebel, F. W., Jr.....Waukesha, R. F. D. 3
Dance, James.....Brookfield
Dance, George.....Brookfield
Dibble, R. A.....
.....Menomonee Falls, R. F. D. No. 18
Dobbertin, Samuel R.....
.....Hartland, R. F. D. No. 21
Dustrude. Geo. O.....Oconomowoc
Fuller, Horace.....North Lake
Fuller, Albert A.....North Lake
Fuller, Roland.....North Lake
Gierke, Edwin A...Waukesha, R. F. D. No. 1
Gimler, Frank.....Calhoun
Grengo, A. L.....Menomonee Falls
Gunderson, Forest.....Oconomowoc
Hall John.....Hartland, R. F. D. No. 21
Hall, Frank....Hartland, R. F. D. No. 21
Hall, Lester..Oconomowoc, R. F D. No. 24
Hart, Wm. C.....Brookfield
Herr, John.....Waukesha
Hicken, Alfred B.....Waukesha
Hill, Chas. T.....Brookfield
Hill, J. T.....Brookfield
Hill, Chas. C.....Brookfield
Inoldenhauer, Fred.....Oconomowoc
Jeffery, H. B.....Menomonee Falls
Kaul, E. H.....Waukesha
Klussendorf, Fred E.....Waukesha
Klussendorf, Arthur.....Waukesha
McKenzie, Will..Mukwonago, R. F. D. No.39
Mitchell, Chas. J.....Brookfield
Mitchell, Dean S.....Brookfield
Mitwede, Henry.....Waukesha
Nicolaus, D. C.....Mukawonago
Omann, Holger.....Nashotah
Peebles, John.....Oconomowoc
Pokfuss, Edw.....Waukesha
Price, W. Howard.....Waukesha
Reyer, Walter L., Templeton, R F. D. 20
Rosenow, Arthur F.....Oconomowoc
Rosenow, H. E.....Oconomowoc
Rust, S. H.....Mukwonago
Schafer, Chas...Waukesha, R. F D. No. 7
Seitz. Adam.....Waukesha
Smith, Geo. J.....Nashotah
Stewart, Joe H.....Wales
Swartz, P.....Waukesha
Swoboda, F. G.....Dousman
Sydow, Wm.....Waukesha
Tempero, R. J.....Menomonee Falls
Van Buren, E. W.....
.....Waukesha, R. F. D. No. 2
Voight, A.....Oconomowoc, R. F. D. No. 26
Wagner, A. G.....Waukesha
Woelpel, Fred J...Waukesha, R F. D. No. 6

WAUPACA COUNTY.

Almon, Perry.....Weyauwega
Bille J.....Waupaca
Bestul, Martin.....Scandanavia
Harrington, Forest F.....
.....Waupaca, R F. D. No. 23
Harrington, Myron.....Waupaca, R. F. D. 6
Johnson, Hanford.....Fremont
Johnston. Frank R.....Waupaca
Kendall. Myron.....Iola
Kneip, Wm.....Weyauwega
Knoke, Henry.....Readfield
Kunkel, Arthur.....Manawa
Larson. Leroy.....Iola
Nace, F.....Iola
Pinkerton, A. J.....Waupaca
Pinkerton, Fred.....Waupaca
Pirner, John, Jr.....Manawa
Spletter, Oscar.....Manawa
Suhs John.....Waupaca
Thomas, Ernest.....Sugar Bush

WAUSHARA COUNTY.

Eagan, J. J.....Wautoma
Fredrick, William.....Lampson
Harris, A. M.....Plainfield
Jones, Howard.....Wild Rose
Knutson, E. L.....Wautoma

MEMBERSHIP LIST—continued.

Larson, J. M.....Wautoma
Thorstad, Clarence.....Wautoma

WINNEBAGO COUNTY.

Blakely, A. J.....Neenah
Boss, Sam J.....Oshkosh, R. F. D. No. 7
Boss, U. C.....Oshkosh, R. F D. No. 7
Boyle, Wm.....Calamine
Bussey, W. P.....Omro, R. F. D. No. 4
Cross, A. J.....Allenville
Davis, J. C.....Oshkosh
Evans, Wm. D.....Fisk, R. F. D. No. 26
Hoppe, Frank.....Omro
Ihrig, J. J.....Oshkosh
Jennings, Edwin.....Pickett
Marshall. A. C.....Omro
Miller, Homer.....Pickett
Miller, Henry C.....Allenville
Miller, Oren.....Pickett
Smith, Seymour....Oshkosh, R. F D. No. 5
Treleven, Guy.....Omro
Wood, Calvin D...Oshkosh, R. F. D. No. 4

WOOD COUNTY.

Kissinger, Henry.....Grand Rapids
Kronholm, E.....Grand Rapids
Kronholm, V. E.....Grand Rapids
Malde, O. J.....Grand Rapids
Peterson, Einar.....Milladore
Peterson, Anton.....Milladore
Schnoeder, Herman.....Marshfield

NON-RESIDENTS.

ARIZONA

Stienstra, S. J.....Keams Canon

CALIFORNIA

Belz, Frank A.....Visalia
Tanner, Archie.....San Jacinta

ILLINOIS

Akins, Clyde E.....Warren
Alprecht, H. C.....Ohio
Beitel, P. A.....Rochelle
Bennett, H. J.....Cherry Valley
Bruning, Jacob.....Shermanville
Chetlain, L. A.....Galena
Christensen, Emil, Chicago, 892 No. 53d St.
Coffin, Russell....Rockford, R. F D. No. 7
Cook, Oscar M.....Apple River
Dienst, A. H.....Hinckley
Durand, Grace, Mrs.....Lake Bluff
Greeley, Helen R.....
.....Chicago, 4833 Woodlawn Ave.
Green, Everett.....Durand
Hendry, Jas..Chicago, 2458 Hamilton Court
Hitchcock, H. R.....Pecatonica
Jones, Ira P.....Hinckley
Kiner, E. E.....Marseilles
Leinberger, Ralph.....Warren
McBride, Harold..Chicago, 5700 Drexel Ave.
McGeachie, E. P...Rushford, R. F. D. No. 8
Martin, Walter I.....Barrington
Miller, Ralph B.....Antioch
Osterday, E. G.....Stockton
Phillips, Jesse.....Elizabeth
Pierce, Ross.....Stockton
Reed, Burt.....Elizabeth
Reiberg, Max.....Chicago
Richardson, Geo. J.....Spring Grove
Russell, E. Allen, Jr.....Lake Forest
Smithwick, M. W.....
.....Chicago, Com. Nat. Bank Building
Swift, M. Earl.....Waterman
Walker, Geo. B.....Elgin
Webbe, W. E.....Barrington
Winker, Harold.....Antioch

INDIANA.

Carman, Edw. G.....Mishawaka
Dewire, M. E.....Hamilton
Fuller, Robt. M.....Mishawaka
Jones, Garfield.....Griendville
Lindenmann, J. H.....South Bend
Perry, R. D.....Columbus

IOWA

Anderson, Theo.....Waterville
Brooks, Homer H.....Hopkinton
Klaus, C. S.....Colesburg
Kaiser, E. D.....Garnavillo
Thompson, T.....Wadema
Voelker, Ed. .....Farmersburg

MEXICO

Cardenas, F. F.....Ocampa, Coah.

MICHIGAN

Bruhn, John.....Topaz
De Forest, Theo. K.....Ann Arbor
Eskil, Odin.....Escanaba
Hatch, L. M.....Big Bay
Johnston, R. M.....Hancock
Larsen, Chas. .....Baldwin
Savage, Albert.....Fremont

MINNESOTA

Florsheim, Isaac .....Nevins
Gunderson, Gehard....Duluth, 117 First St.
Halvorson, Theo.....Duluth
Hillier, H. B.....Brownsdale
Holcomb, W. R.....Excelsior
Imholt, B. A.....Beardsley
Wiker, N. H.....Mabel

MONTANA

Bennett, C. S.....Somers

NEW JERSEY

Geller, Henry Wm.....Woodbine

MEMBERSHIP LIST—continued.

NEW YORK

Curtis, Frank .....Binghampton
Colenso, J. E.....Monroe
Mills, Stanley.....Walden
Northup, H. R.....437 West 22d St.
Schermerhorn, G. B.....Keeseville
Temple, T. R.....Glens Falls

NORTH DAKOTA

Smith, Guy W.....Bottineau

OHIO

Barker, W. H.....South Lynne

PENNSYLVANIA

Niesen, H. P.....Carbondale, 45 Scott St.
Roser, Wm. H.....Mt. Gretna

SOUTH CAROLINA

Napier, J. M.....Clemson College

UTAH

Carey, Jas. E. L.....Fruitland

HONORARY MEMBERS.

Ames, W. L.....Oregon
Babcock, Dr. S. M.....Madison
Bull, Prof. C. P...St. Anthony Park, Minn.
Cary, Prof. C. P. .....Madison
Cheesman, Jas. B.....Racine
Emery, Prof. J. Q. .....Madison
Hays, W. M., Ass't Secretary Agr.....
.....Washington, D. C.
Henry, Dr. W. A. .....Madison
Karel, Hon. L. A.....Kewaunee
Lehmann, Mrs. Eva .....Woodland
McCormick, G. W.....Menominee, Mich.
McKerrow, Supt. Geo.....Pewaukee
Newman, Geo. N. .....Mobile, Ala.
Philips, A. J.....West Salem
Renk, Katharine.....Boise City, Idaho
Russell, Dr. H. L.....Madison
Schauer, Hon. A. G.....Kewaunee
Toole, Wililam .....Baraboo
True, Hon. John M.....Madison
Utsunomiya, S. T. Sapporo, Hokkaido, Japan
Utter, Delbert .....Lake Beulah

AGRONOMY BUILDING TO THE LEFT

Headquarters of the Wisconsin Experiment Association.

TENTH ANNUAL MEETING

OF THE

Wisconsin Agricultural Experiment Association

AGRICULTURAL HALL

MADISON, WISCONSIN

The officers and members of the Association extend a cordial invitation to all interested in progressive farming to attend its meetings and take part in the discussions.

PROGRAM

FRIDAY, 8:30 A. M.

Annual Address of the President.....C. P. Norgord, Madison
Secretary's Report.....R. A. Moore, Madison
Agricultural and Fruit Growing Opportunities in the West Compared to Those in Wisconsin.....W. H. Hanchett, Sparta
Factors Necessary for the Development of Northern Wisconsin.....Prof. E. J. Delwiche, Ashland
The Control of Weeds in Wisconsin.....Prof. A. L. Stone, Madison
Why Wisconsin Should Grow More Wheat.....B. D. Leith, Madison
Farm Experience in the Eradication of Quack Grass .....C. A. Lyman, Sun Prairie
Co-operation of Members and County Orders of the Experiment Association with the State Fair.....Chas. Everett, Racine
Farm Advertising.....J. C. Marquis, Madison
Fire-drying Seed Corn.....W. E. Bishop, Arcadia

FRIDAY, 2 P. M.

BUSINESS MEETING.

Election of Officers, Reports of Committees, General Business, etc.
Plan of Work for the Coming Year:
Division of Farm Crops.....R. A. Moore

Division of Soils.....A. R. Whitson, Madison
Division of Farm Mechanics.....C. A. Ocock, Madison
Division of Agricultural Extension.....K. L. Hatch, Madison
Report of Secretary of the Fond du Lac County Order of the Wisconsin Experiment Association.....Henry Michels, Malone
Report of Secretary of the Dodge County Order .....H. E. Krueger, Beaver Dam
Report of Secretary of the Manitowoc County Order .....O. R. Wiegand, Cleveland
Report of Secretary of the Monroe County Order..L. A. Miller, Sparta
Report of Secretary of the St. Croix County Order .....Wm. Schwandt, Stanton
Report of Secretary of the Sheboygan County Order .....O. R. Frauenheim, Random Lake
Report of Secretary of the Vernon County Order....Jos. Cade, Viroqua

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FRIDAY, 7:30 P. M.

Joint sessions of the Experiment Association and Short and Long Course Literary Societies.
Instrumental Music.....Students' Orchestra
Opening Remarks.....Dean H. L. Russell
Grain Breeding.....Prof. C. P. Bull, St. Anthony Park, Minn.
Vocal Music.....Glee Club
Address, The Wisconsin Experiment Association as an Economic and Educational Force.....Prof. L. D. Harvey, Menomonie, Wis.
Violin Solo.....Prof. J. C. Juergens
Piano Accompaniment.....Mrs. G. C. Humphrey

SATURDAY, 9 A. M.

Reports of Farm Inspectors:
Fond du Lac County.....Henry Michels
Dodge County.....H. E. Krueger
Monroe County.....Geo. Freeman
Manitowoc County.....O. R. Wiegand
St. Croix County.....Wm. Schwandt
Sheboygan County.....O. R. Frauenheim

SATURDAY, 2 P. M.

AGRONOMY BUILDING.

Inspection of prize winning seed grains—Competitive samples sold at auction.

NINTH ANNUAL REPORT

OF THE

Wisconsin Agricultural Experiment Association

PRESIDENT'S ANNUAL ADDRESS.

C. P. NORGORD, MADISON.

We have met here today to get and to give information and inspiration. We have met above all to get a larger stock of enthusiasm for our work as individuals and for the future aims and lines of advancement of this organization. Enthusiasm inspires thought and originates plans. It broadens our view and projects our imagination. It gives vim and vigor of action. Enthusiasm does the world's work. We want enthusiasm. The great national cry of today is the conservation of our national resources and preparation for feeding the increased millions of the future with the products of our soil. We are rapidly approaching the time when, higher yielding seeds, better methods and more intensive cultivation of the lands available will be the chief means of increasing our national production. This organization has stood for improved seeds and improved methods of farming from its beginning, is standing for that today and will be the exponent of this method of meeting the great future issues. We are carrying the enthusiasm for better farming throughout this State through our 1500 members. We are sending the message of better farming and better seeds throughout the whole land through our seed grains and through the reputation of Wis-

consin as an Agricultural State; a State that has successfully applied improved scientific methods of farming to the tillage of the soil the improvement of seeds and the increase of yields. Being therefore leaders in this great national movement we should have good reason for enthusiasm.

Our greatest interest has been the production and sale of pure bred and high priced seed grains. We must not forget that the plumpest and best grains are raised on the best prepared soils; on soils that contain goodly supplies of phosphates; large amounts of organic matter; on soils that are clean and free from weeds.

To bring about this condition of our soils we should see to it that we are practicing proper systems of farming. That through manures and fertilizers we are returning to the soil as much fertility as we take out of it. We should make sure that we are producing a sufficient number of leguminous crops and that we, at regular intervals, plow under a second crop of clover or alfalfa to supply the organic matter and to keep up the nitrogen. Each crop has its enemies in the way of fungus diseases and animal preys. Each has its weeds to which it furnishes favorable environment. Crop rotation and clean cultivation are the agencies whereby we are enabled to overcome these checks upon the production and the cleanliness of our seed grains. In many places when we pass over the State and see fields of grain overtopped by weeds we are impressed with the fact that as yet Wisconsin farmers are not perfect, that some information and inspiration is still needed to make all farmers live up to the best light of the present day in regard to proper rotation, soil preparation and cultivation. Our system of farm inspection should accomplish much in the way of clean and fertile farms. This was the purpose for which that movement was inaugurated. The inspector should be chosen for his knowledge and practice of good methods. He should inform himself thoroughly on methods of handling and caring for seeds. He should be ready with information and advice on all of the problems which present themselves to the average farmer. He should be an inspiration to each member whom he visits. It is not the intention that the inspector shall merely make the members of his district a friendly call. It shall be his duty to scrutinize carefully the fields, their borders and corners, and to examine the seed houses and seed curing rooms of each member selling seed grains. He is to in-

form himself of the sales of these members and the quality of the seed sold by them. Then having honestly and thoroughly familiarized himself with the conditions let the inspector make an honest statement to each member of conditions as he finds them, let him make a thorough and honest report to the Association and, if conditions demand, let us have just action to protect the good name of our Association and its members.

We have reason to be enthusiastic over the fact that our seed grains are carrying off the prizes and trophies over all others in contests, State and National. At State and interstate contests of Wisconsin and Minnesota our corn and small grains carried away the greatest number of prizes. At the Omaha Exposition our members won the sweepstakes for the world on all grains except oats. Wisconsin corn took the first place for corn in the Northern Zone. Pedigree barley took all the prizes offered for that cereal. On sheaf grains we won the world's sweepstakes for oats, barley, buckwheat, wild hay, clover hay, and timothy hay. The ultimate aim of our work is not to win prizes at fairs and contests. Yet as an indication of the advancement of our members in the science and art of farming and as stimuli to further accomplishments the contest and exhibition is of great importance. We cannot afford to underestimate and overlook it but on the contrary we should use it to the fullest extent as an educator and stimulus to further endeavor. Our members are realizing more than ever before the importance of careful selection and preparation of the samples to be placed in competition. Exhibitors of grains might well take some lessons from the stockmen on the amount of thought, time and energy placed upon the preparation of the exhibit. Many a man has failed in a contest simply because he left better material at home and failed to prepare that which he placed on exhibition. While the prize winning grain samples show excellent type and quality an examination of the whole number of samples submitted at various contests and exhibits indicate that not all of our members have obtained an accurate idea of the true type of Wisconsin grains. Many are therefore selecting corn of wrong type and inferior quality. More attention should be paid to the shape and size of kernels, to the fitting of furrows, to the indentation and color as well as to shape of ear and general uniformity and trueness of type. Our members

should become thoroughly familiar with the points on corn presented in Circular No. 8, on Corn Judging. It is true that there has been much improvement in knowledge and practice along these lines but if we are to hold our place in the front ranks of agricultural development we must constantly be taking new steps in advance. Let us remember that of him to whom much was given much shall be expected. Let us then make the name, Wisconsin Seed Grains in truth a symbol for quality, purity, high yield and above all a uniform, unchangeable Wisconsin type.

I believe that we have reached the time when we should see members of this Association practicing more generally the use of "the special seed plot" in which is sown the best seed that can be secured, cleaned and prepared in the best manner possible by use of the best machines available. The product of this plot should receive the best possible care and storage. This applies to the small grains and with special emphasis to corn. Each member of this Association should be growing and selecting his own seed by the ear to row method or by some more extended and improved method if possible. We cannot expect that the seeds sent out by the Station shall retain their high yielding power for a long time unless each member practices some efficient method of breeding and improvement on his own farm.

We are indeed pleased to learn of the establishment of new county orders of this Association. In organization there is power. While the membership was small it was possible for the secretary to keep in touch with all. Today the organization has reached a point in its development where this is impossible. We must therefore depend upon the local organization to keep its members in touch with the parent organization. The field of work which we occupy insures to us one of the largest organizations in the State. In good organizations there lies great power for work and accomplishments. With the promise of a larger number of local orders, with the more thorough education of each member to his opportunities, the future of the Experiment Association looks bright and promising.

REPORT OF THE SECRETARY, 1911.

R. A. MOORE.

Mr. President, Members of the Experiment Association:—

It affords me great pleasure to be with you at this Tenth Annual Meeting of our Association and report on its most wonderful progress. This Association has had a great mission to perform, otherwise it would not have fastened itself upon the hearts of the people in the way it has. Parties from many states and from foreign countries have called at the office of the Experiment Association during the past year to study the working of your organization. It has been a source of great interest to note the wide-spread influence exerted upon the agricultural world by this Association for the betterment of good seed grains.

Pedigree and select seeds have not only been disseminated to the extent of reaching the farmers of Wisconsin, but they are eagerly sought after by other states and countries. Seeds from Wisconsin are being shipped to Mexico, China, Japan, Russia, and to several other foreign countries. A steady increased call for pedigree seeds have come to the office and many of our membership are now producing seeds on a large scale which enables us to fill large orders. We have every reason to feel that this great call will continue and that there will always be a steady increasing demand for pedigree seed grains.

MEMBERSHIP.

The membership has steadily increased and January 1st, 1911 has reached 1318, an increase of 93 over that of January 1st, 1910. The majority of the members are actively engaged in growing pure bred seeds or carrying on tests and experiments along various lines of agriculture.

EXPANSION OF WORK.

Through the co-operation of the Department of Soils, Chemistry, Agricultural Engineering, Horsebreeding and Agricul-

tural Extension, we have been able to add many useful lines of effort. The farm engineering and soil drainage work has appealed strongly to the members and farm buildings and corn curing rooms have been put on many farms in accordance with outlines and specifications recommended by the Engineering Department.

A good dairy herd to keep up the fertility of the farm is a valuable adjunct to have where a specialty of raising pedigree grains is in vogue and it seems at this time that the best and most economical method of building a silo to fill annually for the herd is an exceedingly important matter. Professor Ocock has agreed to emphasize that line of effort the present year.

COUNTY ORDERS OF THE EXPERIMENT ASSOCIATION.

Seven County Orders of the Association are now organized and doing good work. These will probably be increased to fifteen or twenty this year. We have not advised a rapid increase until now as we deemed it highly desirable to let a few County Orders work out the intricate problems which confronts every new organization. We now feel justified in recommending that all counties organize where there are at least fifty in the county eligible to membership.

The County Orders have a very valuable work to perform and up to the present time are performing the task in an admirable manner. All of the County Organizations held annual meetings the past year. Several of them had grain shows in conection with their annual meetings and were instrumental in securing premiums from interested citizens to the extent of $100 and above, for the occasion. Your secretary attended several of these meetings and found them to be great educators for the community in which they were held.

STATE AND COUNTY FAIR WORK.

The several County Orders exhibited at their County Fairs and four of them exhibited at the State Fair, where a great deal of interest was awakened in pure bred seed grains. This line of effort should be encouraged in every possible way and all County Orders should make a display also at the Annual Meeting of the Experiment Association.

COOPERATIVE WORK WITH THE NATIONAL CORN ASSOCIATION.

The College of Agriculture and Experiment Association made an educational display at Omaha which attracted a great deal of attention in the way of showing the work accomplished in Wisconsin in the breeding and dissemination of pedigree grains. The members of the Association made extensive exhibits and Wisconsin ranked foremost among the states that received large winnings of trophies and cash prizes.

The National Corn and Grain show will be held at Columbus, Ohio, this year and again invites our cooperation. We have responded to the call and expect to put up a display that will far surpass any before exhibited. The samples that are to compete for prizes are the same that receive winnings at our Annual Meeting and the Association will immediately pack and ship to Columbus with the college display at the close of our present Grain Contest.

SEED GRAIN AND FARM INSPECTION.

The counties in which organizations were in operation had a system of inspection inaugurated which I feel is highly desirable. By means of this inspection we are enabled to know the extent of cooperation and can watch the tests and experiments carried on to advantage. The farm inspector is also able to give helpful advice to members which enables them to put out the very best of grains in the most approved manner.

Many of our younger members need information regarding corn curing buildings, seed houses, cleaning and grading and especially best methods of selling and shipping seed grains. By appointing one of our experienced seed grain growers he is able to render valuable assistance along many lines of effort. The membership should keep a memoranda of the various subjects that they desire information on so as to ply their inspector when he makes his annual trip. The farm inspector is also able to gather much useful information along general agricultural lines that are valuable to the College of Agriculture.

In my estimation the farm inspector is exceedingly important and should be maintained if possible. The past two years the burden of expense of the inspection has been borne by the State Association and the inspectors have served at so reasonable a rate

that our funds have met the demands. With the admission of new County Orders we would like to expand our inspection system, and, consequently need more funds.

STATE AID.

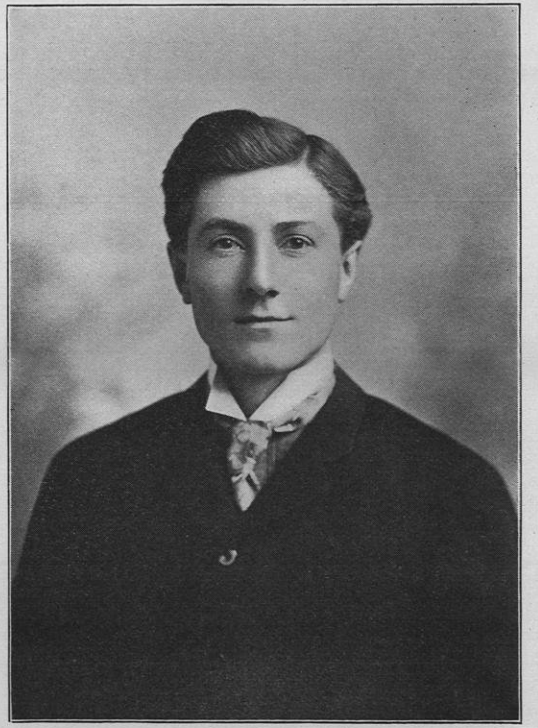
The State appropriates $2000 annually for the support of the Experiment Association. We are very grateful for the kind attention and recognition that they have given us. Our demands on the Legislature have been met in full in the past and I think they will treat us liberally in the future. It is now four years since our appropriation was increased from one to two thousand dollars and in the meantime our membership has more than doubled. The call for material for experimentation is very great and we need increased funds to meet the demands. The good work we are accomplishing should not close or be lessened in the least degree. I think our course at the present time is to again appeal to the State for further assistance.

We need and can use to good advantage $4000 instead of $2000 and I feel confident our Legislature will stand by us as soon as we let them know our wants and what we have accomplished in the past. To this end we need the active interest of every member of the Association.

PEDIGREE AND SELECT SEED GRAINS.

After twelve years experimentation the Wisconsin Barley was ready for dissemination last winter and sufficient sent to our membership to put in 1000 seed growing centers. Although it has taken twelve years to reach our present amount of pedigree barley in the next four years it will be possible to grow sufficient to seed the barley acreage of the entire world. Such is the rapid increase possible.

CHAS. LINSE



GEO. B. JIRTLE

In Memoriam.

Hon. Chas. Linse and Geo. B. Jirtle

HON. CHARLES LINSE

JOHN VAN LOON, LA CROSSE.

Charles Linse was born in Germany, in 1835 and came to America at an early age. He was well and favorably known throughout the state of Wisconsin and other portions of the United States. He was a frequent contributor to Agriculture and Dairy Journals and was by many considered authority upon subjects relating to milk and butter production and general dairy farming. Mr. Linse was one of the first to erect and use a silo in this State. In connection with this he was often confronted with discouraging problems and sometimes subjected to ridicule for his opinions and actions. He, however, presevered always with good nature and wonderful tenacity of purpose. His one aim in life appeared to be to run a successful dairy business. He loved to be among his herds of cattle and the fields teeming with the best of products his skill and knowledge were able to provide for them. He was secretly proud of his success in so improving the soil as to double and often times treble the products thereof. Where formerly he could not raise 20 bushels of corn per acre 60, 70 and 75 bushels were afterwards produced. In this way he succeeded in working his way to the front as a dairyman. He mastered the art of butter making almost to perfection. During the world's fair held at Chicago in 1903 his

butter exhibit was awared a gold medal. This proved to be no mean factor in his business. When the judges had completed their labors a telegram was flashed over the wires and the announcement made that the Gold Medal had been awarded to Mr. Linse. Hearty congratulations were showered upon him for the success which had crowned his efforts. The products of his dairy were eagerly purchased at remunerative prices. In past years he was a member of the State board of Agriculture and also represented the County of La Crosse in the State legislature during 1884—85. He formerly devoted considerable time to work at Farmers' Institutes and it was during a trip made to Buffalo County for that purpose, that he contracted a cold from which he never fully recovered. This coupled with other complications which set in later was the immediate cause of his death which occurred in June, 1910. In his death the Experiment Association loses one of its valued members and the community at large a counsellor and friend whose life is worthy of emulation.

GEORGE B. JIRTLE.

R. A. MOORE.

We regret deeply the passing away of our friend and member, George B. Jirtle, of Clay Banks, Door county. Mr. Jirtle was raised in the country where he grew to young manhood and helped make the home farm pleasant and productive. In order to properly fit himself for the great vocation he was to follow, he entered the university the fall of 1904, taking the short course in agriculture and completing the same the spring of 1907.

Mr. Jirtle was married to Miss Luella Fagg in 1904, who, like her husband, was raised on the farm and was in thorough sympathy with farm life. They purchased the home farm and took up agriculture as their life work. While at the college Mr. Jirtle was exceedingly popular with his classmates and instructors and all regarded him as a leader in his special line of effort. Mr. Jirtle was intensely interested in pure bred grains and live stock and started a work that was to help his entire county in the way of banishing scrub grains, scrub live stock and scrub methods of farming from its limits. However, it was not to be, as he was taken away after a short illness October 26, 1910, at the age of 28, leaving behind his wife and two children who have extended to them the heartfelt sympathy of all members of the Experiment Association.

FACTORS IN THE DEVELOPMENT OF NORTHERN WISCONSIN.

PROFESSOR E. J. DELWICHE, ASHLAND.

My object in speaking to you today, is to discuss briefly a few salient factors which have to do in the development of Northern Wisconsin. Time will not permit of doing much more than that.

In the settlement of any county, the character of the people who come to its confines, has a vast influence on its future greatness and prosperity. Wisconsin, as a whole, is an example of what can be accomplished by the fusion, so to speak, of the best blood which our own country and Europe could supply. No state in the Union perhaps possesses a more cosmopolitan population than our own, few states have advanced further in the development of their resources and in diversifying their interests, both agricultural and otherwise, than has Wisconsin. While we can not ascribe this diversity of interests to the character of our people alone, there is no doubt but that it has had no little share in producing it.

While the southern half of this state is developed agriculturally, the northern half is still largely unsettled. Approximately ten million acres of land fit for farming remains unimproved. And right here is where the human factor, if we may call it so, is of primary importance. Granted that we shall probably have to rely on people from foreign shores to help clear and settle the greater part of our wild lands, it is also true that we need as many Wisconsin bred young men and women as it is possible to get. Just as in the early days, New York, New England and other eastern states furnished our state with leaders in all lines, we today need our own native sons and daughters to show the way to progressive farming to the inexperienced settlers from foreign lands. I believe it is very well to advertise Wisconsin's advantages in such a way as to attract settlers from all regions. In doing so, we should also aim to educate the people of our own state of the great possibilities that lie within our borders.

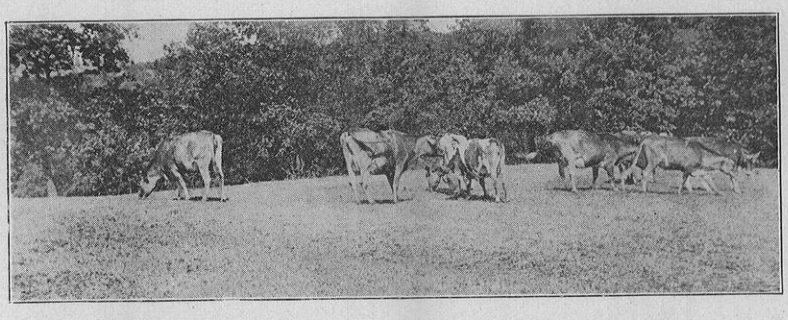
Men who have been raised in once timbered but now cleared sections of our state are best suited to develop the latent agricultural resources of the north, and every inducement should be made to such men. Large land owners could well afford to sell land at cost price to a few good, live progressive and industrious settlers in every new locality.

The land clearing problem is a factor of prime importance in our agricultural development. Much progress along this line has been made in recent years. The new power land clearing machines, capable of clearing and stumping several acres of average "cut over" land in a day and at reasonable cost, are a great advance. These machines are too expensive to be handled by a single farmer, but should be run by companies who make a business of clearing land for a fixed price per acre. The cost of dynamite on the whole has been too high. There is no good reason why this explosive can not be furnished to farmers for the purpose of clearing land, as it is to mining companies. As a matter of fact, the latter pay from 25 to 40 per cent less than the farmer does. In this matter of clearing land, it seems to me, is a place where the Federal Government could well extend aid. According to the current number of the Experimental Station Record, the Reclamation Service during the last eight years spent nearly $60,000,000 for irrigation works in the west, much of which serves to reclaim land now in private ownership. The same authority states that it is estimated that there are in the west, six million acres now under ditch but unirrigated for lack of settlers. While a great deal of the land so improved is very productive, much of it is not of great agricultural value, either for lack of proper market facilities, or unsuitable soil. While I do not oppose the development of the Western lands by the building of irrigation works, for ultimately the government gets it all back, I do believe that dollar for dollar more returns would be gotten out of money loaned to settlers for clearing land in the middle west. Not only that, but it would be a safer investment, for it would not be necessary for the government to make a loan until the land is actually cleared and in crops. In order to protect the settlers from exhorbitant increase in land prices, a limit as to the cost of land on which government loans could be made might be established.

The success of a new settler largely depends on the system of farming he follows, the crop he raises, the stock he keeps, the way he handles his soil and the marketing of his produce. Most new settlers are not acquainted with our conditions, and for them model farms should be established. Grain and forage crops best suited to each section should be developed and best methods of handling them should be demonstrated. The same is also true of horticultural crops. Problems in soil management should be solved by proper experimentation. These and other similar problems of a more or less scientific character belong to the province of the Experiment Station, and can best be solved by means of permanent branch experimental farms located in strategic positions with reference to climate and soil. A good beginning has been made along this line. We hope the good work will be kept up.

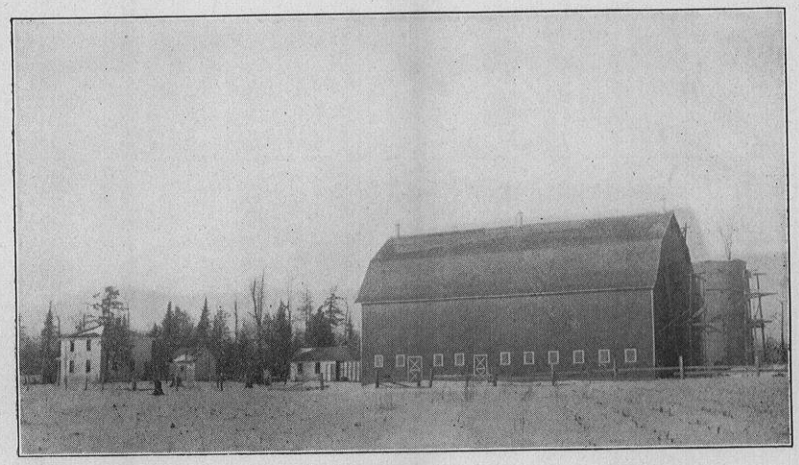
Space permits us to mention only a few vital factors concerned in the full development of the northern half of our great state. What we most need, are men and women of energy, skill, perseverance and self-reliance, who have faith in their ability to do things. To help them in their work, we want all the aid possible from state and nation in order that energy and capital may be employed most profitably.

In conclusion let me ask the hearty co-operation of this association in the development of the resources of our Empire of the North, to the end that Wisconsin, in the future as in the past may be true to her glorious motto, "Forward."



GUERNSEY DAIRY CATTLE ON THE PLEASANT VIEW FARM

This beautiful farm is located about three miles from Augusta in one of the most fertile regions of Wisconsin. The farm is owned and operated by our worthy member of the Experiment Association, A. C. Russell, whose whole ambition in life is to make his farm noted far and near for pure bred seed grains and Guernsey cattle. Mr. Russell is secretary of the Eau Claire County Order of the Experiment Association and in cooperation with the membership of his Order is doing a great work in the way of banishing scrub grain and scrub stock from the county.



THE BEN FAAST FARM, CONRATH, RUSK COUNTY

Ben Faast, Proprietor; J. T. Pritchard, Superintendent

This magnificent farm has been won from the forest in the past four years, showing what enterprise and determination can accomplish when properly applied.

Mr. Faast and his manager are both members of the Wisconsin Experiment Association and take a deep interest in the growing and dissemination of pure bred seed grains. Dairy cattle are kept on the farm and all up-to-date farm practices are put into operation. Mr. Faast allows the State to do demonstration work on this farm for the benefit of the surrounding country. Better seed grains and better stock is the motto of the Ben Faast Farm.

CO-OPERATION OF MEMBERS AND COUNTY ORDERS OF THE EXPERIMENT ASSOCIATION WITH THE STATE FAIR.

CHARLES EVERETT, RACINE.

I am always glad of an opportunity to meet with your Association and to discuss some of the many problems with which you are identified both collectively and individually. Your organization is one of the most useful and most influential factors we have in Wisconsin for the building up of our agriculture, for the making of better, more thoughtful, more painstaking and more prosperous farmers. You are in advance of the farmers of other states and are doing a work that is not only bringing profit to your members individually, but you are placing our good state at the very front of all the states in the Union in the production of pure bred grains, in the growing of alfalfa, in live stock breeding, fruit growing, the eradication of weeds, etc.

Wisconsin is now headquarters for seed grain that is pure, that is clean, true to name and strong in vitality. You are making a reputation for yourselves and for the state. Your past training and co-operation with the College of Agriculture makes you intelligent, makes thinking men of you. It has broadened you reasoning power, made students of you and enabled you to know why and how to proceed to bring about certain results. You are trained farmers, you have cultivated your minds and see clearly just what must be done to make your business permanently successful and profitable.

You are a fine body of bright, intelligent, trained men, and as a citizen of the state I am proud of you. I am pleased to see you prosper and I am greatly elated over the good you are doing for agriculture in general and for the prosperity you are bringing to our farmers. But now is the time to push on harder and faster than ever. Your organization cannot stand still, it is not possible, it must go forward or retrograde. Forward, has ever been the watchword of your Association and it ever must be so. Wisconsin is growing fast, the whole agricultural world is fast awakening from its thousands of years of sleep. Agricul-

tural thought and education is fast opening the eyes of a multitude of ambitious men. They are beginning to see straight and to appreciate the opportunities that nature has provided for every man who will think, study and reason. Your market is going to enlarge very fast. There is going to be a tremendous demand for seed that is strong and pure, and that will produce something besides chaff and cheat. You must enlarge your operations, increase your membership, do more advertising and exert yourselves in all possible directions to meet the conditions and the opportunities that will confront you. You must not hesitate, procrastination is the thief of time, others have an eye on your field and are bound to engage in your business and invade your market.

You should, first of all, cultivate and encourage a home market. You should cater to the Wisconsin farmers trade as much as possible. Your seeds thoroughly acclimated here will do better under our soil and climatic conditions than elsewhere, transportation charges are less when you sell at home, quick delivery is possible and desirable; this state is your home, you are interested in its welfare and are anxious to do what you can toward its prosperity. The northern half of the state is fast developing and will eventually be a great grain growing section. For these and many other reasons you should monopolize the Wisconsin demand for good, strong, pure seeds of all kinds. You must use publicity methods, advertise your business and your wares in every possible way, and this leads me to briefly call your attention to the great Wisconsin State Fair. It is one of the best fairs held in the Union and it affords one of the very best opportunities I know of for the members of your Association to exhibit to the farmers of the state the products of their skill, intelligence and industry.

It can safely be said that one hundred thousand farmers visit the State Fair every year and they are intelligent prosperous, well to do farmers who go to the fair to study its lessons, to inspect the machinery, to study the live stock, to examine the fruits, the products of the dairy and to note the exhibits of seed grains, who grows good seeds and where it can be obtained.

I do not need to dwell at length upon the State Fair as an advertising medium, nor to enumerate to you the many ways in which you can enlarge your field, enhance your reputation as

seed grain growers, and add to your prosperity through the liberal use of this great home exposition. It is your fair, it belongs to you and to the farmers of the state, it was created for you and is maintained to benefit the agriculture of the state. It is free for your use and affords a splendid and very economical method whereby you may become acquainted with thousands of farmers who annually use thousands of bushels of seed grains, who are in the market for a supply every spring and who are anxious to buy from home growers and from men who have a reputation for square dealing and who grow and sell nothing but grain that is pure, strong and clean.

The members of your Association have such a reputation. You must maintain it at all hazards, never trifle with it in the slightest degree, never ship a bushel of seed that is not first class in every respect. Never run the risk of bringing disgrace upon yourself, upon your Association and upon the state of your adoption. I receive letters sometimes from farmers who have purchased seed grain and they send me samples of the grain stating that it was warranted to be pure, clean, etc., and I sometimes find such samples to contain all kinds of foul stuff and that it is not fit for chicken feed. I have never received a complaint against a member of this Association for which I am very glad and I congratulate you and commend you for your honorable dealings. I hope that I shall never have occasion to make excuses for a single member of your organization nor to denounce you as dishonorable, tricky and unprincipled.

I want your Association to make use of the State Fair. I want you to make one of the greatest displays of seed grains that has ever been seen at any State Fair in the Union. The cost to you will be but a trifle, but the benefits that you derive therefrom can not be measured. It will bring great credit to you in many ways as well as to your state and to the agriculture of the state. I haven't any clearly defined plan of procedure at this time but have been thinking that perhaps it might be best for your county organizations to make an exhibit. That is a matter that can be worked out later. I will be glad to take the matter up with the State Board of Agriculture with the view of providing space for such an exhibit or exhibits, and offering premiums that will at least fully compensate you for your time and trouble. I want you to consider this matter seriously for

it is for your own good. I hope that you will appoint a good, strong, committee on State Fair exhibits and I assure you that I will be pleased to take the matter up with you again, or with your committee at any time and to do everything possible to aid you in making the best show of seed grain at the next State Fair ever seen in Wisconsin. I can give such a feature a big send off editorially in advance of the fair. It is a splendid opportunity for you gentlemen and you should not delay in taking advantage of it.

THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION AS AN EDUCATIONAL AND ECONOMIC FORCE.

PROFESSOR L. D. HARVEY, MENOMONIE.

When any body of people with common training and common purposes form an association for the carying out of these purposes, it is because some one has first conceived the idea that the realization of those purposes for the individual and the community may be more speedily brought about through organized effort directed to a common end, than through individual effort lacking such organization. This conception of the individual is brought to the attention of those with common interests whom it is desired to associate, and an appeal made to them showing the effectiveness of organization and the benefits to be derived therefrom, both for the individual members and for the community at large. It usually happens that in such associations of individuals, the individual gain or advancement of its members is the dominant thought. It may happen that the purpose of the originator may be largely altruistic; that his thought is to secure organized and self-sacrificing effort on the part of the members for the benefit of the community at large. If his appeal is sufficiently strong—if those appealed to are imbued with the spirit of public service the organization comes into being and begins its work. There is still a third type of individual effort which combines both individual gain and public

service. The gain for the indivdual may be financial, social, intellectual, political, or moral and the category may be still further extended. The gain for the community may be in any one or in several of these directions.

I do not know which of these three types of associated effort was in the minds of the originator and founder of this Association. It may be that his prime purpose was to promote the economic interests of its members, with a recognition of the fact that such promotion would render a service to the public. It may be that at the outset its purpose was limited to a few lines of activities as is wise in most cases because concentrated effort upon a few lines of activities means greater effectiveness; than effort directed to the accomplishment of a greater variety of purposes and lacking concentration. It may be that it was the purpose to concentrate effort rather narrowly at first with the hope of thus securing the largest returns in the least time, and thus making clear to the members of the Association the advantages of combined effort, and awakening the desire for the broadening of this effort in other directions. Whether this was in the minds of the founders or not, success at the outset inevitably raises the question as to the possibility of broadening the scope of effort and its yielding an even greater success in other lines. As I read the reports of this Association, I am struck with the wisdom displayed in its organization and with the excellence of results already obtained. It seems almost like presumption for an outsider lacking the technical training so essential for success in the activities of this Association to assume to discuss before its members its functions as an educational and an economical force. My only excuse is that experience has taught me that it is well for any body of people organized for work in a definite field to have occasionally presented to them the views of an outsider—of one who may look at their work from a different standpoint than their own. I am aware of the fact that the individual who attempts to do this is running the risk of assuming the possibility of securing results which a wider knowledge of conditions would show him were not feasible, and yet he may see conditions and possibilities from his viewpoint that may be overlooked by those absorbed in a definite and somewhat limited field of work.

For several years I have been intensely interested in the work

of the agricultural college with its short course students and have done what I have been able to do to awaken an interest throughout the state in that kind of educational effort, and have considered the feasibility of its extension through other agencies, so that a large number of young men upon the farms might secure its advantages. I have studied with considerable care the various types of schools in which this work could be done effectively, and I have also given thoughtful consideration to other agencies than the schools, available for the extension of agricultural education, and for the improvement of conditions in farm life. Among these other agencies I have found none more potent than your Association. When we consider the potential influence of an organization of more than twelve hundred young men who have come under the influence of the strong and inspiring teachers of the Agricultural College, who have become acquainted with the work of that institution, the results of its experiments and their bearing on the agricultural interests in Wisconsin, who have caught something from the inspiring influence of their leaders. I do not know where we might reasonably look for more immediate or more lasting returns of the greatest utility to the agricultural interests of the state than to the members of this Association. The plan of organization which keeps the Association in direct and close touch with the activities of the college and with the Experiment Station and with the extension work of the University. is one that assures wise guidance and fruitful source of inspiration. It makes every member of the Association a field agent for the Wisconsin Experiment Station and for the dissemination of that which is latest and best in agricultural theory and practice. I take it that no young man with ambition enough to do the work necessary to graduate from the agricultural short course is lacking in the good sense and application necessary to benefit by such training and wherever he improves his agricultural practice, he becomes an object lesson for his neighbors. They may watch his experience with some doubt and with a lack of confidence in his success, but when their success is demonstrated it will not fail to eventually influence the practice of these doubters, and thus improve in general the conditions in the community in which he lives. This might be accomplished without the assistance of this Association, but when we add to

the influence of individual practice the endorsement of this great Association, its possible efforts to speedily awaken an interest in the community in the work of its members, it is evident that we may look for much greater results than would be possible without the Association. As I view it, the members of this Association have not only a great opportunity and large privilege to render public service, but they have responsibility in this direction as well. Their neighbors have helped to pay taxes that supported the development of the Agricultural College, that have made it possible for you young men to secure the advantages of the short course in agriculture, and you owe it to them and to the state to give back to them something in return beyond what they may gain through observation of your individual success. See what they have made it possible for the College of Agriculture to accomplish for your interests: The funds have been provided which were absolutely necessary for the development of this short course in agriculture, for the splendid equipment in the Agricultural College to make the work most effective. They have furnished the funds that have enabled representatives from that institution to go about through the state, and for it to send out bulletins and circulars for the purpose of acquainting you with the opportunities the short course in agriculture offered you. You now owe it to them to do what you can to secure the largest possible returns from the work of this institution.

You have already accomplished most splendid results in the dissemination of pure bred seeds and in the cultivation of new varieties of farm products. Your annual reports indicate steady broadening of the scope of your work. This extension of your activities through other fields may be worked out in two ways: one plan may be the focusing of the effort of the whole Association upon a single line of work, or at most, upon two or three lines of related work, for such length of time as may be necessary to accomplish the best and most permanent results. The other plan would be to take up a number of lines of work, selecting them with reference to the needs of different portions of the state where the membership of the Association is found—the mode of procedure in each particular line of work to be outlined and directed by the Agricultural College, and undertaken by the members of the Association living in the partic-

ular locality where each special line of work is needed. Each plan has its own special advantages. The first secures united and concentrated action with a wider area and greater variety of conditions from which to compare results. It may show that the mode of procedure decided upon and carried into effect while accomplishing excellent results in certain communities was not best adapted to conditions in other communities. It may make apparent the fact that in certain communities the difficulty in awakening an interest in a particular line of work is so great as to warrant the discontinuance of effort in that direction. In some localities, individual members of the Association with decided initiative may improve upon the general plan as outlined, and may furnish valuable suggestions to the college authorities for the future development of this particular work. The second plan may have the advantage of offering such a variety of work adapted to different localities as will most deeply interest the different members of the Association—a point in which the first plan sometimes falls short. The results from this wider range of activities will show somewhat earlier than by the first plan the particular kinds of work from which the best results are secured, after having been tried out on a limited scale with sufficient experience to determine the most effective mode of procedure. In some cases, the particular work might be taken up under the first plan and thus avoid some error that might otherwise be made generally throughout the state by the members of the Association, but which under the second plan had been made in only a limited area, and corrected through experience.

The growing of pure bred seeds for market, the organized plan in operation for marketing these seeds, make the work of the Association an economic one for its own members, and to the extent that you are successful in introducing better breeds of grain and forage crops, the work is of an economic value to the whole community. Its work in improving modes of cultivation, caring for and marketing products is both educational and economic, both for its own members and for the community at large. As this Association continues to develop, I hope to see its scope of work very largely broadened; so largely, in fact, that it shall become a potent educational force for the improvement of all conditions of farm life that need improvement. We

must bear in mind that financial gain is not the sole purpose of living, either upon the farm or elsewhere. We have recently heard in answer to the demands of the railroad companies for the general increase in railroad freight rates, that such an increase is not a necessity in order that these railroads may earn fair returns on their investments, that what is needed is a more scientific, more systematic organization of their varied activities. The railroad managers have been told that it is possible to save $300,000,000 per year by a better organization and administration of the railway service. There is good ground for believing that this statement contains a very large kernel of truth. If this is true in a field where it has been supposed that the very highest type of effective administration has been secured, how much more true is it in the agricultural industry where but little attention has as yet been given to a systematic study of all the conditions which must be taken into account in carrying on the industry with the highest efficiency; where little attention has been given to the systematic organization of the various lines of work carried on upon the farm; where little or nothing has been accomplished toward effective and sound economic organization in buying what is needed for the farm, or in marketing the products of the farm; and even if conditions are known, and effective organization planned, there has been little or nothing done in the way of working out wise and efficient administration of this organization. Here is almost an unlimited field for the work of this Association. Your members are perhaps at present not perpared to enter upon this work. You have been less concerned with this field than you have with the theory and practice of production. Let me say plainly to you, that excellent as your opportunity has been for study and practice, those very opportunities have put on you the responsibility for still further study and practice. The young man who ceases his study when he leaves the college, ceases to grow. The material for study of industrial conditions, organization, and administration is furnished upon every farm in the country, and invites the attention of every farmer with a promise of large returns for such study. The results of study and investigation by specialists are available in books and periodicals to a larger extent today than ever before. As individuals, you owe it to yourselves to study these matters at first hand in your own work upon

the farm, and in the work of your neighbors, and to study in books and periodicals the theories and conclusions worked out by students of these problems. You owe it to your Association to bring to it the results of your study, and as an organization to carry out into the state these results, and to educate others along the lines in which you are educating yourselves. You have been fitting yourselves to become leaders in your community in the agricultural industry. You should maintain that leadership, and you will do well to remember that the price of leadership is hard work, no matter whether it be for personal gain or for public service. You must not be impatient because great results are not apparent immediately. You can not be too patient about beginning the work which is to accomplish results. You need not always wait for the leaders of your organization to plan the line of march. It is a possibility for everyone of you through your own effort to contribute something that may be of the highest value to the leaders who are charged with the responsibilities of organizing the work of your Association. You may do effective work in carrying out the plan of your organization. You are ever alert to see the possibilities of new lines of effort, and of improvement upon the plans suggested. This means intellectual activity and growth instead of stagnation and decay. It will broaden your outlook upon life and its possibilities. It will make you appreciate more fully the force of the statement that financial gain is not the sole purpose of life. The conditions of farm life in the home are of the most vital importance. While you are striving to accummulate money, you must strive for the development of better social and civic conditions in the community and state, for better sanitary conditions in the home, for better educational facilities for your sisters and brothers and for your own children. Of all the people in the farming communities in this state, you are the ones who ought to see most clearly the advantages of education, and especially of that kind of education adapted to the environment of the boy and girl on the farm, but it is not enough to see these advantages. You owe it to yourselves, to those who may be dependent upon you, and to the state to work actively for the improvement of these educational conditions, to vote taxes cheerfully to this end, and your Association through organized effort, as well as through individual effort of its members, may do most effective work in educat-

ing public sentiment to the point where the best things possible in education for the children in rural communities may be available.

Much yet remains to be desired in the way of greater conveniences and comforts readily available in the home. Your course in the Agricultural College may not have touched upon this question, but an immense amount of material is available through which you may secure the necessary information. If your Association should demand of the home economic department of the Agricultural College such information, it will be forthcoming. Should you ask that department to plan for you a definite campaign for the improvement of sanitary conditions in the home, and for the provision of things which make for ease, convenience and comfort in the activities of the home maker, I am sure you will be met with a hearty response. Think what might be accomplished in a single year through the active efforts of 1200 young men in this direction! Think how the work accomplished in this one year would extend itself in the communities where it had been carried on through the force of example alone!

Already the authorities charged with the extension of the work of the agricultural department has recognized the value of the Association as a medium for communicating with the farming population of the state. They have only begun to touch the possibilities in this direction, and they are looking to you as one of their strongest and most effective allies. I am sure you will not disappoint them. This work will demand effort of you from which you will see no immediate or prospective financial returns. Will you fail to respond because you see "nothing in it," or will you look further to see something in it for society at large and something in it for yourselves as individuals? Every piece of work done for the betterment of social, civic, or industrial conditions in a community without the stimulus of prospective gain, means an intellectual and moral growth to the individual: it means a subordination of self-interest to public service, and after all, the truest success in life is not what we do for ourselves, but what we do for others. You must work for yourselves, of course, but you must not let work for self and selfish interests stifle those better impulses out of which come service to society.

PLANT BREEDING AND THE FARMER

PROFESSOR C. P. BULL, MINNESOTA COLLEGE OF AGRICULTURE.

I. The Government statistics report Wisconsin's wealth of farm crops to be $148,000,000.

There is no knowing just what proportion of this immense valuation has been furnished by the staple field and garden crops, which directly or indirectly furnished the food and clothing for our people. But we do know that the products of the field and not of the bush or vine, furnish the absolute necessities of life.

The population of our state, particularly of the towns, villages and cities has increased at an alarming rate in the last decade. The farming population has not nearly kept apace with the increase of that of the cities.

This means that the flattering (?) increase in our population is largely of a non-producing class. Figures would undoubtedly show that the Agricultural wealth of our state is ample for our people if it were all kept at home, but that cannot be.

The products of our mills and even of our fields go to distant markets to supply the food and the seed for other cities and farms.

Another point in preface is the ever and rapid increase in the cost of living on the one hand and the increasing land values on the other. The farmer of today is up against the combination of capital in the purchase of commodities and in the sale of his product with this on the cash register and is confronted by the decreased yields and fertility of the soil, together with a higher valuation and tax levy on the trial balance sheet.

Another feature (which I hope, is not true in Wisconsin, but I fear for the truth), is the fact that mortgage indebtedness has increased at a calamitous pace—in one state I am told to the extent of $43,000,000 in four years. And to place the cap sheaf on the situation, farm labor has become so irresponsible, indifferent and independent that a farmer has hardly the privilege to drive his own binder or ride behind his own driving horse.

II. The farmer, it would therefore appear, has a problem of his own, with the

1. Increased cost of commodities.
2. Increased cost of land values.
3. Decreased soil fertility.
4. Decreased yields per acre.
5. And in competition with combined capital he has but one ultimate resource to success, viz., increased net returns from the products of the farm.

I am aware that there are many ways by which this may be accomplished as e. g.

1. Better tillage.
2. Better drainage plans.
3. Improvement of soil fertility.
4. Crop rotations.
5. By community cooperation in buying, in selling and in raising uniform and standard crops, and lastly,
6. by breeding.

It is the last two of these that I wish to emphasize in the few minutes left for my part on this program.

III. Breeding for the improvement of crops is looked upon by the average farmer as something intricate and impossible except in the hands of an expert. Such is not the case. Breeding today is looked upon as including not only the creations of a new or improved stock, but as the betterment of the crop through its relations with its environment and by enhancing the producing capacity through the elimination of the poorer individuals or selection.

It must be remembered that plants or animals as well as people, if specialized along a certain line to a high degree, loses to a certain extent its ability to cope with the adverse elements, e. g., the fat animal, the spoiled child or the plant of high yield (Bolley's flax).

Granted then the we have a variety bred for high yielding power, we cannot stick it out in poor and poorly prepared soil among weeds and without cultivation and expect the maximum results.

A crop of any given variety has a certain inherent power or

ability to yield. It will exert this power in exact proportion to its environmental conditions—favorable or otherwise.

We must protect crops from the unfavorable and deliver to them, the favorable surroundings. An engine on a railroad is powerful, but derail it and it is useless.

A sled on ice or snow will carry large loads with little draft. Without this it is useless. The corn plant in good soil, with moisture and proper cultivation will yield 75 bushels per acre. The same corn in same soil and with same moisture supply, but without any cultivation, will yield about eight bushels with inferior quality. The dairy cow on good feed—on poor feed, and so all along the line.

The restricted lines of breeding field crops such as crossing and hybridizing for the purpose of obtaining new varieties and species must for the most part be left to the Experiment Station, for it takes a long time and is an expensive proposition, but selections for the improvement of the so called "Elementary species" is not difficult and is potent in immediate returns.

Farmers should take up this work without hesitation, but with an earnest vigor. There are greater and quicker returns from breeding field crops and selling seeds than there are in breeding and selling live stock.

The Minnesota Experiment Station has bred and distributed to the farmers the following:

	Per cent increase over farmer's varieties.
Minn. No. 163—No. 179—No. 188 wheat	8—18%
" No. 6—No. 26 oats, No. 261—No. 281—No. 295 oats est.	10%
" No. 13—23 corn est.	5—20%
" No. 25 flax	26%
" N8. 2 rye	35%
" No. 105 barley	5%

The state average yields are low—in part because of poor soil fertility, poor quality of seed and poor tillage. But if improved strains and breeds of seeds were used, the result would be at least a 10% increase regardless of any other influencing factors.

Take one instance, Minnesota No. 169 wheat giving 18 % increase. Assuming Minnesota wheat production, 90,000,000 bu., increase this by 18% and it will be 106,200,000 bu. Put it on

a more practical basis—the yield per acre, and let us see what this would amount to for Wisconsin.

The average yields of:

Wheat	1909—18.6 bu.	increased 18%=21.94	3.34	bu.
Oats	1909—36 bu.	increased 10%=39.0	3.3	bu.
Barley	1909—31 bu.	increased 05%=32.5	1.18	bu.
Corn	1909—33 bu.	increased 12%=37.	4.17	bu.
Flax	1909—14.5 bu.	increased 26%=18.4	3.7	bu.
Rye	Average—16.0 Est.	increased 35%=21.6	5.6	bu.

The average farmer can figure the increased profits from the use of improved seed upon his farm. The Experiment Station has many other improved stocks of seed coming up through the breeding nursery. These are proving to be even better than those already distributed.

The Station has distributed since 1897, in 13 years, 21,155 bushels of seeds, mostly to Minnesota farmers. 5,189 people have received this seed, an average of a trifle over 4 bu. each.

IV. What farmers should do.

1 Get these or any other improved and reliable seed.
2 Maintain their purity and type.
3 Improve their adaptibility to local conditions.
4 Maintain their productivity through breeding and selection.
5 Plant a seed plot every year.
6 Sell seed.

V. What the farmer can do.

They can originate strains of valuable varieties by selection,
Hanson's No. 13, Berry's No. 23, Reid's Yellow Dent.
Powers Fife, William's Fife, Leaming.
Hayne's Blue Stem, Van Vorst's B. B. S. Chapman's White Dent, Wealthy Apple.

They have access to the improved varieties of the Experiment Station. They can get these and grow them and improve them and sell the product for seed.

How—By use of the Crop Rotation system. Use minor rotation for seed plots and breeding. Use major rotation for com-

mercial seed production. Thus the seed will graduate from (1) breeding plot to (2) seed plot, (3) to commercial seed plot.

My last point which I wish to make is this. The farmers of Wisconsin should co-operate in the breeding, in the raising and in the selling of field crops and the seed. Each and every locality is just a little different. I would go still further.

If a man would take the pains to hand pick seed for a breeding plot, give him a breeder's certificate.

If a man selected and graded seed for a seed plot, give him a selector's certificate.

If a man graded and cleaned seed for field sowing only, give him a grower's certificate.

In short, use only improved seeds.

Establish community breeding Associations.

Distribute and sell through the Association.

Let the Association take seeds when the Experiment Station must leave off and continue the practical work.

Let the farmers establish rotation systems affording breeding plots and create a reputation.

Strains of varieties become adapted to local conditions. Local communities should form Associations and breed and sell only a certain few varieties which are standard and will produce heavily.

There should also be County or District Associations. These should affiliate with and lead up to a state organization and the State organization should affiliate with the State Experiment Station. Thus, through the co-operation of the State Experiment Station and the State Association, the improved seeds may be distributed throughout the state. And conversely, the sale of a large amount of the seed could be sold through the Association. I would go farther.

Secure appropriation from the coming Legislature for inspectors to visit the farmers who grow improved seeds. If a man meets the requirements for the production of pure, clean and highly improved seed, give him a certificate upon which he can sell.

PLANNING FARM ADVERTISING.

Pointed Suggestions on Planning, Conducting and Following up a Campaign of Advertising of Farm Products.

J. CLYDE MARQUIS,[1] EDITOR, WIS. COLLEGE OF AGRICULTURE.

All farm advertising does not pay. A careful study shows that failures are most frequently due to the failure of the advertiser to give proper study and care to one or more of three points: (1) planning the campaign; (2) the character of the advertisement; and (3) the handling of inquiries. The science of advertising involves many factors which need to be closely studied if one is to become an expert in handling advertising but the three points just mentioned are so frequently overlooked that they deserve special consideration.

MERIT THE BASIS OF GOOD ADVERTISING.

The first essential in a successful advertising campaign is to have something to sell that is worth advertising. The product must have merit and must appear useful or desirable to the prospective producer. Some of our farmers and breeders have begun to advertise before they had produced anything of particular merit. Ordinary products attract relatively less sales through advertising than products of extra quality with unusually desirable characters.

It must be remembered that the fundamental purpose of advertising is to bring certain producers into contact with certain consumers who will appreciate and pay for the particular product involved. Successful advertising of farm products in the past has been based in most cases upon an article of particular merit, either a highly bred animal, carefully selected seed grains or a specially pure dairy product which is better and more desirable than the average grade which may be secured in the open market.

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[1]Resigned June 1, 1911.

To illustrate, a crop of wheat which is to be sold for milling purposes finds a market in the regular way at the local elevator as it is an article of general trade and may possess no unusual qualities. On the other hand a crop of carefully selected or highly bred wheat to be sold as seed possesses the necessary merit which will assure good results from properly conducted advertising.

ADVERTISING GOES WITH HIGH FARMING.

The development of farm advertising has been most marked among the breeders and farmers of the better classes. Those who have had fine animals have secured the greatest returns by seeking customers through advertising. The products of high quality are given relatively more value in the markets than products of ordinary quality since variations in the quality of general farm products have come to be recognized. Advertising has come to form a part of the business management of the farm in order to get the product of unusual quality to the buyer of the highest purchasing power. Other things being equal the product which is of highest relative quality will sell best as a result of advertising.

ORGANIZED ADVERTISING MOST EFFECTIVE.

To bring maximum results advertising must be followed regularly and consistently. The time worn phrase "Keep everlastingly at it" is still the best motto but needs to be coupled with the suggestion "Keep intelligently at it." The effect of advertising accumulates and as time passes the cost grows less in relation to results secured, due to the "after effect" of previous advertising. Those who spasmodically advertise, whether in the farm papers or by other methods, may secure excellent results for brief periods but will be disappointed at other times. The so-called "cumulative effect" of advertising is too valuable to be overlooked. Our best breeders of pure-bred stock recognize this and keep an "ad" constantly before their patrons.

In planning to advertise the purpose of the advertiser needs to be seriously considered. Are you after immediate sales with little thought for the reputation gained or are you seeking to build up a reputation as a breeder or producer which will es-

F. H. BURT
DUROC-JERSEY HOGS

The Burt Farm

ALL MONEY REFUNDED FOR STOCK IF NOT SATISFACTORY. RETURNED IN GOOD CONDITION IN 10 DAYS. ALL EXPRESS PREPAID

MRS. F. H. BURT
R. C. R. I. RED CHICKENS

BRODHEAD, WIS., ...1911

"This simple letterhead shows a good business organization with both sides of the house properly represented."

TEKSA FAMILY

TUBERCULINE TESTED

Snowdoun Farm Guernseys

H. W. GRISWOLD, Proprietor

West Salem, Wis.,

ROSENDALE GUERNSEY HERD

CHAS. L. HILL, Proprietor.

Rosendale, Wis.,

HOWARD GREENE
DAVID W. WILLIAMS, Supt.

BROOK HILL FARM

PURE BRED GUERNSEY CATTLE

CHOICE POULTRY AND EGGS

GENESEE DEPOT, WIS.,

The simple neat letterhead shows better taste than the over-printed kind. Put the strong arguments into the letter and not alone into the letterhead.

tablish a permanent market for your product? The method you pursue will depend upon whether you desire simply the "immediate sales" as in the first case, or "general publicity."

QUICK SALES OR GENERAL PUBLICITY.

For special sales the small "classified" ad will give good returns on the investment. A "display" ad will also pay if the amount of the thing to be sold is large enough to warrant the cost and the margin of profit big enough to pay the cost of advertising. The special sale ad must "sell the thing" to be successful and if it does that it has fulfilled its purpose, but the general publicity ad must stand for the integrity of the advertiser, it must create confidence in him to the extent that it stimulates inquiries which result in immediate sales and also makes a good impression which is fixed in the mind of the buyer. Much of our farm advertising has been poor because we have striven after the immediate sale and have not studied the value of the ad which created a permanent market.

In beginning to advertise, however, the farmer needs to use the ad which will bring the quick sales or he is likely to lose confidence in advertising altogether. After he has gained the courage to invest freely and has the patience to await results and experience in handling inquiries he should plan some "general publicity" advertising to establish a reputation.

To better explain this idea the following experience of a swine breeder will serve. Mr. A used a small one-inch, single-column ad in a leading farm paper for several years and sold a large number of young breeding males as the result of inquiries attracted by that ad. His sales were never large however, and his reputation as a breeder of swine did not grow to any extent. Upon the advice of a more experienced advertiser he used some four-inch ads to explain the merits of his foundation stock, the careful breeding and feeding which he followed with his herd and his ideals as a breeder. Almost immediately the inquiries which he received showed that a better grade of buyers were interested in his work. His higher priced animals sold quickly and he was ultimately able to secure much better prices for all of his stock. The functions of advertising are greater than merely selling a product. Reputations may be limited by advertising provided good farming backs up the campaign.

PREPARATION FOR ADVERTISING.

All successful farm advertising is not confined to the use of printers' ink alone. Good farm paper advertising should form a large part of the campaign, but will be helped by an intelligent campaign along other lines as the improvement of farm methods, well written and well printed circulars and letterheads, and perhaps most important of all carefully prepared replies to all inquiries.

Good farm management involves many things which are the essentials to the securing of maximum results from advertising First, planning for steady production in *marketable quantity.* If a breeder is to get the most from his publicity, he must have the product ready for sale at regular intervals and in sufficent quantity that he will not be obliged to turn away customers. There is a minimum below which a "campaign" of advertising cannot go. If it passes this lower limit it becomes merely "occasional" or "transient" in character and loses the culminative value. The farmer who would conduct a successful business must strike considerably above this minimum.

To organize a farm for steady production the production must be carefully planned. If livestock is the major product the number of breeding animals must be conserved and increased if necessary to assure a sufficient crop for the market. An ad may sell a single animal well and it may sell five animals just as well thereby reducing the cost of advertising per animal four-fifths.

One of the most common temptations of the advertiser is to buy from nearby or related herds sufficient animals to meet the calls from advertising. This action makes the farmer a dealer. The dealer has his place and legitimate function but the farmer-producer should be exceedingly careful in beginning this practice. The question which it creates in the minds of many buyers, particularly farmers, is why should I not buy first hand and not through this dealer? If he keeps the fact of his being a dealer from the purchaser he misrepresents the facts and dishonesty has no place in successful advertising.

Another essential in the organization of the form of the advertiser is the adoption of business methods in correspondence, financial operations, the handling of the products and in the attention to prospective purchasers either through correspondence

or personal visits. Much depends upon the salesman, and the farmer who advertises is conducting a business in which he is the chief salesman.

Sufficient farm labor should be provided to allow the proprietor time to attend to correspondence and sales properly. It takes time to run the business side of a commercial farm and no man can put in ten hours a day in the field and write his letters in the evening, ship his animals at night and succeed. The field work is essential and must be done but the results from advertising depend upon the attention to inquiries. Purchasers who visit the place must be shown around without haste. If you haven't time to show your products they may not have time to decide on a purchase. By planning in advance ample provision can be made so as to give these details proper attention.

Far too many farmers have practiced advertising in broken doses without consistent, honest effort to get the most from the publicity. Such advertising has brought small returns.

ESSENTIALS OF A SUCCESSFUL LIVE STOCK ADVERTISING CAMPAIGN.

1. An Intelligent Breeder:
   - Familiar with his breed.
   - A student of breed progress.
   - Full of high ideals and confidence in the quality of his own animals.
2. A Good Herd:
   - A sire of recognized merit.
   - Carefully selected dams.
   - Well assorted young.
   - A marketable number for each sale season.
3. An Organized Farm:
   - Balanced crop production.
   - Proper feed and care of stock.
   - Attractive premises.
   - Ample farm help.
   - Business methods with correspondence, finances, records and in selling.
4. Efficient Advertising.
   - Properly distributed advertising.
   - Properly written ads.
   - A thorough "follow up" system.
   - A persistent campaign.
   - The "square deal" in every detail.

WHY WISCONSIN SHOULD GROW MORE WHEAT.

B. D. LEITH, MADISON.

In the past, Wisconsin was an important wheat growing state, at present she is known as a dairy state rather than a grain state. I believe the wheat pendulum has swung altogether too far out, and the time is at hand when a backward movement toward wheat in a rotation is not only practical but profitable and should receive encouragemnent.

To approach the subject properly, I feel that a brief resume of the conditions which favored early wheat growing in this state is necessary. The soil was rich, the climate favorable, yields were good, and land was cheap.

Wheat was a cash crop to the early settler. Money was not always available and wheat "receipts," "tickets" or "certificates" passed as good as coin. And in some places even the grain itself was used as a commodity of exchange.

It was not a perishable product and the early settler could store it until he could get time to haul it, without deterioration. Had he attempted to produce a perishable product like butter, the nature of this product would have made it unprofitable.

It was an excellent crop for a man of small means. A few dollars invested in seed, a little cultivation around the stumps, and the fertile land did the rest. Many times the first year's crop almost paid for the land and equipment. This same feature was also a detriment to many farmers, for they bought more land on the faith of their wheat crop; and when a poor season came, or a drop in price they were almost stranded. Their only resource then was to sow more wheat. They did not have the means to do anything else. And even in the later days of wheat growing in this state when dairying offered a solution to the maintenance of fertility and better crops many farmers were unable to make the change for lack of the cash.

Many of the immigrants came from wheat growing sections in the states farther east, and many from Europe, and they naturally raised the crop with which they were most familiar.

The early farmer usually found a good home market. Many

new settlers were flocking in, and their wants had to be supplied from the home market.

With this brief consideration of the factors which favored wheat growing in pioneer days, I shall now pass rapidly over the reasons for the decline of wheat growing. Probably one of the most pertinent reasons was the failure to get a profitable crop regularly. Some years there was crop failure and some years the market was so glutted that wheat could hardly be sold. Crop failure was laid to unfavorable seasons, deterioration of seed, ravages of insects and diseases, and soil exhaustion. Unfavorable seasons and deterioration of seed probably had some influence, but the great item was the lack of proper soil management. They were taking the plant food from the soil and returning nothing. The funds of the soil bank were getting very low. The continued growing of one crop had made conditions favorable for the propagation of insects and diseases. The brush and woods gave them shelter through the winter and their favored host, wheat, was there again for them in summer.

The farm papers began to advocate dairying as a means of conserving the soil fertility, and men with sufficient capital began to invest in stock. Land rose rapidly in value and many sold their farms and took up cheaper lands further west. The railroads began reaching into the inner towns of the state, the home markets broke down and prices were controlled by outside competition. The farmer no longer needed to depend upon a crop which could be stored. With the rapid transportation offered by the railroads he could market perishable products. Dairying became a profitable, money making occupation as well as a means of maintaining the fertility of the soil.

With this brief consideration of why wheat growing was practiced in Wisconsin and why it was discontinued, we are better able to understand the future possibilities.

The subject of my discussion is why we should grow more wheat; not that we should go into wheat growing as a single crop, neither that we should exclude stock raising. I believe that the value of stock as a source of fertilizer is a very important factor in any mode of farming, and then a state so far to the front in dairying as Wisconsin is would show great lack of judgment to suddenly change to grain farming.

A glance at the conditions that exist today will show that many of the causes which forced wheat raising from the state no longer exist. The best grain lands of the West are taken up and are not cheap enough to seriously compete with Wisconsin lands. Their yields average less and crops are not sure. Disease and insects are ravaging these western lands which have been sown continuously to wheat. Rotations and stock are being earnestly advocated by the Agricultural Colleges of these states. The possibilities are, a lessened wheat yield from this section each succeeding year. It is true that Canada has many acres of wheat land yet unbroken, but the climate holds the flow of population somewhat in check. Other wheat lands of the world which will compete in wheat production are Argentina and Siberia. The government and the people in both of these countries are undesirable to the progressive and intelligent emmigrant, and the natives themselves are very crude farmers. So the competition of cheap lands is not the important factor that it was forty years ago.

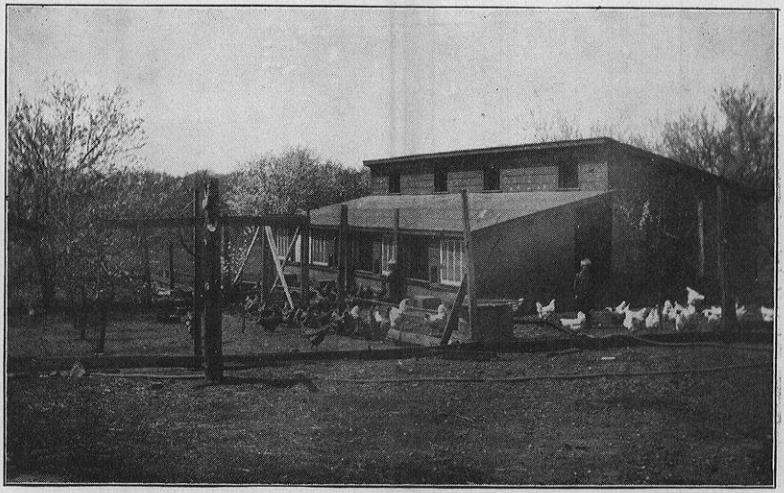
The farmer today understands the problems of maintaining soil fertility much better than in former days. Our soil is now again in good condition and with the advancement of agricultural education there is no reason why we should again approach soil exhaustion.

Diseases are better understood and are quite successfully combated. Farms are cleaned up, affording less chance for the harboring of destructive insects. The rotation of crops very naturally keeps both insects and diseases of any one crop in check by lessening or removing their natural hosts long enough to give them a hard struggle for existence.

Our seeds are bred up and pedigreed. Their records are known and only the best are selected. At present we have fifteen varieties of winter wheat in our breeding plots, and several varieties of spring wheat have been selected for testing. These will not all be ready for distribution for some time yet, but there will be one hundred or one hundred fifty bushels of winter wheat ready for distribution the coming year, if nothing unusual happens. The Beloglena wheat, which was distributed this fall, went thirty-seven bushels to the acre on the University farm, and our University farm is in no exceptional state of fertility. I feel that many farms in the state could be made

FARM RESIDENCE OF S. P. MARKLE, LA CROSSE, WIS.

This beautiful residence is located on the 360 acre farm owned and operated by our worthy member of the Experiment Association, S. P. Markle. Mr. Markle has Jersey cattle upon the farm and makes a specialty of White Wyandotte and Barred Plymouth Rock chickens and Wis. No. 7 corn. We regard Mr. Markle as one of the best corn growers in the state and his seed corn is eagerly sought after and gives general satisfaction.



POULTRY DEPARTMENT ON THE S. P. MARKLE FARM.

to surpass it in wheat yields. Therefore through the co-operation of this University with the Experiment Association a higher quality of seed will be held out to the farmer of the future.

The Americans are extravagant meat eaters, but economy must put in its appearance ere long. One thousand pounds of grain will go five times as far, used as a food for man, than the meat or milk will which can be made from it. Meat is too expensive now for the average European table, and the time is not far distant when it will be for the Americans also. This means a cereal diet, and that diet will be mainly wheat. Will the production of wheat keep up to the increase in demand for the product, and the increase in population? This momentous question will probably not approach a solution during our life-time, but it indicates the direction towards which things certainly must turn. It would seem to indicate that wheat prices must stay up to profitable figures.

The grazing areas are becoming limited, continuous wheat cropping on an extensive scale will soon give way to rotations in more intensified farming systems, new lands of great productivity are in less desirable localities, and farming has risen to a place among the occupations where a man can no longer waste his substance and thrive. From these conditions only one conclusion can be drawn—the price of meat is bound to rise still higher, and the resulting demand for a cereal diet is going to cause the price of wheat to rise. The skillful farmer who will take the time, trouble and expense to go into intensified wheat farming will be amply repaid.

We have the heavy clays which are so well adapted to wheat; we have a favorable climate; we have the pedigreed grain; we have the knowledge pertaining to good farming; what we lack is wheat acreage. We can see the errors of the past, let us profit by them instead of giving up to them, and may the Badger State once more step into the ranks of the wheat growers.

FARM EXPERIENCE IN THE ERADICATION OF QUACK GRASS.

CHARLES LYMAN, SUN PRAIRIE.

After trying a number of ways to rid my farm of quack grass I have found a comparatively simple method and one which does not involve the loss of the land during the growing season. In working this out I have had the usual number of failures, have made a great many mistakes and have enjoyed the unlimited and free advice of friends and neighbors. I have often wondered why an otherwise intelligent person will so often maintain that it is absolutely impossible to eradicate quack. It is a favorite story of this sort of farmer to tell how he hung quack grass roots on a wire fence and after drying there for many months the roots were planted and grew. I have never been impressed by this story, partly because I have heard it from so many sources that I think it must be one of those legends handed down from the time of Noah, and partly because I could never see any particular reason for thus decorating an otherwise perfectly good fence. The impression is quite general that the eradication of quack is next to impossible, or, at least, that it costs almost as much as the land is worth. I hope, however, that I can convince you that such is not the case.

In 1904 I started farming for myself on a 76 acre farm which was completely covered with quack. Years ago, I am told, a former owner had sent to New York state for quack grass seed, and had sowed it carefully on the ground that later was to be my farm. Judging from appearances when I took possession, the germination of that seed was perfect, and the purity test like that of Ivory Soap, niney-nine and forty-four one hundreds. You will readily concede that with such a "lay out" I have had an abundant opportunity to get acquainted with quack grass. And it is with some little satisfaction that I can truthfully say I have almost eradicated the quack on my entire farm, which now coprises one hundred and sixty-eight acres.

My plan as it now stands for most easily and economically killing out quack is a follows: To plow during the middle of summer, level the ground with a disc harrow and later to plow again, also disking level before freezing up. The following spring the ground should be again plowed and put into some cultivated crop. Tobacco, sugar beets, corn and potatoes I would place in order as the crops best suited. With preparation like this I have always succeeded in completely ridding the ground of quack grass and at the same time getting good crops. One year my tobacco went a ton to the acre on land worked in this way. In 1909 my tobacco yielded close to 1900 pounds per acre on an eight acre tract. This was part of a field that in 1908 was completely possessed of quack grass. Corn and sugar beets will also do especially well when the land has been prepared in this way. This method of preparation, although it means plowing the ground three times will almost invariably pay for itself in larger yields per acre, even over fields perfectly free from quack and with the same amunt of fertility. The reason for this lies in the large amount of humus in the soil from the decayed roots, a greater supply of available fertility due to the ferquent workings of the soil, and to the repeated cultivation which stores up and retains a large supply of moisture. In fact, from my experience with quack grass, I have come to the conclusion that there is no better insurance against a dry season than to treat the soil a good deal as if one was trying to eradicate quack itself.

When I say that quack grass can be completely eradicated from a field by preparation such as I have outlined, I must also add that the work must be done in a workmanlike manner. The first plowing is perhaps the most important. There should be no rubbish, long grass, weeds or coarse manure to turn under and retard the effect of the disk. A quack grass field is generally rough and uneven. That is because the quack grows so quicky that portions of the field will be infested before the ground is made into a proper seed bed. I have found that a two horse walking plow does the best work. The plow I use the first time is now only ten inches wide. It is easily pulled in hot weather and is easily handled generally. I use a rolling coulter on this plow and can turn over two or three inches of sod and lay it fairly even. I want to place great emphasis upon plowing

as shallow as possible the first time. And because a field that has been in pasture or meadow for several years will have most of the roots within two or three inches of the surface. I believe that anyone starting to rid his place of quack should begin with meadow or pasture land.

It requires considerable patience to do a thorough job the first time. The plow runs out very easily, and in places where water has left deposits of soil on top of the sod the roots will be found to a greater depth and the plow must be kept very sharp. I always make it a point to back the team and begin over again when making a balk. Also to skin bare of sod any protruding stones that may be in the field. If a single spot is left unturned a nucleus is left for the quack to spread the following year. The use of a good file is invaluable to keep the plow point and lay sharp, and even when the plow has been sharpened at the shop I find it well to file out the wavy outline of the share left by the blacksmith.

As soon as possible after plowing I disk thoroughly, using the file here as well so as to keep the disks cutting keenly. It is important not to allow the new quack grass roots to take possession of the fresh upturned soil. After a hard rain it is often difficult to make much of an impression when the surface has been left in an uneven condition.

The second plowing is often as troublesome as the first. No absolute method can be outlined here. Sometimes I use a 14 inch walking plow with a fine coulter and sometimes with a rolling coulter. Occasionally I use the same 10 inch plow with which I did the first plowing. Sometimes I have plowed cross wise. But generally I have plowed the same way as at first, often throwing the same furrow back that was turned at first, and with about two or three inches more soil with it. The second pulverizing I also do with a disk harrow, aiming to cut up the sod and roots into as small pieces as possible. The ground should never be left rough from the plow. It may be later the next spring than you have planned before the last plowing is done and by that time it will take considerable more work to level off the ground. Very little green will appear in a field in the fall that has been treated in this way. In fact, this year I plowed about two acres during the hottest part of the summer and fully two weeks before the drouth was broken. This one plow-

ing was almost sufficient to do the work. At the second plowing in the fall there was scarcely a sign of life and the soil was loose and friable.

The last plowing comes of course the following spring. In case of corn or beets as soon as the small grain is out of the way. With tobacco as soon as the ground can be manured. This year the last of my tobacco was planted July 5th. The ground had been disked several times since plowing. The quack failed absolutely to put in an appearance and the last five rows I left unhoed, partly as an experiment to see if any quack would appear and partly because the ground was loose and did not really need the hand labor. There was absolutely no sign of quack during the summer or fall. Another strip intended for tobacco, but not planted, was left until about the 10th of August when it was disked to kill small common weeds and sowed to turnips. There has not been a sign of quack in that.

The fact of the matter is that plowing and disking at the proper time kills outright a good deal of the quack. There is still enough left to quickly spread over the field the following year if left undisturbed. The second plowing and disking leaves very little quack, but still enough to make it very troublesome the following year if left without the final plowing in the spring. The last plowing gives plenty of fine soil in which the roots are found dried up and practically rotted. Into this soil the shovels of the cultivator will freely dig turning over anything that may still have life.

Contrasted with my present method is my earlier one and the plan still used by many around me of plowing for the first time in the spring. A constant fight is on hand all season with a mass of long, hard, white roots. At times after a rain it is almost impossible to dig into the ground deeply with a cultivator and at the end of the fight the quack is still in possession. This is especially true in a corn field where the roots are interwoven with the roots of the corn in the hill and no amount of justifiable work will eradicate the same. It is due to such methods that the impression prevails so generally that quack grass can not be killed. It is really amusing how certain some of my friends were that I would fail also in my efforts. And it is also rather funny to hear them after they see with their own eyes that the trick has been turned. It reminds me of the story of a railway

accident. The witness was asked how Ole met his death. "Well, Ole and I were walking along the track and soon the train, he came along, and I didn't see Ole. I crossed the track and I see Ole's leg, I walked about a rod and I see Ole's arm, and a little farther and I see Ole's other leg and pretty soon I see Ole's head. Then I say, 'My God, I tenk something must of happen to Ole.' " Certain friends have watched me critically as I plowed, disked and plowed again, not realizing that leg, arm and other leg were being lopped off, and at last when they come to see that the quack is really exterminated, that the head is also cut off, they say, "My gracious, something must have happened to that quack grass."

It occurs to me that I may be asked why I do not use a spring tooth harrow in the eradication of quack. I believe that its use may be a good thing in certain cases, more especially on a grain field after harvest, or where there is not a solid mat of roots. In my own experience, remember that my land was completely covered and filled with long roots. I do not believe that a spring tooth harrow would have handled these without clogging. I have found the disk harrow satisfactory, preferring to let the quack roots exhaust themselves in the soil rather than to pull them out and haul them off, involving a loss in fertility in so doing. I have also failed to mention the effect of shading the ground with a cultivated crop. Personally, I do not lay stress on this, first because under my method the quack is generally killed before the ground is shaded, and secondly because if it does not happen to be gone before the ground is shaded I would be afraid that some of the shoots that would easily yield to the hoe or cultivator would be overlooked.

A great many things occur to me that are very important in the management of a quack grass farm. Among them is the ownership of a flock of sheep. I believe that every farm badly troubled with quack grass should maintain sheep. The sheep will leave fields free from rubbish, weeds, etc. They will keep fence corners free from quack and aid in other ways. It is also important to take out all old fences and throw the strips into the rest of the field. Along a highway where there are no trees the ground should be plowed well into the road. In small pastures where trees are found hogs will quite effectually kill out quack if allowed to root and if aided somewhat by the plow

or disk. When it is necessary to construct a fence through a field containing quack I would recommend the use of woven wire 36 inches high with no barb wires on top and with posts several rods apart. If the corner posts are well braced this will make a fence strong and high enough to turn horses, cattle and sheep, and one that can easily be taken down when the time comes to plow the land.

In closing I believe that no better time than now will come for a practical suggestion and one which I feel sure will be advocated by everybody who has had experience with quack grass and who is honestly trying to eradicate it completely. I think the Wisconsin Agricultural Experiment Association should advocate the passage of a law compelling the eradication of quack grass along water courses and on lands higher than one's neighbors where hard rains carry the washed out roots to adjoining farms. For there is no surer way to spread this pest than by the presence of the fresh roots themselves. The discussion of such a measure would give much publicity to the simplest and most practical ways of killing out this weed, which in itself is most desirable.

THE WEED SITUATION.

A. L. STONE, MADISON.

The permanence of profitable Agriculture in Wisconsin is being seriously threatened by the rapidly increasing spread of weeds, noxious and otherwise. Weeds are active agents in profit reduction in several ways; they absorb plant food and moisture which otherwise would be available for crop use; they are hardier, grow more rapidly, usually have greater leaf expansion and so crowd, shade, and dwarf the cultivated crop. Many weeds are poisonous when eaten by live stock and cause losses of thousands of dollars annually. Many weeds act as hosts for the fungous diseases such as smuts and rusts. Thus the treatment of seed grain for smut proves effective for but two or three

years at the best, causing additional expense in labor and material for a repetition of the treatment. Largely increased expense in harvesting and curing cereal or forage crops is engendered by the presence of weeds in additional wear and tear on machinery, twine for binding, and labor for curing. The quality or grade of grains or hay grown under weedy conditions is greatly reduced. Grain is docked in the market for weed seeds present, the dockage being proportional to the amount of weed seeds. Hay containing weeds like Canada Thistles or similar weeds is also graded low. Weeds have a toxic effect on the soil, strongly effecting many grain crops following and thus reducing yields. Finally, the annual cost of controlling weeds by the usual method of cutting, digging, and cultivation is an enormous tax on the farm.

Just how great is the annual profit reduction from all these causes is impossible to accurately or definitely determine. The gravity of the weed problem has become so great that there is pressing need of actual facts which may be used to convince the farmer. The farmer is by nature conservative, his life and vocation making him so. His life is strenuous and he will be far more likely to take time to consider the weed problem, if it be demonstrated that this will be profitable to him.

In dealing with the weed problem there are two necessary lines of action, viz., eradication of the weeds already existing and prevention of further introduction. To successfully attack the first phase of the problem, it is necessary to present convincing proof of its necessity, as has been stated once before. In an attempt to obtain adequate and convincing data the Agronomy Department has co-operated with members of the Wisconsin Experiment Association. For two years data have been collected with the following results:

WISCONSIN EXPERIMENT STATION AND ASSOCIATION.

Results of Weed Investigations.

1. Total number of reports received.....499
2. Number of counties from which received.....57
3. Average size of farms in acres 167
4. Total cost of weed eradication $11,134.23
5. Total amount of town taxes on farms.....$27,362.42
6. Average cost of weed eradication 38.83
7. Average amount of tax 69.08
8. Adjudged value of weed infested farms per acre 53.12
9. Troublesome weeds in order of numbers—
   - Quack Grass—Number of reports.....228
   - Canada Thistle—Number of reports.....262
   - Wild Mustard—Number of reports.....112
   - Sow Thistles—Number of reports..... 81
   - Burdock—Number of reports..... 72
   - Yellow Dock—Number of reports.....115
   - Cockle Burr—Number of reports..... 31
   - Snapdragon—Number of reports..... 26
   - Ox-eye Daisy—Number of reports..... 14
10. Average area of Canada Thistles in acres..... 5.6
    Average area of Quack Grass in acres..... 3.32
    Average area of Mustard in acres.....20.50
11. Average per cent. of pasture spoiled by weeds..... 5.48
12. Number of farmers willing to assist in enforcing better weed and seed laws.

The total cost of weed eradication on the 499 farms above reported was nearly one-half the amount paid as taxes for the support of public institutions; and this does not include the cost of cultivation necessary to control weeds in cultivated crops, like corn, potatoes and sugar beets. Although information on the latter point was asked in almost no instance was it furnished. Of the 499 farmers 228 report Quack Grass with average area of 3.32 acres; 262 Canada Thistles with an average of 5.6 acres; 112

Wild Mustard with an average of 20.5 acres per farm; and other weeds in gradually lessening acreas. In the farms reported upon in one block of eight counties in the North-eastern part of the State where the average area was 129 acres an average area of 35 acres of noxious weeds per farm was reported. Beside damage to cultivated crops these 499 farmers report 5.48 per cent of their pastures as lost because of weed growths.

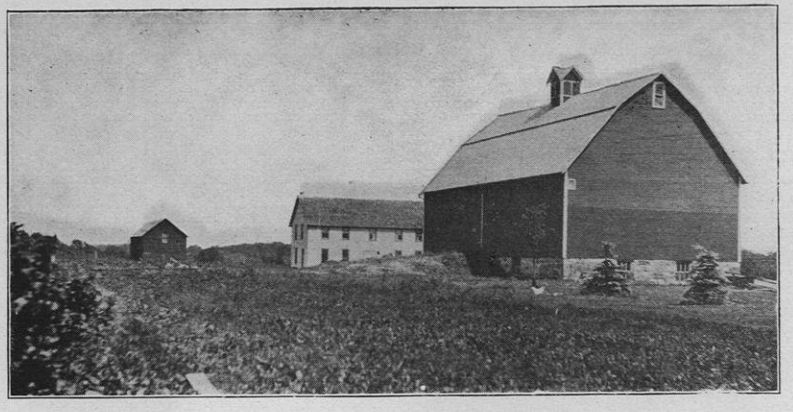
AGRICULTURAL AND HORTICULTURAL OPPORTUNITIES OF WISCONSIN COMPARED WITH THOSE OF THE FAR WEST.

W. H. HANCHETT, SPARTA.

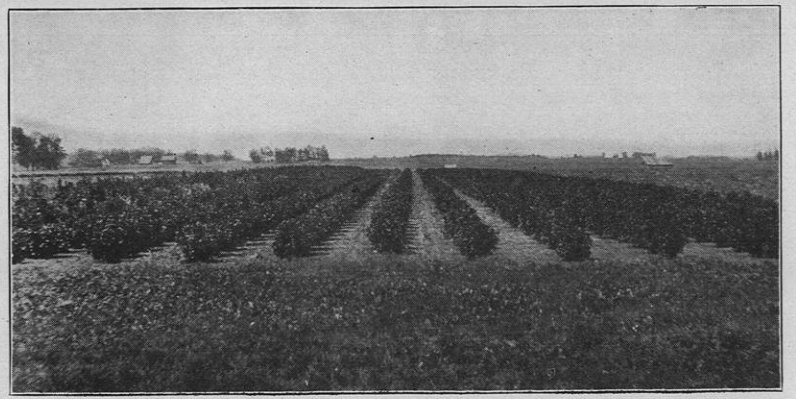
In presenting a paper on this subject I wish it understood that what I have to say regarding Horticultural and Agricultural opportunities of the far west comes from the impressions I received from a hasty trip through some of the fruit growing sections of Washington and Oregon while what I say regarding the opportunities in the same line in Wisconsin comes from years of experience and observation.

I will first state that I believe there are splendid opportunities in the coast region for young men with considerable capital and the necessary experience to engage profitably in either horticulture or Agricultural pursuits; but these opportunities must be located after careful study of the matter in any given locality and in no case should investments be made without this study personally given in the locality of the proposed investment.

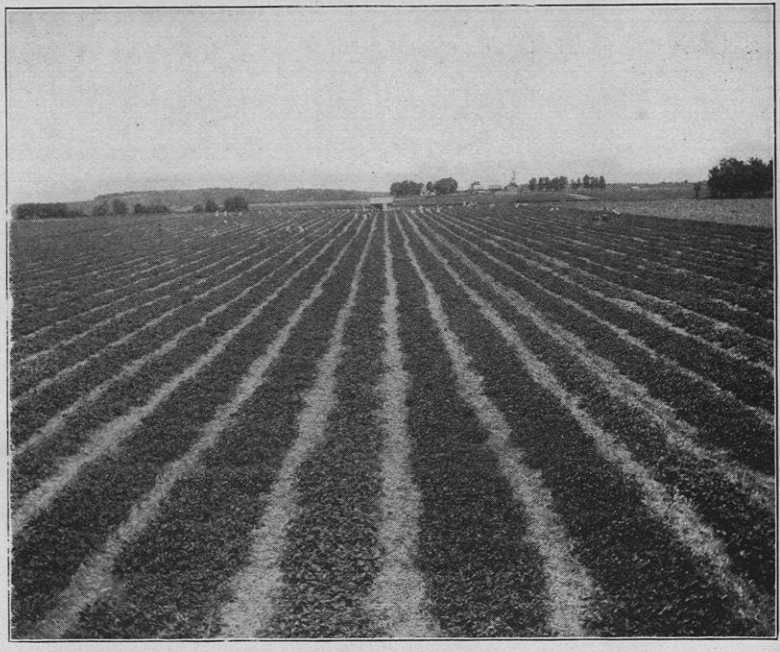
The one advantage of the coast region over Wisconsin conditions consists in a milder climate while as offsets we must consider as objections, the high capitalization of climatic conditions, water rights and the great distance from the leading markets of the country. Wild land in any of the orchard sections of the west is selling around $500.00 per acre and the transportation charges to leading markets being so heavy that the Wisconsin orchardist could make a fair profit with a selling price at the cost of transportation for the western grower.



BARN, MACHINE SHED AND HOUSE FOR FARM WORKERS, ST. CROIX FRUIT FARM



A FOUR ACRE FIELD OF CURRANTS ON THE ST. CROIX FRUIT FARM



A FIFTEEN ACRE STRAWBERRY FIELD ON THE ST. CROIX FRUIT FARM

THE ST. CROIX FRUIT FARM

Fay Brothers, Owners and Proprietors, New Richmond

Under the able management of our worthy member of the Association A. W. Fay, the St. Croix Fruit Farm has become known far and near for the quality of fruits grown. Besides fruit a specialty is made of producing pedigree seed grains and clover seed. Some of the choicest seed in the state is grown on this farm. The Fay Brothers are former students of the Wisconsin College of Agriculture and have united with other members of the Association in the great fight to banish scrub farm seeds forever from the state.

Wisconsin advantages are, low priced adapted lands, no need of artificial irrigation, and greatest of all a central location as regards the best markets of the country and in my opinion this last advantage which Wisconsin holds outweighs any advantage of climatic conditions the coast country may possess over our own Wisconsin, for the enterprise of Wisconsin tillers of the soil has succeeded in producing many varieties of fruit and farm crops which successfully withstand our more rigorous climate.

As a horticulturist I naturally took more time to inquire into horticultural pursuits during my trip to the coast country than into agricultural pursuits generally, and it was my opportunity to see a number of neglected orchards in Oregon which lead me to believe that my native state was more naturally adapted to apple growing than was Oregon for a neglected orchard here will bear many marketable apples most any season but the orchards of this description in Oregon were the sorriest sight in the way of a fruit tree that it has ever been my privilege to look upon; and I firmly believe that the Wisconsin orchardist who will give an orchard the painstaking care necessary to produce a marketable apple in Oregon will be able to raise just as large a crop of better quality and as fine appearance as can be raised in the most favored section of the Hood river valley. Another feature that impressed itself upon my attention was the neglected look of the rural home even in the noted Hood River district. The domicile of the lumber-jack farmer of the northern part of our state would put many a farm house located on $2,000.00 per acre land in the Hood River valley to shame and I couldn't help asking myself if the great stories of profits from these lands were all fairy tales or whether the Oregonian had no pride of home.

We were told some stories of wonderful production and profits which could all be verified if one could take the time to trace each to its source but it would always be found that it was the exception and far above what could safely be counted on as a fair average. Sometimes it would be that a certain tree produced so much and if all the trees on an acre had produced an equal amount the profit from a single crop would amount to several thousand dollars per acre; or a five acre orchard had produced a crop selling from $10,000, to $15,000

but nothing would be said about twenty or thirty acres of orchard belonging to the same man which produced nothing or that the transportation charges were to be deducted from the sale to get the gross receipts of the sale to the grower.

Even these statistics can be matched in our own Wisconsin for the crop from a field of blackberries near Sparta has been sold for a net return to the grower of $1,000.00 per acre; a cherry orchard near Sturgeon Bay averaged over $800 per acre for one crop, strawberry crops have frequently brought a return of from $500 to $1000 per acre and apples have produced at the rate of over $3,000.00 per acre for a single crop but I do not wish anyone to consider that this is done very often even in Wisconsin. I wish however before closing this paper to call attention to some of the special horticultural advantages of our own Wisconsin.

1st. We have a live working Horticultural society with a live secretary paid sufficient salary to command his whole time directing horticultural efforts in the state, who has made a study of horticulture as adapted to the state, to whom it is safe to apply for advice regarding a horticultural venture in most any part of the state.

2nd. We have well defined fruit growing centers where fruit growing is being successfully carried on on a large scale. Sparta stands preeminent as a small fruit center and its adapted soil, splendid distributing facilities, and well organized marketing association will doubtless keep it in first place as such. Sturgeon Bay has proven a reliable location for producing cherries and other tree fruits at handsome profits to the grower and has plenty of room for further development along that line. The Bayfield peninsula, while only recently brought to notice as a fruit growing section, is making great strides at the present time with small fruits, apples and cherries it promises soon to become a great fruit center. Its advantages are in its water protection, the lateness of its strawberry crop and the high quality of the apples and cherries raised in its high latitude. Further the plateau or ridge lands throughout the state have proven well adapted for apple growing and the chance for developmnt along this line is almost unlimited. If the young man who wishes to enter horticulture

as a small fruit grower he will do well to investigate Sparta, for here the volume of business comands the special service of traansportation companies so necessary to the business. The distribution has been reduced to a science by the organized growers who realize that one of their important assets in business is to maintain the volume of business necessary to get needed shipping accommodations and then to maintain a careful system of distribution, so recruits in the business are always made welcome. We want to double the production from this point, and need recruits to help us do it.

If the candidate wishes to grow cherries he will do well to investigate the Sturgeon Bay and Bayfield districts for these districts have been well tried out and have plenty of room for further development and both are working out marketing organizations which become a necessity in any large fruit producing center. If the candidate wishes to grow apples he will have quite a large range of territory to choose from for most any of the ridgelands of the state are adapted to this class of fruit as well as those localities having water protection such as Sturgeon Bay and Bayfield districts.

Last but most important of all is the advantage Wisconsin possesses in a central position as regards the best fruit markets of the country. This is an advantage which the candidate for fruit raising should study well before locating elsewhere.

In closing I wish to give this advice to any Wisconsin bred young man who wishes to take up horticulture for a life's work, in choosing a location study well the advantages and opportunities offered by your native state before locating elsewhere, and if you decide to locate elsewhere study your location well before parting with your initial capital.

FIRE-DRYING SEED CORN FOR HIGH GERMINATION AND PROTECTION FROM MICE AND OTHER VERMIN.

W. E. BISHOP, ARCADIA.

Fellow members:

I have been interested in good seed corn for several years, and in a loft, over a kitchen eighteen feet square, I saved from eighty to a hundred bushels each year. The corn was piled on a tight floor, to the depth of thirty inches, and never germinated less than ninety per cent strong.

But there were three objections to this method:

1st. Lack of room.

2nd. Too low a test.

3rd. Destruction of corn by mice and rats.

In the spring of 1904 I began to study on some plan to remove these difficulties, and in 1908 I erected a building which has so far proven very satisfactory.

This building is 16x24 feet and has 16 foot posts. The foundation is of concrete. The sills are 6x8 inches. Joists are 2x8 inches laid 24 inches apart. The studdings are 2x6 inches and 16 inches apart. Lower floor is ship lap and the second floor eight feet above is made of 1x4 inch strips laid one inch apart.

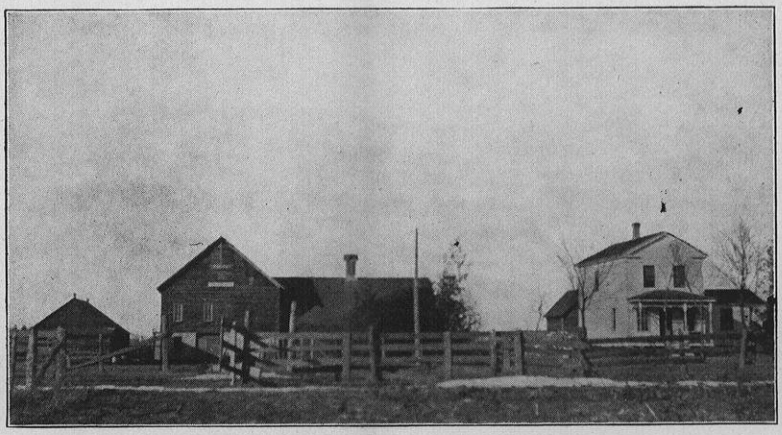
There are two windows on each floor. The upper windows being at the ends of the building, to permit a draft of air through the building on bright windy days.

But the real work is done by a fifty inch box stove at one end of the lower floor, and a seven inch pipe entering a chimney at the other end. The chimney is 26 feet high with an eight inch flue. Three six inch galvanized iron ventilators capped and screened to keep out birds and moisture; situated at equal distances in the peak of the building, draw the heated air from below. And this current of warm air flowing upward through the corn night and day from October first to December first produces a quality of seed which is so near perfect that I

SEED CORN CURING HOUSE

Planned and Erected by W. E. Bishop

Mr. Bishop is a member of the Experiment Association and his **Golden Glow** seed corn is known far and near for its high vitality.



FARM HOME AND OTHER BUILDINGS ON THE FAIR VIEW FARM, SAUK CITY

Robert Lachmund, Proprietor

The Fair View farm comprises but 55 acres of land, but through systematic methods of practice in the growing of farm crops in connection with a good sized dairy herd the fertility of the farm is on the increase and nets a far greater return than many receive from farms four times the area.

Mr. Lachmund was graduated from the State University in 1904 and completed the Short Course in 1906 and has been a loyal and progressive member of the Experiment Association since he entered the College of Agriculture.

have had fields in which 98% of the hills contained three good thrifty stalks.

You are now ready to ask two questions:

"Do you pile up the corn," "And how about mice?"

In answer to the first question, I do pile it up. But first it is spread about a foot deep in one entire section of the drying floor. After twenty-four hours it is shoveled to another bin, and after twenty-four hours more of direct heat it is moved to the last bin, where it is added to each day until the corn is all in. The capacity of this building is about one thousand bushels. As to the mice will say that in a few days after the corn is all in I close all doors, windows and ventilators, get a good bed of coals in the stove, fill the stove with cordwood, disjoint the pipe and lay a piece of sheet iron over the flue, open the stove door about two inches and—go out. After twevle hours all mice then present are good mice, and the corn offers no temptation to them henceforth. I loose asbolutely no corn from vermin. I trust this may be of some value to the members of the Experiment Association.

THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION.

R. A. MOORE, SECRETARY.

The Wisconsin Experiment Association was organized February 22nd, 1901, and now has a paid up membership of about 1500. We probably have a working membership of 1800.

The Experiment Association receives State aid and while it co-operates closely with the College of Agriculture, yet it is no integral part of the College, only as a co-operative body. We now are receiving $2000.00 annually in cash from the State and the State also prints 5,000 copies of an annual report. The funds received from the State are used wholly for purchasing pure bred seed grains, farm inspection, carrying on co-operative experiments and for the growing and dissemination of pure bred seeds.

The Association has arranged with the Experiment Station so that all pure bred pedigreed seeds which are grown on the Station Farm can be purchased and controlled by the Experiment Association. These grains are sold to the Association at the regular market price of common grains. In turn the members of the Experiment Association agree to establish seed grain centers, carry on tests, and sell at a moderate figure to farmers and seedsmen of the State the pure bred pedigreed seed grains. In this way the Experiment Association has been able to establish pure bred grain centers in nearly every district and township in the State, so that the farmers will have near at hand a place to purchase grains that will yield from 5 to 10 bushels more per acre than the common varieties handled.

While the first attempt was merely to supply the farmers of the State with pure bred seeds, we now find that the members of the Experiment Association are supplying parties all over the United States. Seed grains are being shipped to every seed growing state in America. This has been a great encouragement to our young men who have been debating as to whether it would be best to stick to the farm or leave it. Many of them have been able to receive an exceedingly good reward for their labor, besides having the satisfaction of doing a great work for the State.

There is no doubt but that for every dollar received from the State the Association has through its practical experiments and demonstration of what can be done with pure bred grains in comparison with scrub varieties, given back a thousand dollars in return. The rapid dissemination of the Oderbrucker barley that gave through thousands of tests 5.6 bushels average yield over the best barleys compared with it, means over two million dollars annually to Wisconsin. The rapid growing and dissemination of the high yielding Silver King and Golden Glow corns have added more than two million dollars annually to the income of the farmers of the State.

The active part taken by the members of the Experiment Association in the introduction and demonstration of the oat and barley smut treatment has brought a return which means several million dollars annually to the farmers of the State.

There are now 17 county organizations which have been established as adjuncts to the State organization as to more closely

systematize and supervise the work. These county organizations hold annual and special meetings for the general benefit of the public and at these meetings the best methods of growing and dissemination of grains and forage plants are discussed as well as methods of weed and smut eradication. The State Association assists at all these local meetings and provides speakers competent to handle the more technical work of the organization.

The work of the Wisconsin Agricultural Experiment Association is being studied carefully by other states and other countries and many of the states have now organized similar associations to carry the message of better seed grains and practical demonstration of improved methods of agriculture into every portion of the State. The plain, practical tests and experiments made in every locality in plain view of the main highways with alfalfa, weed eradication and pure bred crops and the wide adoption of these methods has been the means of making Wisconsin known far and near for her progressive methods of agriculture and adding untold wealth to our state.

COUNTY ORDERS OF THE EXPERIMENT ASSOCIATION.

For the purpose of closer cooperation between individual members of the Experiment Association it was deemed desirable to organize county local orders. At the present time we have local organizations in 17 counties and all doing effective work. Other counties will soon organize until each county will have its respective local organization. The desire of the State Association is to have the county organizations as uniform and systematic as possible. As a guide to this end we herewith give a constitution which with slight modifications can be used for any county order.

CONSTITUTION AND BYLAWS OF THE COUNTY ORDER OF THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION.

Article I.—Name. The organization shall be known as the ..... County Order of the Wisconsin Agricultural Experiment Association.

Article II.—Object. The object of this organization shall be to promote the agricultural interests of the County and State in general.

1st. By co-operating with the Wisconsin Agricultural Experiment Association in growing and disseminating pure bred seed grains.

2nd. By having Associations' exhibits at agricultural fairs.

3rd. By having annual meetings in order to report and discuss topics beneficial to the members of the Order.

Article III.—Membership. 1. Any person may become a mem- of this Order who has taken a course in the College of Agriculture at Madison or at any place in the State under the jurisdiction of the College.

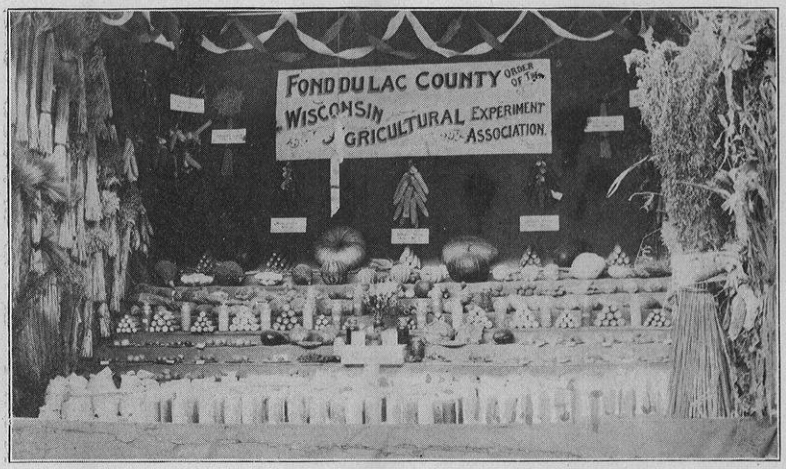
2. Any farmer who is interested in pure bred grains and live stock or in progressive farming in general may become a member of this Order.

3. Honorary membership may be conferred upon anyone interested in progressive agriculture by a majority vote at any annual or special meeting.

Article IV.—Dues. A fee of fifty cents shall be collected from each member annually.

Article V.—Officers. The officers of this Order shall consist of a President, Vice President and Secretary-Treasurer, whose terms of office shall be one year, or until their successors are elected.

Article VI.—Duties of Officers. 1. It shall be the duty of the president to preside at all meetings of the Order and to enforce the observance of such rules and regulations as will be for the best interest of the organization; to appoint all reg-



DISPLAY OF THE FOND DU LAC COUNTY ORDER AT THE STATE FAIR, 1910

Certainly Fond du Lac County is deserving of great credit for the work put into practice at the County and State Fair. The Order is living up to the letter of the constitution in every respect. Through the displays made in 1910 the people far and near have had an opportunity to see the good work of the Order and learn of its noble purposes. The County Order display at the State Fair in 1910 was in charge of its energetic president J. P. Bonzelet, of Eden, one of our foremost pure bred seed grain growers of the State.

STATE FAIR EXHIBIT OF THE DODGE COUNTY ORDER OF THE EXPERIMENT ASSOCIATION

The above exhibit of pure bred seed grains and forage plants was awarded first honors and is without doubt the best County display ever exhibited in Wisconsin or any other state. The magnificent display was superintended and put in place by the Secretary of the Dodge County Order, Hon. H. E. Kreuger, of Beaver Dam.

Mr. Kreuger is regarded as one of the leading seed grain growers of the United States and has taken more cash prizes, ribbons and trophies on pedigree and select grains than any other member of the Experiment Association.

Mr. Kreuger is doing a great work in pure bred seed dissemination and his seeds are called for, far and near.

ular committees as he may deem expedient for the welfare of the Order.

2. In the absence of the President, the Vice President shall presidet and perform the duties of the President.

3. The Secretary-Treasurer shall keep the records of all meetings and proceedings of of the Order, also the names of all members and their addresses. He shall also keep the funds of the Order, collect all fees, pay all debts, and shall submit a written statement of all moneys received and paid out by him and shall balance his books not later than one month before the annual meeting.

Article VII.—Disbursements. The funds of the Order shall be used to defray its expenses or by vote of the Order for such purposes as will advance the agricultural interests of the Order and shall be paid out only upon an order signed by the President and countersigned by the Secretary.

Article VIII.—Amendments. This Constitution may be amended at any meeting by a two-thirds vote of the members of the Order present.

BY-LAWS.

Article I. The officers of this Order shall be elected by ballot at the annual meeting.

Article II. This Order shall be governed by Robert's Rules of Order.

Article III. All members joining at the organization of this Order shall be known as Charter Members.

Article IV. The time and place of holding the annual meeting shall be determined by the officers.

Adopted ....., 19.....

LOCAL COUNTY ORDERS OF THE WISCONSIN EXPERIMENT ASSOCIATION AND OFFICERS WHO GUIDE THEM.

Dane County Order—
President—Chas. A. Lyman, Sun Prairie.
Vice-Pres.—C. E. Ruste, Blue Mounds.
Sec., Treas.—Ray W. Chatterton, Basco.

Dodge County Order—
President—Anton Bohl, Jr., Beaver Dam.
Vice-Pres.—Chas. H. Howitt, Randolph.
Sec., Treas.—H. E. Krueger, Beaver Dam.

Eau Claire County Order—
President—B. H. Arries, Augusta.
Vice-Pres.—J. H. Halbert, Augusta.
Sec., Treas.—A. C. Russell, Augusta.

Fon du Lac County Order—
President—J. P. Bonzelet, Eden.
Vice-Pres.—L. W. Briggs, Peebles.
Sec., Treas.—A. F. Block, Lomira.

Grant County Order—
President—Walter Steinhoff, Platteville.
Vice-Pres.—W. C. Forehand, Platteville.
Sec., Treas.—Orin Bennett, Platteville.

Jefferson County Order—
President—Gilbert Linton, Ft. Atkinson.
Vice-Pres.—F. H. Whiting, Lake Mills.
Sec., Treas.—Ivan McIntyre, Ft. Atkinson.

La Crosse County Order—
President—L. C. Lemke, Onalaska.
Vice-Pres.—J. Weilinga, Midway.
Sec., Treas.—Frank E. Balmer, Onalaska.

Langlade County Order—
President—Calvin Balliett, Antigo.
Vice-Pres.—Edward Nordman, Polar.
Sec., Treas.—A. M. Arveson, Antigo.

Manitowoc County Order—
President—Herman Rothel, Kiel.
Vice-Pres.—Roland Kolb, Manitowoc.
Sec., Treas.—O. R. Wiegand, Cleveland.

Marathon County Order—
President—G. A. Parsch, Wausau.
Vice-Pres.—Herman Amhaus, Edgar.
Sec., Treas.—J. F. Kadonsky, Wausau.

Monroe County Order—
President—C. F. Hansen, Sparta.
Vice-Pres.—L. F. Miller, Sparta.
Sec., Treas.—C. E. Hitchcock, Sparta.

Racine County Order—
President—Oliver Q. Chambers, Union Grove, R—6.
Vice-Pres.—Arthur A. Gerhard, Rochester.
Sec., Treas.—Edwin B. Skewes, Union Grove, R—6.

Richland County Order—
President—H. A. Martin, Gotham.
Vice-Pres.—Hubert Schmitz, Lone Rock.
Sec., Treas.—H. L. Post, Sextonville.

Sauk County Order—
President—Wm. Toole, Baraboo.
Vice-Pres.—George Hengstler, Reedsburg.
Sec., Treas.—C. W. Wichern, Baraboo.

St. Croix County Order—
President—R. W. Brunner, Hudson.
Vice-Pres.—Geo. H. Kruschke, New Richmond.
Secretary—William Schwandt, Stanton.
Treasurer—B. H. Fuiten, New Richmond.

Sheboygan County Order—
President—W. L. Illian, Adell.
Vice-Pres.—J. O. Parish, Plymouth.
Sec., Treas.—O. R. Frauenheim, Random Lake.

Vernon County Order—
President—Nels O. Neprud, Coon Valley.
Vice-Pres.—Cornelius Sebion, Westby.
Sec., Treas.—W. T. McClurg, Viroqua.

SECRETARY'S REPORT OF THE VERNON COUNTY ORDER OF THE EXPERIMENT ASSOCIATION.

JOSEPH M. CADE, VIROQUA.

On February 23, 1909, a meeting was called at Madison for the purpose of organizing a County Order for Vernon County.

N. O. Neprud was elected President; Cornelius Sebion, Vice-President and Joseph M. Cade, Secretary and Treasurer.

The order was called "The Vernon County Order of the Experiment Association," and our constitution and by-laws were practically the same as the Fond du Lac County order. The first year of our organization we did not accomplish very much.

Last year we had an exhibit at the County Fair. The officers of the fair association were pleased to have us make the exhibit and gave us all the room we desired. We made a very good exhibit and it attracted considerable attention and helped advertise our order.

We carried off a good share of the premiums.

September 22d we had our second meeting and took in some new members.

Through the interest shown by the membership our order will certainly be a great benefit to the farmers of the county at large.

SECRETARY'S REPORT OF THE ST. CROIX COUNTY ORDER OF THE EXPERIMENT ASSOCIATION.

WILLIAM SCHWANDT, STANTON.

Mr. President, and Fellow Members of the Experiment Association: The year 1910 has been a great disappointment to our order, owing to the extreme dry weather in the north and western part of our county.

According to the St. Paul weather bureau, only 12 inches of moisture fell throughout the entire year, whereas other years as high as 32 inches were recorded.

Such being the case, I consider myself fortunate to be here to give the St. Croix County Order report today.

We now have eighteen paid up members and hope to give the present winners at the State Fair a surprise next fall.

I believe we should be given a better chance at the annual here owing to the fact that we are in the northern part of the state and cannot compete very successfully against the southern part in corn raising.

We have had no county fair this year, nevertheless we put up a good exhibit at Glenwood City and at the Farmers' Institute at New Richmond, December 13-14. A picture of the latter was taken, and we have the assurance of our worthy secretary, R. A. Moore, that you will see this picture in the annual report.

On January 6th we held our annual meeting at New Richmond. A fine program had been arranged and it was considered a success.

The same officers were re-elected; R. W. Brunner, President; Geo. H. Kruschke, Vice-President; Wm. Schwandt, Secretary, and B. H. Fuiten, Treasurer.

It was found owing to the unfavorable weather that many of our best pedigree grains were not fit for seed, the kernels were badly shrunken and we concluded it would be necessary to get new seed from the State order or buy some from other county orders.

A resolution was adopted that we do all that is in our power to induce the next legislature to raise the appropriation for experimental purposes.

We are no doubt beaten by every county order in the state this year, in showing of seed grains, but I believe we have them beaten when it comes to good fellowship.

The people in general in this county do not as yet realize our aims and purposes. Many remarks are made as to our getting the exhibits from Madison, and then again they think we just put up the exhibit in order to sell seed grains. They are right in one respect, it does advertise our pure bred grains but it also advertises the county as well as the State of Wisconsin.

I thank you and hope to see you all again next year.

SECRETARY'S REPORT OF THE FOND DU LAC COUNTY ORDER OF THE EXPERIMENT ASSOCIATION.

HENRY MICHELS, MALONE.

The work of the order during the past year was confined mainly to three lines: 1st, The inauguration of a School Children's Corn Growing Contest. 2nd, The putting up of a display of grains and vegetables in the competitive County Exhibits class at the state fair at Milwaukee. 3rd, The inspection of the farms of the members during the growing season.

The Children's contest was, in a way, different from any that have been held in the state, and it met with great success. The object of the contest was to aid the advance of progressive agriculture in the county by introducing, through the school children, that variety of corn best suited to our conditions, viz. Golden Glow. Over 600 children sent in applications for, and received small packets of this corn and planted them in plots separate from the general crop of corn grown on the farm. They were required to care for these themselves and record such data regarding the growth of the crop as were called for on blanks furnished them. In the fall, each contestant had the privilege of selecting samples of his or her corn, and exhibiting them in any or all of three classes at the county fair, viz: "10-ear class," "single ear class," and "corn on stalk" class. A feature of the exhibit was the subdivision of the 10-ear class into twenty-one township classes, so that the contestants in each of the townships in the county competed against each other, and finally, the winners in the township classes competed against each other for sweepstakes honors. There were no entry fees. The county fair management set aside $100.00 for premiums, and in addition gave a free scholarship entitling the winner of the sweepstakes to a course in corn judging given at Madison during the winter. The county superintendent of schools was instrumental in carrying out most of the details of the contest.

Last year was the first time that the Order put up a display in the County Exhibits class at the State Fair, but the work was done so thoroughly that, in spite of the inexperience, we landed

second premium, being nosed out of first place by only thirty points.

Owing to a lack of time the farm inspection work did not cover as wide a territory as was desired. Quite a number of the farms of members were visited and notation made regarding the pure-bred crops grown, what conveniences were found on the farms for handling the seeds and curing them, and aiding the members wherever possible by giving helpful suggestions. A weed census was also taken.

Several other lines of work which the order had planned to take up had to be abandoned owing to a lack of funds. More money will be available during the coming year on acount of the winnings of the Order at the State Fair.

SECRETARY'S REPORT OF THE SHEBOYGAN COUNTY ORDER OF THE EXPERIMENT ASSOCIATION.

O. R. FRAUENHEIM, RANDOM LAKE.

During the past year our Order has done good work, considering the small membership we have had.

Our first annual meeting was held at Plymouth, Feb. 24, 1910. The aim of our organization from the first, was to show the farmers of the county where to obtain the best farm seeds. Therefore a corn and grain show was held in connection with the meeting. While the exhibits were not large in quantity, the quality was excellent.

At our County Fair the past year, we had a very creditable display of what our members are producing in the line of pure-bred farm seeds. Such an exhibit was something new to residents of the county and created a favorable impression with them. This exhibit was also put up at the State Fair as a county exhibit. While we were not fortunate enough to land at the top with our exhibit, I feel that we were well repaid by gaining valuable experience to help us in the future and at the same time received valuable advertising for our members.

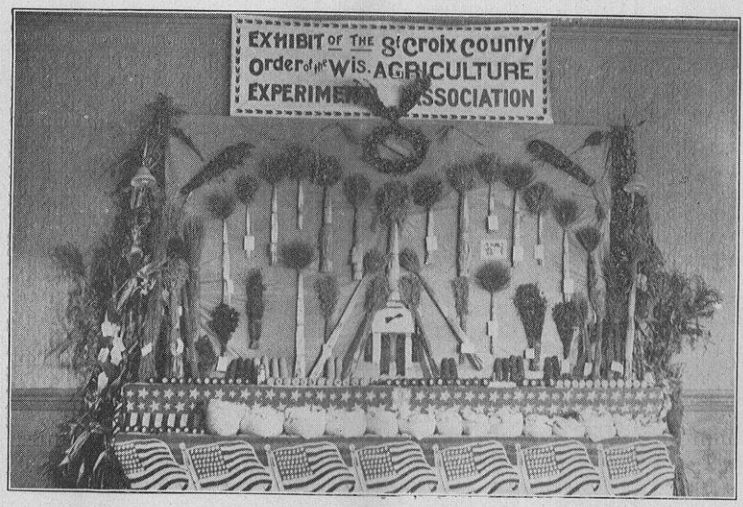
A small circular was prepared, giving the object of our Order and containing a growers list of our members. These folders cost us very little and I believe, have done good work in showing farmers where they can obtain pure-bred seed grains. I would advise other Orders to put out such circulars, as they cannot invest to better advantage in advertsiing.

The County Exhibits serve a two fold purpose, Advertising our seeds and enriching our Order's treasury. The greatest drawback our Orders are having is lack of sufficient funds to do the best work.

Our second annual meeting was held the week of January 10, in connection with a three days Farmer's Course given by the College of Agriculture at Plymouth. This Course was of great assistance to our Order and will help us in the great work we have in hand. I feel positive we have 50 members at the present time. I believe that we should take all farmers into our Orders that show the right spirit in the work, for in this way our object desired of the dissemination of pure-bred seeds will be easiest attained. Our Order will take as members, all farmers, that have taken the three days' Course in our county, the boys of the high schools taking an Agricultural Course and other worthy men that are willing to help us in our good work.

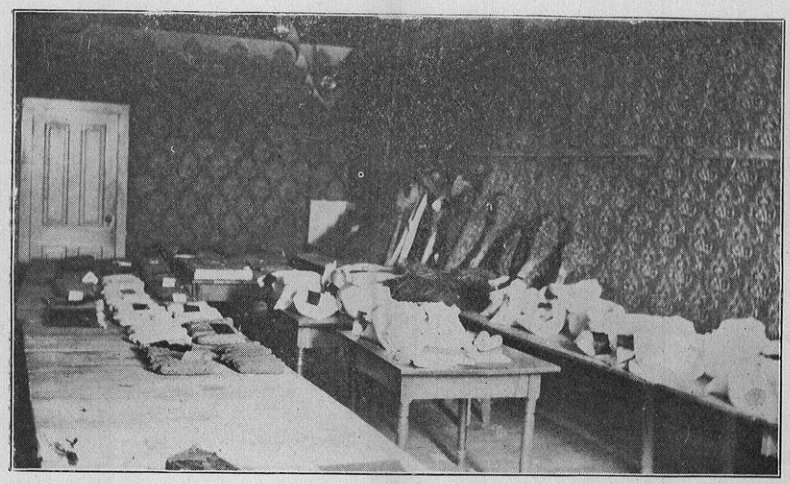
A surprise was in store for those in attendance at the course and meeting in our corn and grain show. Through the efforts of some of our members we were able to put up several hundred dollars worth of prizes for our corn and grains. These prizes brought out corn and grains better than were ever exhibited in our county before. Naturally when one sees grains and corn winning a ribbon, the party winning such ribbons will become known as a grower of good seeds and will have no difficulty in disposing of his seeds. Orders should hold shows in connection with their annual meeting to get the farmers interested in their grains. Business men and manufacturers are willing to make donations for the prizes. But be sure to put up a display worthy of the prizes in order to encourage those making the donations.

The members of our Orders should always try their level best to improve. Many things will suggest themselves in the way of improvement as we go along. The County Orders have a great



St. Croix County Order makes annual exhibitions of pure bred seed grains at the County Fair and at Agricultural Meetings.

The St. Croix County Order is winning fame for its county wherever it exhibits, and through the activity of its energetic membership has been instrumental in solving the seed grain situation of the northwestern part of Wisconsin. Let the good work go on until every farmer will know the value of pure bred seeds.



SHEBOYGAN COUNTY ORDER'S DISPLAY OF PEDIGREE SEED GRAIN AND SELECT FORAGE PLANTS AT THE ANNUAL MEETING OF THE ORDER AT PLYMOUTH

Over $300 in cash and special prizes offered annually.

purpose, and it is up to the members of these Orders to boost our good old Badger state still higher up the ladder of fame as a pure-bred seed state.

SECRETARY'S REPORT OF DODGE COUNTY ORDER OF THE WISCONSIN EXPERIMENT ASSOCIATION.

HENRY E. KRUGER, BEAVER DAM.

Mr. President, Fellow Members: Another year has rolled by and I am pleased to report that it has been a prosperous one with the Dodge County Experiment Association.

Beginning the year we were successful in capturing first premium on both threshed and sheaf grain at our state association annual competitive display for County orders 1910, this gave us aid financially.

Second we put up the competitive display at the State Fair again the past year and captured first place. This was the first time in the history of the fair that Dodge County carried away that honor. This of course got the local and county papers as well as the Milwaukee dailies to give us several nice writeups, so we got considerable advertising which stirred up the boys and when our annual meeting was held in Beaver Dam, September 29, 1910, we had the largest crowd that we had ever had and our membership was doubled at once. The old officers were re-elected. It was also voted to continue the work of putting up the County exhibit at the state fair.

It was also suggested that the Secretary have a booklet printed containing the names of the members that had seed as well as pure bred live stock to sell. And the following letter was sent to all former students of our Agricultural College residing in our County.

DEAR SIRS: The officers of the Dodge County Experiment Association have decided to issue a small pamphlet containing the names of all its members and what they have to offer for sale along the line of pure bred field seeds, as well as pure bred live

stock, so if you have anything to offer, give me the name of variety or breed and the quantity or number of bushels—Barley, Wheat, Oats, Corn, Beans, Peas, Clover and Timothy seed and Potatoes, also Cattle, Sheep and Swine.

If you have no live stock to offer now we will be glad to make mention of what you have to offer in season.

Remember you are eligible to membership, see Costitution on page 35 of our State Association, annual report, 1910. Be sure and send in your annual fee of 50c, for this is all the income the Association has to cover cost of printing, etc.

This should prove of value to all of us, for the leaflets can be passed out at the State Association's annual meeting, also at the time of the Farmers' Course. Professor R. A. Moore has also expressed his willingness to enclose them with his correspondence and inquiries for seeds.

You must not delay in sending in what you have to offer. It should reach me not later than December 1, for the season will soon be here when they will be needed; when printed each member will be sent a supply to enclose with his correspondence.

Hoping to have your hearty co-operation in this matter, I am,

Sincerely yours,

HENRY E. KRUEGER,
Secretary-Treasurer.

ANTON BOHL, JR., President
CHARLES H. HOWITT, Vice-President.

This letter brought in a list of all seeds and pure-bred live stock our members had to offer as well as a good bunch of new members so we now number 35 or three times our number a year ago.

Five thousand of the booklets were printed and they left the press January 2, and 25 or more were sent to each member, as well as to all eligible to join in our County, to enclose with their correspondence, thinking we may be able to interest the latter to join us next year.

Prof. Moore was also supplied, and 2000 copies were sent out in lots of 35 each, to cheese and butter makers in our own and adjoining counties, asking them to hand each of their patrons one, which I am sure most of them were pleased to do.

Others will be passed out at this meeting and at the coming Farmers' Course.

Next year we will have our booklets printed in time to distribute at the County and State Fair.

REPORT OF ST. CROIX COUNTY FARM INSPECTOR.

WILLIAM SCHWANDT, STANTON, WIS.

Mr. President and Fellow Members of the Experiment Association. The season of 1910 was my first experience at farm inspection, and I hope you will not criticise me too severly for my short comings. The inspection consisted of visiting nineteen farms which were owned or operated by members of the Experiment Association. Six of these farms were entirely free from all noxious weeds, seven contained from one square rod to an acre but well controlled, while six contained from one acre to five and owing to the fact that the farms inspected ranged from 80 to 840 acres I did not consider the obnoxious weeds found up on these farms so very serious, considering the great amount of weeds found on farms in general. All that have noxious weeds are doing the best possible to exterminate them and I hope to report a gradual reduction of the weed area.

The following farms were inspected:

Brunner Bros., Hudson, Assistant Managers of Cedar Lawn Stock and Grain Farm. This farm consists of 360 acres upon which is grown pure bred No. 8 and Golden Glow corn, Kherson Oats and Pedigree Barley Nos. 6 and 9. There are good curing rooms for corn and a fine lot of alfalfa started on this farm. R. W. Brunner is a graduate of the Class of 1909, and President of the St. Croix County Order of the Experiment Association.

Geo. H. Kruschke, New Richmond, graduate of the Class of 1909, Vice-President of the St. Croix County Order and manager of the Plum Grove Farm, consisting of 120 acres. Grower of Golden Glow Corn and Oderbrucker Barley. Mr. Kruschke

has good curing rooms for corn and has the best dwelling house and barns in the town of Stanton.

Will Alberts, New Richmond, graduate of Class of 1909, Assistant Manager of his father's farm consisting of 160 acres. Grower of Golden Glow Corn, Oderbrucker Barley and Wisconsin Pedigree Barley. Has good curing rooms for seed corn and fine residence and barns.

B. H. Fuiten, New Richmond, graduate Class of 1901, owner of Sunny Slope Farm, consisting of 100 acres of fine level land. Grower of No. 7 Corn, Oderbrucker Barley and a good stand of alfalfa. Mr. Fuiten has good corn curing rooms and a new farm residence and barns.

Ed. Hogan, New Richmond. Farmers' Course 1910. Owner of 520 acre farm. Grower of pure bred Nos. 7 and 8 Corn and Pedigree Barley.

Albert W. Fay, New Richmond, graduate Class 1900. Part owner and manager of St. Croix Fruit farms (incorporated.) Grower of medium red clover and alfalfa seed, also Oderbrucker Barley and Wisconsin Pedigree Barley. Strawberry, culture a specialty.

J. T. Arnquist, New Richmond. Class 1911. Assistant manager of Fair View Stock Farm, consisting of 160 acres of clay loam soil. Grower of Golden Glow and Wisconsin No. 8 corn, Oderbrucker Barley and Pedigree Barley No. 13. Has good curing rooms for seed corn. Sold about 50 bushels of No. 8 seed corn last year. Has up-to-date farm residence and barns.

P. W. Utgaard, Cylon, graduate Class of 1910. Assistant Manager of his father's farm. Grower of Swedish Select Oats, Golden Glow Corn and Wisconsin Pedigree Barley No. 13. Is experimenting in sugar beet culture.

Alfred Jerdee, Deer Park, graduate 1909. Is part owner of 240 acre farm. Grower of Swedish Select Oats and Oderbrucker barley. Has fine groves of oak and maple.

F. H. Boardman, Jr., New Richmond, graduate Class 1900 Manager of his father's farm of 840 acres. Grower of Pedigree Barley. Has 50 apple trees bearing fruit that are 20 years old. The best orchard in the county. Has fine residence and barns.

B. A. Imholt, Houlten. Graduate Class 1901. Is part owner of the well known Pine Cliff Farm, consisting of 217 acres. Grower of Oderbrucker Barley and Wisconsin No. 8 Corn.

Sidney E. Batten, Hudson, graduate of Short Course. Owner of a fine farm consisting of 320 acres. Grower pure bred Oderbrucker Barley. Corn and hog raising a specialty.

P. A. Paulson, Hudson, graduate of Short Course. Manager of Sunset View Farm, consisting of 80 acres of clay loam soil. Grower of Pedigree Barley No. 6, Oderbrucker Barley, Petkus rye and Blue Stem Wheat. All his grains are sold for seed and are first class.

H. F. Bailey, River Falls, graduate Short Course. Owner of Oak Park Farm consisting of 200 acres of clay loam soil. Grower of Silver King, Wisconsin No. 7 Corn, Oderbrucker Barley and Early Champion Oats.

W. L. Bennett, Stanton, graduate Short Course, Manager of Stanton Stock Farm, consisting of one section of land. Grower of No. 7 and No. 8 Corn, Oderbrucker and Pedigree Barley and Swedish Select Oats. Mr. Bennett has a fine field of alfalfa started.

P. Carlson, Hudson, Farmer Course student. Manager of 240 acres of fine land. Grower of Golden Glow Corn, Swedish Select Oats and Blue Stem Wheat.

David Imrie, Roberts, Farmers' Course Student, owner of Bonnie View Farm consisting of 320 acres of fine clay loam soil. Mr. Imrie is one of our successful institute conductors and raises Pure Bred Holstein Cattle and is President of the Holstein Breeders' Association in this county.

B. L. Ruddell, Hammond, graduate of Short Course. Owner of fine 120 acre farm. Grower of pure bred Oderbrucker Barley. Has good barns and other buildings.

REPORT OF MANITOWOC COUNTY FARM INSPECTOR.

WALTER F. BEHM, MANITOWOC.

Fellow Members of the Experiment Association: My work along farm inspection has been short but I believe this is work in the right direction, as I realize now as I never did before the great good that the state and local Associations can do for our members and farmers in general.

At every place visited, I was met with a hearty welcome, but in order to get the best results I had to take the place of a critic to a certain extent as this brought out what was sought for and gave me a chance to make suggestions along the line that would be the most effective.

The season of 1910 was somewhat disappointing to seed growers in some sections, as early frosts, drought and other conditions did much damage and caused failure to accomplish satisfactory results and then again in other sections I found large quantities of fine seed oats and barley going to the elevator at common market prices which could have just as well brought the grower one-third more money had he been stirred up to advertise and let other states and his own locality know that he had the goods.

We desire to have pure bred grains go on to the general market as this will lift the standard of the state but the members of the Association who have made it possible to grow select seed grains by assisting in the general dissemination are entitled to seed grain prices for their general out-put and should keep in close touch with their local Order and State Experiment Association which can aid them in getting good prices.

Most all of our members visited were leaders in their locality and growing pure bred grains, but some were not up-to-date as they had not kept in touch with their local Order and State Experiment Association; they needed a brushing up and they were pleased to know of the many new things that could be told them and made free to ask questions on branches of work that were of vital interest to them.

REPORT OF VERNON COUNTY FARM INSPECTOR.

JOSEPH M. CADE, VIROQUA.

The season of 1910 has been somewhat disappointing to seed growers on account of the drought, and small grains have not done quite as well as they should have done.

In my inspection work I found quite a number of members who lack facilities for handling grain on a commercial scale due to the lack of a first class fanning mill, a grain grader and a proper place to cure seed corn. One mistake which is very noticable is that there is a great amount of choice grain fed, which would bring a good price on the market.

There is but very little quack grass or Canada thistles in this part of the state and what there is is not allowed to spread.

Most of the members I visited were growing pure bred seed grains and the things that were emphasized the most was the cleaning and grading of seed grains and the planting of clean seed on ground that was free from obnoxious weeds.

REPORT OF MONROE COUNTY FARM INSPECTOR.

GEORGE A. FREEMAN, SPARTA.

The work of inspection for this county was begun July 14, 1910, a time when many farmers were disheartened on account of the ruinous effect of the drought. Many on the higher lands were harvesting their oats with mower and rake, others were sowing millet where grain or hay had been removed, hoping for rain to start the seed to growing for it had not rained since the middle of May.

Our more fortunate farmer friends located on the slopes and in the valleys were found harvesting better crops and grubbing out and burning burdocks while their horses were resting.

It would seem that farm inspection work at this season of the year is far more productive of good results than if it were done during the closed seasons. Some farmers are negligent regarding the destruction of noxious weeds, while others are not familar with all of the comon weeds and strange as it may seem, some do not know quack grass when they see it. In certain localities complaints were made regarding the carelessness of certain individuals allowing Canada thistles to be scattered broadcast throughout the neighborhood. There are cases where men seem very unwise in their attitude toward these pests. On the other hand there are some who have determined to exterminate them, but very few had ever heard that alfalfa was sure death to Canada thistles.

In this one particular we believe that the inspection of 1910 will prove a paying proposition. It will induce farmers to grow some alfalfa to exterminate thistles and when this is done they will have learned how to grow alfalfa and know something of its value for livestock.

The total acreage inspected was about 20,000, including 61 farms of non-members, with 12,000 acrs; also 32 farms of members including about 8,000 acres. Of the 61 farms of non-members 26 had some quack grass and 18 had Canada thistles. Of 32 farms of members visited, 13 had some quack and 4 had Canada thistles, but in nearly every case they were confined to a very small area in some remote part of the farm and were being dealt with in a manner that will be sure to finish them soon.

We found that the yellow dock was the most commn of all the noxious weeds and this was confined largely to the permanent pastures.

In certain sections however there is great need of more rigid enforcement of the weed laws, as even the cows' tails may be seen to be loaded with burdocks in December and January; the seed of which is to be distributed about the roadways and pastures in the spring when the cattle begin to shed their coats.

Monroe county is largely made up of high ridges and deep valleys. These ridges in many cases seem to be the home of the Canada thistle and the source from whence came the seeds which have taken root first in the upper valleys. Presumably

the winds and surface waters are responsible for the rapid spreading of these pests. Quack grass seems to have been distributed along the roadways in hay hauled from farms well run with it, also in nursery stock packed in hay, so it may always be a safe plan to unpack nursery stock somewhere where the hay may be burned at once, so as to avoid any chance of introducing like nuisances.

Attention was called to a farm intersected by the C. M. & St. P. railway, where quack grass seed had been sown by the company's employes to keep the fills from washing. Quack grass had spread from the company's right of way until it had nearly full possession of the entire lower part of this farm. It would seem that the owner should receive indemnity from the company in such a case and that there should be a law in the state to protect real estate owners from further damage in this way. It is useless for an individual land owner to try and keep his land free from noxious weeds when adjoining lands are fully occupied by them and are continually growing fresh supplies of seeds to be washed down by every rain and blown across by the winds as well as being carried by the birds. We believe that this work of inspection has already accomplished much good and should be continued, and that the Experiment Association in annual convention assembled should perpare a bill to be offered to the next legislature, looking toward the protection of farmers along the railroads as hereinbefore referred to.

The members of the Experiment Association are to be commended for their activity in war against weeds and the good example they are holding before their neighbors, in improving quality and quantity of grain produced as well as the improvement of agricultural and home conditions generally.

TESTING SEED CORN.

L. F. GRABER, MADISON.

The annual yield of corn in Wisconsin is practically limited by the following factors:

1. Seasonal influences, such as weather conditions, drought, frost, etc.—disease and insect attacks.
2. Soil fertility.
3. Proper planting and cultivation.
4. Growing the most productive varieties.
5. Curing and testing the seed.

Weather conditions are far beyond our control. Soil fertility can always be maintained but requires foresight and good judgment.

Proper planting and cultivation are matters of intelligence and common sense.

Growing the best variety of corn—that variety which is best suited to local conditions—is a matter which has been determined by our Experiment Station and thoroughly demonstrated through the cooperation of the Wisconsin Agricultural Experiment Association. Furthermore, through the careful and extended work of Prof. Moore these varieties locally adapted have been put through a series of breeding tests covering a period of some ten years, whereby their yielding powers have been mightily increased.

This has not only been shown by tests of the Experiment Station but by comparative tests of 1500 members of our Wisconsin Agricultural Experiment Association, who are at present extensive growers of these pure bred varieties of corn for seed as well as for seed. Consequently it is not difficult for any Wisconsin farmer to grow the very best producing variety of pure bred corn suited to his locality.

While all of the above factors are of extreme importance to the corn growers, there is no one other factor of more importance than the proper curing and testing of the seed. Proper curing is absolutely essential as the germination of seed corn will depend primarily on the method of curing and storage.

But even with proper curing, testing the germination power of the seed is decidedly necessary.

Testing seed corn is one of the very easiest and one of the most profitable occupations on the farm and yet, it is the one thing which is most sadly neglected on the majority of the Wisconsin farms today. It is true that a great many farmers test their seed, but how do they test it? I am reminded of one farmer who had little faith in seed corn testing. His method was to take a handful of corn from about three ears and plant it all in a bunch in the cold garden soil. If only half of it grew he thought he could risk planting it because a lot of it would grow at planting time that did not grow in the garden. Whether it would grow or not, this is not what one would call corn testing—it is a foolish waste of time and energy.

It is just such testing as this and absolute neglect in testing that today is keeping the average yield per acre of corn in Wisconsin down to 33 bushels per acre, when it ought to be soaring around the 40 or 50 bushel mark. The average per cent of strong germination of 142 ten ear samples of seed corn collected from farmers of all parts of the state in the spring of 1910 was only 64 per cent. This is regretably low. It should have been 94%! I beg to repeat that if every corn grower planted corn that would germinate 94%, and such corn can be secured by proper curing and testing, the annual yield in Wisconsin would be raised 10 bushels per acre. This would mean an increase of at least 10,000,000 bushels of corn over and above the 50,000,000 bushels Wisconsin now produces annually. In money value this would, at present, prices add $5,000,000 to the pockets of Wisconsin corn growers.

HOW TO TEST SEED CORN.

But how are we to test our corn? What is the best and most convenient method? There are many methods of testing seed corn—some good, some not so good. It is the purpose of this article to first consider carefully and fully the method now used by the Experiment Station and then to discuss briefly other possible methods.

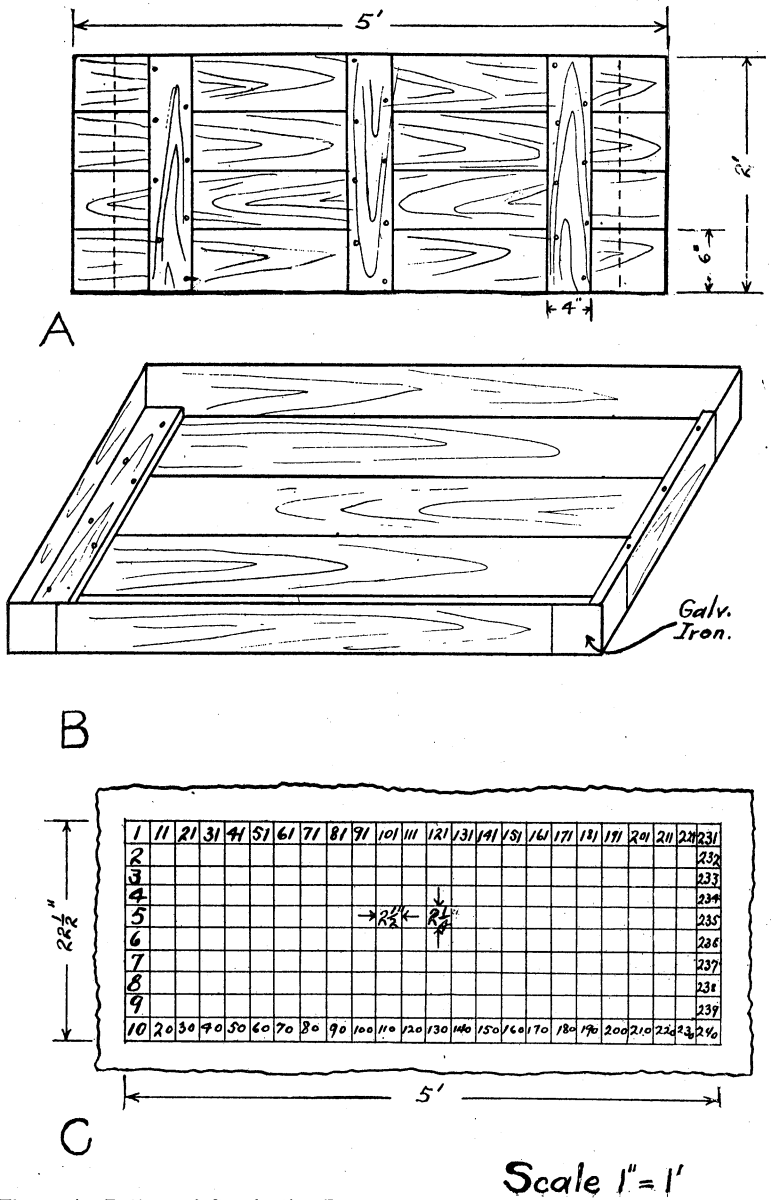


Fig. 1.—A. Bottom of Germination Box.
B. Germination Box Complete.
C. Germination Cloth.

MAKING THE GERMINATION BOX.

It is not necessary to buy a high priced seed corn germinator. One can be made much cheaper and will serve the purpose, as well, if not better than some of the costly germinators that are placed on the market.

Make a box about four inches deep, 2 feet wide, and 5 feet long. Use ¾ or 1 inch soft pine boards. First make the floor by nailing four ¾ or one inch pine boards, 6 inches wide and 5 feet long together by means of three pieces 4 inches wide and 2 feet long as shown in Figure 1, A. On the upper side of the floor nail a similar strip at each end. This is to prevent warping. It is advisable to leave some space between the boards of the floor to allow for swelling which invariably results from the water used in making the test.

The next step is to nail a board 5 inches wide around all sides of the floor as shown in Figure 1, B. A strip of galvanized sheet iron 5x10 inches should be nailed over each corner as shown in Figure 1, B. This prevents almost absolutely, warping at the corners where it always causes the greatest trouble.

PAINT THE GERMINATION BOX.

It has been my experience that it pays well to paint the germinator in order to prevent general warping which always results when the wood is not coated. The corn tester ought to be a permanent possession on every farm and consequently painting is absolutely necessary. Give the box two coats of paint using considerable oil for the first coat. This will make it look well and last longer.

MAKING A LARGER GERMINATION BOX.

The tester as above described is large enough to test 240 ears at one time, or from 2½ to 3 bushels of seed corn—enough to plant 15 to 18 acres. The box may be made longer, 8 or 10 feet if desired, where there are large amounts of seed corn to be tested. However a 2 foot by 5 foot tester is a convenient size for the average farmer. Where there are 8 to 10 bushels of corn to be tested with this size tester only a

portion of the corn can be tested at one time and on this account testing should be begun at least three weeks prior to planting time.

MARKING THE GERMINATION CLOTH.

With our germination box all nicely painted, the next step is to secure four yards of unbleached muslin at least 28 inches wide. Cut off 2 yards and mark into a series of ten rectangles, 2¼x2½ inches long as shown in Figure 1, C. To do this an indelible copying pencil which can be purchased at any book store, may be used. This works nicely if the cloth is moistened when the marking is done. However, these marks bleach out quite rapidly and become indistinct. I have found the use of wax colored crayons to be very satisfactory. With these the marking can be best done on the dry cloth. It will not fade or wash out.

The outside rows of squares should be numbered as shown in Figure 1, C. It is not necessary to number each square as they are made in series of ten and consequently the number of any particular square can be determined by counting down from the top row of figures.

THE GERMINATION BED.

The germination of any seed requires moisture, heat and air. In corn testing it is extremely important that these conditions are uniform in all parts of the tester. To accomplish this some material must be used in making the germination bed that will hold moisture and at the same time will not be readily affected by sudden changes in temperature. Fresh, clean, moist sawdust serves the purpose very well. The floor of the germination box should be covered about 2 inches deep and the sawdust then leveled and packed by means of a wooden trowel, see Figure 2. The sawdust packs smoothly if it is quite wet. In case the sawdust is not fresh and is somewhat rotted it should be boiled in water or steamed to prevent the growth of molds. Where steaming is possible it is preferable. The steam may be transmitted through a common hose into the bottom of a barrel of moistened saw dust and thus passing through the sawdust for 20 or 30 minutes will thoroughly kill

all molds and other fungous growths. While steaming is more convenient, boiling is just as efficient. The sawdust may be put in a large boiler and boiled for 15 to 20 minutes.

Clean sand may be used in place of sawdust but it does not hold moisture as well and dries out more rapidly. In places where sawdust is difficult to obtain sand can well be used to advantage.

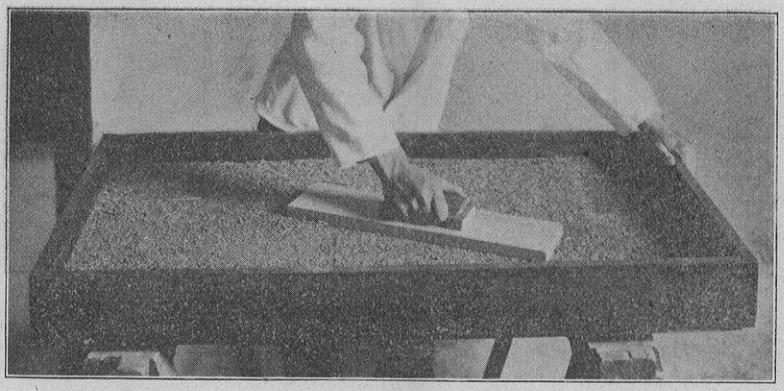


Fig. 2.—Packing sawdust in the Germination Box.

MAKING THE TEST.

The marked cloth should now be laid on the sawdust and the borders turned in. It may be sprinkled with water to make it lie flat. As the chief object of testing seed corn is to determine the germinating power of each ear the seed corn is all laid out in rows on the floor or on a bench or rack, see Figure 3. After every tenth ear two nails are driven. Six kernels are then taken out by means of a pocket knife from different parts of each of the first ten ears and placed respectively in the first ten squares (Nos. 1 to 10) of the germinator. Six kernels from each of the next ten ears are placed in the next ten squares, and so on. However, I have found that in order to avoid confusion, it is often well to number each ear, 1, 2, 3, 4, etc., with a square piece of card board attached to the butt of the ear by means of a nail inserted in the cob. *See Figure 3.* This requires a little more time but it is a certain preventative against confusion and errors.

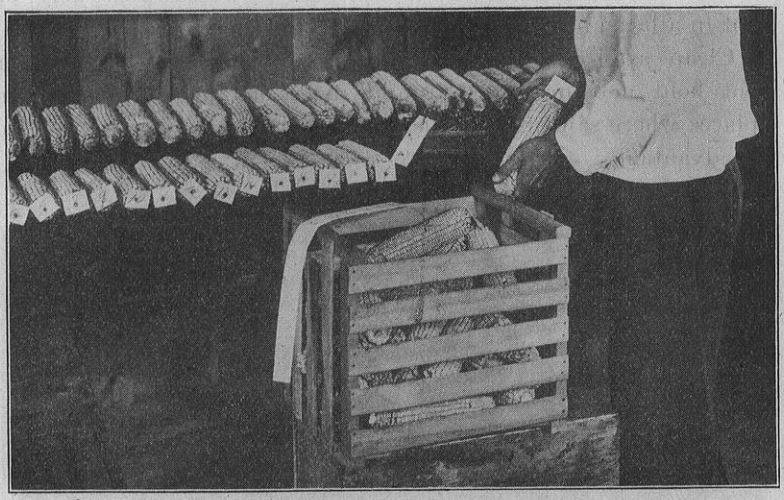


Fig. 3.—Arranging and numbering the ears.

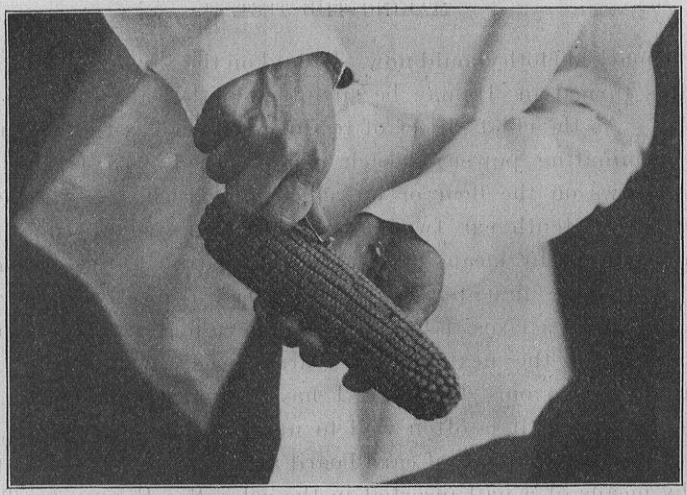


Fig. 4.—The correct way to remove kernels from an ear of corn.

THE GERMINATOR STICK.

In transferring the 6 kernels—a representative sample of each ear—to the germinator much time can be saved if a germinator stick is made. Take a piece of soft pine 1x1 inch and 24 inches long and with a 3-4 inch auger bore ten holes 3-4 of an inch deep and about $2\frac{1}{4}$ inches apart so that each hole will correspond to each of the ten squares on the germination cloth. Bevel one side of the stick with a plane. Number each hole from one to ten.

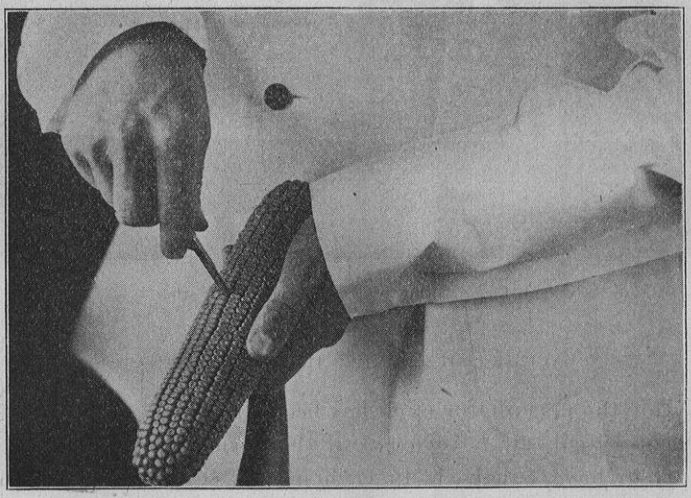


Fig. 5.—The wrong way to remove kernels from an ear. The knife should not be inserted between the kernels but between the rows of kernels.

The six kernels from each of the ten ears of one series can be placed in regular order in the holes of the germination stick and thus transferred at one time to the ten squares of the germination box. Thus it can be seen that six kernels from ear No. 1 are placed in square No. 1; ear No. 2 in square 2; ear No. 4 in square 4 and so on. (See Fig. 7.)

REMOVING KERNELS FROM THE EAR.

In removing the kernels from the ear the blade of a knife should be inserted between the rows as in Fig. 5 and not between the kernels as in Fig. 6, and the kernels pried out. With an

ear in one hand and a knife in the other a kernel should be taken out near the butt and then the ear slightly turned and another kernel from nearer the center and so on so as to obtain 6 kernels from all parts of the ear. An easy device for placing the kernels in the holes of the germinator stick is to fold a piece of rather stiff paper so as to make an angle of about 45°. The kernels can be placed on the paper and allowed to slide into the holes.

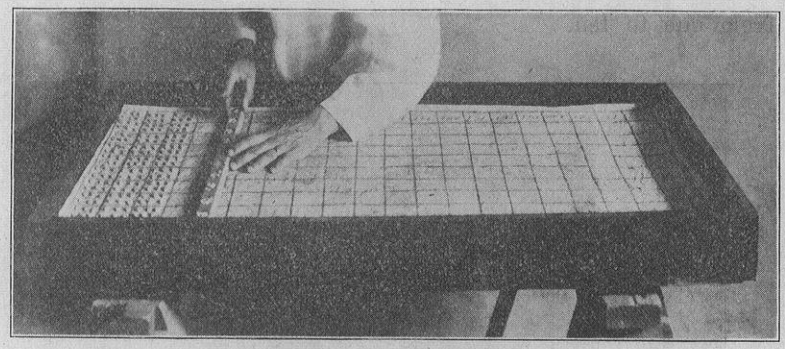


Fig. 6.—Emptying the germination stick.

PLACING THE KERNELS IN THE GERMINATOR.

After the germinator stick has been filled with 6 kernels from each of 10 ears, it is inverted in the germinator, (See Fig. 7.) so as to have 6 kernels in each of ten squares with numbers corresponding to the ears from which the kernels were taken.

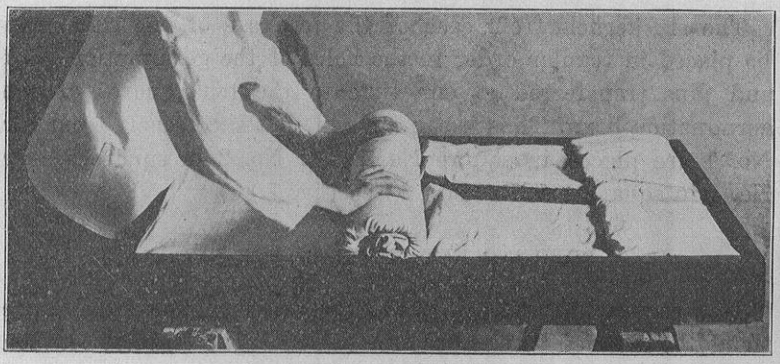


Fig. 7.—Removing the top layer of sawdust.

The kernels should be arranged within the square in two rows of three kernels each with germ faces up. This facilitates subsequent reading of the test.

COVERING THE GERMINATOR.

After having filled the germinator the kernels should be covered with a quite finely woven piece of cloth as the sprout roots will grow through unbleached muslin, in case it is used, and will cause serious trouble when it is desired to remove this cover at the time of reading the test. Common sheeting or bleached muslin makes an excellent cover. This cloth should be dampened and care should be taken not to disturb the kernels while covering them.

Over this another piece of unbleached muslin at least two feet wider than the germinator is placed and then filled level and packed with moist sawdust. The extra muslin around the ends is folded over the top of the sawdust.

READING THE TEST.

The germinator should be kept at ordinary room temperature (about 70° F.) and after 6 days the corn will have sprouted sufficiently to read the test conveniently. During this time water should be added once or twice to keep the saw dust in a good moist condition—but not saturated. The top layer of sawdust is rolled up as a mat as shown in Fig 8, and removed. The firmly woven cloth is now removed, care being taken not to disturb the sprouted kernels. Each square of kernels is examined in regular order. In square No. 16 perhaps all the kernels failed to grow. Immediately Ear No. 16 is discarded —later to be cast in the feed lot. It will surely make better feed than seed. In discarding this ear we are practically getting rid of 1000 dead kernels that we otherwise would have planted had we not tested our corn properly. How many such cases will we find the germinator? That will depend on how well the corn was cured. With the best method of curing few of such ears will be found.

In making this test three types of kernels, as to germination, will be found, viz., strong, weak, and dead. By strong kernels

we mean those that give vigorous growing sprouts in the germinator. By weak kernels we mean those that will germinate but produce slow growing, weak, spindly sprouts. Most of these will rot in the soil unless planted under the most favorable conditions and even then produce slow maturing, weak stalks and nubbin ears. Dead kernels are those which fail to grow at all.

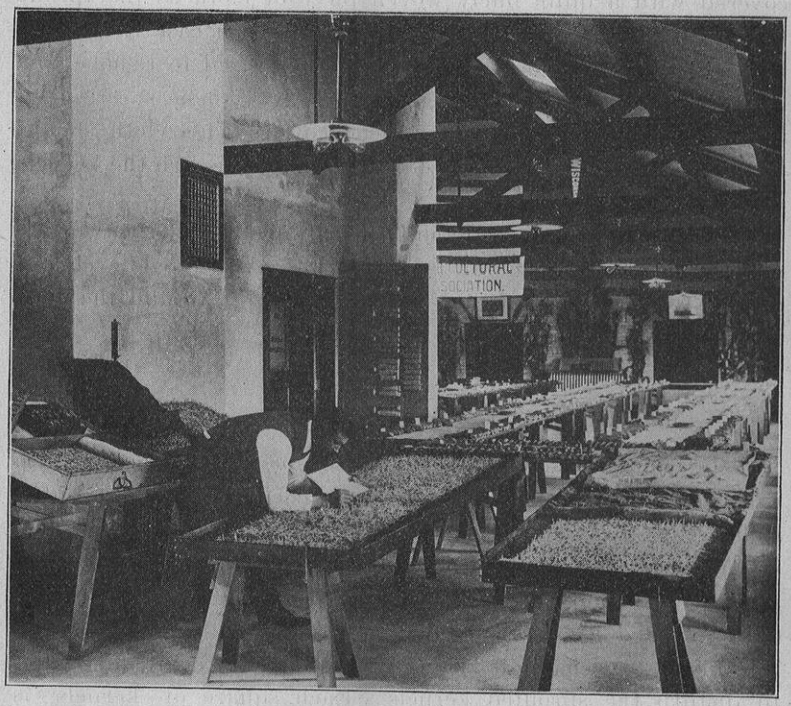


Fig. 8.—Reading an extensive test of seed corn.

Only the strong germinating ear should be saved for seed that is ears growing six healthy, vigorous sprouts in the germinator. In case, the supply of seed corn is short, such ears where only one kernel out of six is weak or dead, should be saved but kept separately and used only in case of necessity.

EFFECT OF TESTING CORN ON YIELDS.

At the Iowa station a very interesting experiment has been conducted. Ears having different degrees of vitality were

planted on separate uniform plots. The following table shows the resultant yields.

Germination.*			Yield. Bushels per acre.	†Decrease in yield.
Strong.	Weak.	Dead.		
6	0	0	75.1	.....
5	0	1	65.4	9.7 bushels.
4	0	2	58.6	6.8 "
3	0	3	50.1	8.5 "
2	0	4	42.1	8.0 "
1	0	5	39.4	2.7 "
0	0	6	34.7	4.7 "
5	1	0	69.8	....
4	1	1	63.6	6.2 "
3	1	2	56.2	6.4 "
2	1	3	48.0	8.2 "
1	1	4	44.1	3.9 "
0	1	5	38.3	5.8 "
4	2	0	69.1	.....
3	2	1	62.3	6.8 "
2	2	2	54.1	8.2 "
1	2	3	48.9	5.2 "
0	2	4	39.2	9.7 "
3	3	0	62.9	.....
2	3	1	61.8	1.1 "
1	3	2	50.7	11.1 "
0	3	3	47.2	3.5 "
2	4	0	67.0	.....
1	4	1	64.7	2.3 "
0	4	2	49.4	15.3 "
1	5	0	66.0	....
0	5	1	51.4	14.6 "
0	6	0	71.0	.....

*In all reports of germination the vitality is reported as strong, weak or dead. The numbers in the left hand column indicate those kernels which are strong, the number in the second or middle column those kernels which are weak and that in the right hand column, the number of dead kernels. Therefore 6—0—0 will indicate that of the kernels tested all 6 were strong in vitality: 3—2—1 will indicate that 3 showed strong vitality, 2 were weak and 1 was dead.

†The decrease in each case means so much yield less than was given in the class preceding.

The important facts to be obtained from this table are the decreased yields due to low germination. Ears in class 6-0-0 yielded 10 bu. per acre more than those in class 5-0-1 and 5.3 bu. more than those in class 5-1-0. Ears in class 1-0-5 yielded 40.4 bu. less than ears where all six kernels gave a strong germination.

Where all six kernels failed to grow the yield was 34.7 bu. per acre which is exceptionally high for this class of ears.

TIME REQUIRED FOR TESTING AND COST OF MATERIAL.

Testing seed corn is both an easy and an enjoyable task. It requires about 2 hours to test 100 ears and with practice 150 ears can be tested in two hour by one person. It is not necessary to do the testing in the daytime when other duties are pressing. Testing can be done in the evening by members of the family and can be made a source of real fun, as well as profit.

The cost of materials for making the test is slight and may be itemized as follow:—

Lumber for Germinator box—	
Two ¾″ 10′x6″ pine boards	$.50
Two ¾″ 8′x5″ pine boards	.50
One ¾″ 10′x4″ pine board	.25
Nails	.05
Galvanized Iron	.10
Paint	.50
Muslin	.40
Four yds (unbleached) at 10c	.40
Two yds. (bleached)	.25
Total	$2.50

An outfit as above described will last a life time if made correctly and will be one of the best paying investments on the farm. Once used it will always be used. Experience will demonstrate its value.

OTHER METHODS OF TESTING SEED CORN.

There are methods of testing seed corn other than herein described but none quite so convenient and satisfactory. According to the Iowa Station the "water method" of testing seed corn did not show the advantages often ascribed to it. In their extensive tests they have been led to believe that testers presenting the most favorable and uniform conditions for germination are the best.

THE IMPORTANCE OF TESTING SEED CORN.

The great necessity of testing the germination power of each ear of seed corn is practically self-evident and requires no further argument. It simply is a process of casting out the weak or dead ears and thus planting only those of high vitality that will produce strong, vigorous growing corn plants.

BUSINESS MEETING.

Business meeting of the Wisconsin Agricultural Experiment Association, Friday, January, 13, 1911, 2 P. M., Auditorium.

Called to order by the President, C. P. Norgord. The minutes of the last meeting were read and adopted, after which the following officers were elected:

President .....C. P. Norgord, Madison.
Vice-President .....E. W. Lee, Granton.
Secretary .....R. A. Moore, Madison.
Treasurer .....H. N. Longley, Dousman.

On motion of the Secretary, Professor C. P. Bull of the Minnesota College of Agriculture was made an honorary member of the Experiment Association.

On motion it was unanimously decided to allow the Secretary $150 annually for his services.

The President appointed the following committee on resolutions:

James B. Cheeseman
H. P. West
Chas. T. Lyman.

The selection of a representative to attend to matters relating to the National Corn Association was taken up and on vote, R. A. Moore was unanimously elected.

The following resolution were reported by the committee and on motion were unanimously adopted.

WHEREAS the work of the Wisconsin Agricultural Experiment Association has grown to such large proportions that its present appropriation of $2,000 is entirely inadequate to carry on efficiently its present plan of work, it is quite unable with the present fund to widen the scope of its functions.

Be it therefore resolved, That the State be urgently requested to increase its appropriation to a sum of not less than four thousand dollars per year, and the Secretary, Professor R. A. Moore, be instructed to take such immediate action as to make this request effective.

Inasmuch as it is desirable and necessary to increase the advertising of Northern Wisconsin lands for immediate settlement and availability for the effective cropping of larger areas of land, it is imperative that immediate action be taken to reclaim stump and wet lands on a larger scheme of operation than any hitherto attempted.

Be it therefore resolved, That the Legislature be petitioned to initiate some enabling legislation to effect such changes in groups of towns, or counties as may be needed to secure the workable condition of lands not now in cultivation on the same lines as the Drainage Reclamation Acts.

That copies of this resolution be forwarded to the Governor of the state of Wisconsin and to the Wisconsin Advancement Association.

WHEREAS, The accommodation of the Agronomy Building for the enormous amount of work imposed on the different sections of the department is quite insufficient to meet its present needs, prompt action should be taken to obtain an early extension of the building on the plans originally drawn for its purposes.

Be it resolved, That the President and Secretary, Professors C. P. Norgord and R. A. Moore be instructed to take action to obtain the needed changes immediately.

That this Association affirm its belief in the vital necessity of good roads as a prerequisite to effective settlement of new territory, and recommends that such action be taken to encourage and promote in every practicable way the extension of County and State Roads.

This Association attests its high appreciation of the present Seed Control Laws and advises that such improvements as may be presented by the Department of Agronomy be given attention, and that additional enactments be effected.

That Secretary R. A. Moore be instructed to call the attention of the neighboring States of Illinois, Michigan and Minnesota to our own legislation and its administration for the elimination of weeds, that extended seed laws may become general to the end of excluding importation of weed seeds from any and all sources.

Recognizing the efficiency and low cost of transportation obtained through the Parcels Post in all Countries in which its beneficient work has been experienced,

Be it resolved, That the United States Senators, and the Congressmen from Wisconsin be urged to support such legislation as will secure to us the advantages of this service immediately.

That our Secretary be instructed to forward copies of this resolution to each of our Senators and to our Congressional Delegation.

Signed,

JAMES B. CHEESMAN,
H. P. WEST,
CHAS. T. LYMAN.
Committee on Resolutions.

TREASURER'S REPORT.

H. N. Longley, Treasurer of the Association, made the following report, which was duly adopted.

Report as rendered by Treasurer, January 13, 1911.

Receipts

Feb.	5	Balance in treasury	$309 98
Feb.	5	Check from H. P. West	12 00
Feb.	5	J. P. Bonzelet (seed at auction)	33 00
Feb.	11	Cash from auction	100 00
Feb.	11	Fees	65 00
Feb.	12	C. E. Akins (seed sold at auction)	18 10
Feb.	28	Fees	14 00
Mar.	3	Fees	112 25
Mar.	3	Money from auction	82 00
Apr.	28	Fees	40 00
May	17	Fees	10 50
May	27	Fees	20 00
June	28	Cash from auction	24 10
Oct.	7	Fees	15 00
		Total Receipts	855 93

Disbursements.

Feb.	9	C. P. Norgord (services as auctioneer)	$10 00
Feb.	9	A. L. Stone (for judging grain)	5 00
Feb.	9	E. D. Ochner (for badges)	8 00
Feb.	9	J. L. Owen Co. (No. 2 Barley gang)	4 25
Feb.	28	H. D. Dunbar (premiums)	50
Feb.	28	Gustave Parsch (premiums)	50
Feb.	28	D. L. Bryson (premiums)	50
Feb.	28	Albert W. Fay (premiums)	1 00
Feb.	28	F. J. Gerking (premiums)	1 00
Feb.	28	F. G. Swoboda (premiums)	1 00
Feb.	28	Chas. Wussow (premiums)	50

Feb.	28	J. Frank Bradley (premiums)	50
Feb.	28	J. F. Ford (premiums)	1 00
Feb.	28	John G. Jones (premiums)	1 00
Feb.	28	H. Schuman (premiums)	1 00
Feb.	28	A. Chase (premiums)	50
Feb.	28	Frank B. Joos (premiums)	1 00
Feb.	28	R. A. Gillette (premiums)	1 00
Feb.	28	J. H. Hendricks (premiums)	3 00
Mar.	11	H. C. Brueckner (premiums)	9 50
Mar.	11	Idalyn Bibbs (office expenses)	15 00
Mar.	11	R. A. Moore (services as secretary for association)	150 00
Apr.	11	John Van Loon (premiums)	2 00
Apr.	11	W. W. Weir (premiums)	2 00
Apr.	11	R. N. West (premiums)	6 50
Apr.	11	H. L. Ward (premiums)	2 00
Apr.	11	Robt. W. Ward (premiums)	5 50
Apr.	11	Alvin Voight (premiums)	2 50
Apr.	11	W. A. Toole (premiums)	3 00
Apr.	11	J. B. Thorpe (premiums)	2 00
Apr.	11	Hilbert Sorenson (premiums)	3 00
Apr.	11	R. J. Schaefer (premiums)	3 50
Apr.	11	P. A. Paulson (premiums)	1 50
Apr.	11	H. N. Meekin (premiums)	3 50
Apr.	11	Wm. Leonard (premiums)	8 50
Apr.	11	C. H. Howitt (premiums)	52 50
Apr.	11	F. B. Grebe (premiums)	34 50
Apr.	11	O. R. Frauenheim (premiums)	4 00
Apr.	11	J. H. Detwiler (premiums)	4 00
Apr.	11	E. L. Dreger (premiums)	2 00
Apr.	11	A. F. Carlson (premiums)	4 00
Apr.	11	J. P. Bonzelet (premiums)	7 00
Apr.	11	Frank Backaus (premiums)	2 00
Apr.	11	G. A. Booth (premiums)	3 00
Apr.	11	A. Bohl (premium)	44 50
Apr.	11	C. E. Akins (premuim)	13 50
Apr.	11	John Accola (premium)	3 50
Apr.	11	E. F. Briggs (premium)	7 00
Apr.	11	F. J. Gerking (premium)	2 00
Apr.	11	H. P. West (premium)	39 00
Apr.	11	H. E. Krueger (Co. order exhibit)	20 00
Apr.	11	H. N. Longley	2 00
Apr.	28	Stamps retained at office	30 00
Apr.	28	Office expenses	10 50
June	12	Clara Quan (clerical services)	46 70
June	17	Stamps retained at office	10 00
June	27	Idalyn Bibbs (clerical services)	20 00
July	3	Stamps for treasurer	1 00
July	26	Idalyn Bibbs (office expenses)	15 00
July	26	Ginn & Co. (book on soil fertility by Hopkins and exchange on check)	2 09
July	30	Roger E. Moore (collecting grains and forage plants for exhibition purposes)	24 00
Sept.	12	Idalyn Bibbs (office expenses)	10 00
Sept.	28	Idalyn Bibbs (office expenses)	30 00
Oct.	20	Nell Lorigan (office expenses)	10 00
Oct.	20	Stamps (retained at office)	15 00
Oct.	31	Nell Lorigan (office expenses)	25 00
Oct.	31	M. C. Lilly & Co. (badges for members of 1911)	52 50
		Total disbursements	$807 54

Receipts	$855 93
Disbursements	807 54
Balance	$48 39

Report as rendered by Treasurer, January 3, 1911.

Respectfully submitted.

H. N. LONGLEY,
Treasurer.

SECRETARY'S REPORT ON STATE APPROPRIATION.

R. A. Moore, Secretary of the Association, makes the following report:

Money in the treasury, February 4th, 1910, date of making last report	$435 84
State appropriation for 1910	2,000 00
Total	$2,435 84

Disbursements.

1910		
Feb. 11	H. N. Longley, expenses and services at annual meeting	$11 50
Feb. 11	P. G. Holden, expenses and services at annual meeting	25 00
Feb. 11	G. A. Freeman, Sparta, expenses and services inspecting farms of members of the W. E. A. in Monroe County	55 12
Feb. 11	Henry Michals, Malone, expenses and services inspecting farms of members of Fond du Lac County	25 29
Feb. 11	J. P. Bonzelet, Eden, Wis., expenses and services at annual meeting	12 02
Feb. 11	H. E. Whittaker, expenses and services at annual meeting	12 36
Feb. 15	H. E. Krueger, expenses and services inspecting farms in Dodge County	28 17
Feb. 17	Cantwell Printing Co., 2,500 programs	55 00
Feb. 18	O. R. Wiegand, Cleveland, inspecting farms in Manitowoc County	33 00
Feb. 21	Democrat Printing Co., 1,000 separates $57, 10,000 envelopes $23.75, 2,500 tags $3.75	84 50
Feb. 25	Idalyn Bibbs, clerical services, month of February	20 00
Mar. 3	R. A. Moore, expenses at Plymouth in reorganizing Co. order of the Experiment Association	8 36
Mar. 10	O. R. Wiegand, 1 day's labor added to previous bill	2 00
Mar. 21	Idalyn Bibbs, clerical services for month of March	20 00
Apr. 21	Idalyn Bibbs, clerical services for month of April	20 00
May 26	Idalyn Bibbs, clerical services for month of May	20 00
July 8	L. W. Brown, 5 prints and negatives	$6 25
July 8	Parsons Prtg. Co., wire basket, 35c; 1 file, $1.00; ink and stand, 60c; 80 badges, $1.25	3 20

July 18	J. E. Moseley, 5 films, 45c	2 25
July 22	Postmaster, 5,000 1c, 1,300 2c, 1,600 8c	204 00
July 26	R. A. Moore, travelling expenses attending National Corn Assoc. meeting, Chicago	6 30
July 26	Idalyn Bibbs, clerical services for month of July	20 00
Aug. 29	Idalyn Bibbs, services August	20 00
Sept. 6	J. M. Cade, Weed Inspection in Vernon County	16 50
Sept. 6	Postmaster, 2000 8c stamps	160 00
Sept. 24	Idalyn Bibbs, services Sept.	20 00
Sept. 27	H. E. Kreuger, Prem. on grains, 8th annual meeting, $78.00, supplies to Omaha, $5.50; express on barley, 35c	83 85
Sept. 30	G. E. Moore, expenses with state fair exhibit	25 58
Sept. 30	Postmaster, 5,000 2c stamps	100 00
Oct. 3	Parsons Printing Co. 5,000 mimeograph letter heads	10 00
Oct. 5	O. R. Frauenheim, for farm inspection work	24 18
Oct. 10	Anton W. Schmutzer, Antigo, farm inspection and weed census	2 40
Oct. 19	Wisconsin Experiment Station, 300 bushels Ped. winter rye, 80c; 40 bushels winter wheat, $1.20; 75 bu. oats, 50c; 300 bu. barley, 75c	550 50
Oct. 21	Geo. E. Moore, 8 days labor for putting up exhibit at State Fair, $2.00 per day	16 00
Oct. 24	Democrat Printing Co., 20 receipt books	6 25
Oct. 25	Nell Lorigan, clerical services month of October	15 00
Nov. 23	Henry Michels 15 bushels Golden Glow corn, $2.75, discount 25%	30 94
Nov. 23	Henry Michels, farm inspection	14 50
Nov. 25	Nell Lorigan, clerical services month of November	15 00
Nov. 30	Cantwell Printing Co., 1,000 letter heads	4 25
Dec. 7	R. A. Moore attending meeting of Directors of Nat. Corn Show as delegate of W. E. A.	10 15
Dec. 16	Postmaster, 1,500 1c	15 00
Dec. 22	Nell Lorigan, clerical services, month of December	15 00
Dec. 24	Valoo V. Moore, 9½ bushels Silver King corn, $3.00	28 50
1911		
Jan. 3	Milwaukee Bag Co., Milwaukee, Wis.	87 50
	Total disbursements	$1,945 42
Jan. 3	Total receipts in state treasury	2,435 84
	Total disbursements	1,945 42
	Balance in State Treasury	$490 42

We, the undersigned committee, appointed to examine the Treasurer's and Secretary's reports on receipts and disbursements of funds for the past year, beg leave to report that we found them correct.

Signed B. D. Leith,
L. F. Graber,
H. E. Kreuger.

Tenth Annual Meeting, Jan. 13, 14, 1911.

ANNUAL DISPLAY OF GRAINS AND FORAGE PLANTS

EXHIBITION OF GRAINS AND FORAGE PLANTS FOR 1911.

One of the attractive features of the last annual meeting of the Experiment Association was the display of grains and forage plants. Approximately eight hundred dollars in cash and special prizes had been set aside for premiums to be paid for the best exhibits of pure-bred seed grains and forage plants. The quality of the grain displayed was of high standard and the interest taken in the exhibit was such that the Association deems it advisable to continue this line of effort on a much larger scale. Cash and special prizes to the approximate value of ten hundred dollars will be given to the growers of best seeds at the next annual meeting. A list of special prize offerings will be sent to members of the Association later in the year.

All members of the Association should exhibit seed grains at the State Fair at Milwaukee, at the National Corn Show and also at the Experiment Association Contest. We desire to let farmers and seedsmen far and near know what we are able to produce.

We feel that through the exhibition of pure-bred seed grains much good can be done in the way of encouraging the growing and dissemination of these seed grains free from smut and obnoxious weed seeds.

The Experiment Association should demonstrate to the seedsmen and farmers of Wisconsin that good seed can be grown within our borders which is acclimated to our home conditions. The seedsmen of our state and of adjoining states will be only too pleased to assist in the dissemination of home grown seeds if they can be shown that the quality is equally as good or better than they can get elsewhere. Realizing the great improvement that can be made in the growing of farm crops we trust that every member of the Association will do all in his power to assist in every possible manner in the production of choice grains and forage plants for our next display.

PARTIES AWARDED CASH AND SPECIAL PREMIUMS AT THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION MEETING, JANUARY 13-14, 1911.

Class 1a—Best ½ peck Swedish Select oats (Wis. No. 4.).
First—Jas. H. Sattler, Rosendale (J. L. Owens mill) value.....$45 00
Second—Tennis Sebion, Westby..... 3 00
Third—C. H. Howitt, Randolph..... 2 00
Fourth—J. G. Jones, Beaver Dam..... 1 00
Fifth—J. W. Jung, Randolph..... 50

Class 1b—Best½ peck of any other variety of oats.
First—J. H. Hendricks Campbellsport..... $4 00
Second—H. P. West, Ripon..... 3 00
Third—Ray H. Bussewitz, Reesville..... 2 00
Fourth—Anton Bohl, Beaver Dam..... 1 00
Fifth—Wm. Leonard, Jefferson..... 50

Class 2a—Best bundle Swedish Select oats (Wis. No.4).
First—J. P. Bonzelet, Eden..... $4 00
Second—T. S. Ward, Fort Atkinson..... 3 00
Third—C. H. Howitt, Randolph..... 2 00
Fourth—Jas. H. Sattler, Rosendale..... 1 00
Fifth—Wm. R. Leonard, Jefferson..... 50

Class 2b—Best bundle any other variety.
First—F. P. Grebe, Fox Lake..... $4 00
Second—J. C. Hans, Jefferson..... 3 00
Third—Rob't Ward, Fort Atkinson..... 2 00
Fourth—H. P. West, Ripon..... 1 00
Fifth—J. F. Ford, Mazomanie..... 50

Class 3a—Best ½ peck Pedigree barley.
First—H. E. Krueger, Beaver Dam.....Pure bred lamb
Second—H. P. West, Ripon..... $3 00
Third—Fred Nutteman, West Salem..... 2 00
Fourth—Anton Bohl, Beaver Dam..... 1 00
Fifth—J. G. Jones, Beaver Dam..... 50

Class 3b—Best ½ peck Oderbrucker barley.
First—H. E. Krueger, Beaver Dam..... $4 00
Second—Anton Bohl, Beaver Dam..... 3 00
Third—J. G. Jones, Beaver Dam..... 2 00
Fourth—D. R. Jones, Jr., Beaver Dam..... 1 00
Fifth—Rob't Ward, Fort Atkinson..... 50

Class 3c—Best ½ peck any other variety of barley.
First—Anton Bohl, Beaver Dam..... $4 00
Second—Wm. R. Leonard, Jefferson..... 3 00
Third—Henry Michels, Malone..... 2 00
Fourth—J. G. Jones, Beaver Dam..... 1 00
Fifth—D. R. Jones, Jr., Beaver Dam..... 50

Class 4a—Best bundle of Pedigree barley.
First—Rob't Ward, Fort Atkinson..... $4 00
Second—T. S. Ward, Fort Atkinson..... 3 00
Third—J. P. Bonzelet, Eden..... 2 00
Fourth—H. E. Krueger, Beaver Dam..... 1 00
Fifth—Geo. W. Kendell, Sun Prairie..... 50

Class 4b—Best bundle of Oderbrucker barley.
First—H. E. Krueger, Beaver Dam..... $4 00
Second—J. P. Bonzelet, Eden..... 3 00
Third—Rob't Ward, Fort Atkinson..... 2 00
Fourth—Wm. R. Leonard, Jefferson..... 1 00
Fifth—Geo. R. Kendall, Sun Prairie..... 50

Class 4c—Best bundle any variety of barley.
First—T. S. Ward, Fort Atkinson..... $4 00
Second—Wm. R. Leonard, Jefferson..... 3 00
Third—J. P. Bonzelet, Eden..... 2 00
Fourth—Rob't Ward, Fort Atkinson..... 1 00
Fifth—Geo. H. Leonard..... 50

Class 5a—Best ten ears Clark's Yellow Dent (Wis. No. 1).
First—F. P. Grebe, Fox Lake..... $4 00
Second—C. H. Howitt, Randolph..... 3 00
Third—J. W. Jung, Randolph..... 2 00
Fourth—A. C. Holscher, Madison..... 1 00

Class 5b—Best ten ears Silver King corn (Wis. No. 7).
First—F. B. Joos, Fountain City, Yorkshire pig, value.....$25 00
Second—J. R. Thorpe, Tavera..... 3 00
Third—S. P. Markle, La Crosse..... 2 00
Fourth—W. E. Colloday, Madison..... 1 00

Class 5c—Best ten ears Early Yellow Dent corn (Wis. No. 8).
First—F. P. Grebe, Fox Lake, corn grader, value.....$15 00
Second—C. H. Howitt, Randolph..... 3 00
Third—John Van Loon, La Crosse..... 2 00
Fourth—H. E. Krueger, Beaver Dam..... 1 00
Fifth—H. Merkel, Appleton..... 50

Class 5d—Best ten ears Golden Glow corn (Wis. No. 12).
First—C. H. Howitt, Randolph..... $4 00
Second—F. P. Grebe, Fox Lake..... 3 00
Third—Justus Brueckner, Fort Atkinson..... 2 00
Fourth—Wm. Schwant, Stanton..... 1 00
Fifth—C. W. Verbeck, Lodi..... 50

Class 5e—Best ten ears North Star Yellow Dent (Wis. No. 11).
First—Wm. Toole, Baraboo..... $4 00
Second—C. H. Howitt, Randolph..... 3 00
Third—H. E. Krueger, Beaver Dam..... 2 00
Fourth—W. A. Toole, Baraboo..... 1 00
Fifth—F. P. Grebe, Fox Lake..... 50

Class 5f—Best ten ears Yellow Flint corn.
First—No record.
Second—C. H. Howitt, Randolph..... 3 00
Third—F. P. Grebe, Fox Lake..... 2 00
Fourth—J. C. Hans, Jefferson..... 1 00
Fifth—H. E. Krueger, Beaver Dam..... 50

Class 5g—Best ten ears White Flint.
First—Geo. H. Leonard, Jefferson..... $4 00
Second—Anton Bohl, Beaver Dam..... 3 00
Third—Wm. R. Leonard, Jefferson..... 2 00
Fourth—H. E. Krueger, Beaver Dam..... 1 00
Fifth—F. P. Grebe, Fox Lake..... 50

Class 5h—Best ten ears, any variety of corn.
First—H. C. Brueckner, Fort Atkinson..... $4 00
Second—Arthur H. Dienst, Hinckley, Ill..... 3 00
Third—Arthur Ochsner, Plain..... 2 00
Fourth—John Van Loon, La Crosse..... 1 00
Fifth—H. E. Krueger, Beaver Dam..... 50

Class 5i—Best single ear of corn.
First—S. P. Markle, La Crosse..... $4 00
Second—H. C. Brueckner, Fort Atkinson..... 3 00
Third—Walter Steinhoff, Platteville..... 2 00
Fourth—C. H. Howitt, Randolph..... 1 00
Fifth—Wm. R. Leonard, Jefferson..... 50

Class 5½ Special. Best 50 ears Silver King corn (Wis. No. 7).
First—S. P. Markle, La Crosse, Corn planter, value.....$50 00
Second—F. B. Joos, Fountain City..... 6 00
Third—J. G. Jones, Beaver Dam..... 3 00
Fourth—J. R. Thorp, Tavera..... 2 00
Fifth—H. E. Krueger, Beaver Dam..... 1 00

Class 5½ Special. Best 50 ears any Wisconsin Standard Yellow Dent.
First—Henry Anthes, Jefferson, spring tooth harrow, value.....$25 00
Second—C. H. Howitt, Randolph..... 6 00
Third—F. P. Grebe, Fox Lake..... 3 00
Fourth—John Van Loon, La Crosse..... 2 00
Fifth—A. H. Bauer, Manitowoc..... 1 00

Class 6a—Best ¼ peck Medium Red Clover seed.
First—O. R. Frauenheim, Random Lake..... $4 00
Second—Fred Pierner, No. Milwaukee..... 3 00
Third—C. H. Howitt, Randolph..... 2 00
Fourth—J. W. Jung, Randolph..... 1 00
Fifth—J. C. Hans, Jefferson..... 50

Class 6b—Best ¼ peck of Mammoth Red Clover seed.
First—H. P. West, Ripon..... $4 00

Class 6c—Best ½ peck Alsike clover.
First—O. R. Frauenheim, Random Lake..... $4 00
Second—H. P. West, Ripon..... 3 00
Third—J. W. Jung, Randolph..... 2 00
Fourth—H. E. Krueger, Beaver Dam..... 1 00
Fifth—J. F. Ford, Mazomanie..... 50

Class 6d—Best ½ peck White Clover seed.
First—R. N. West, Ripon..... $4 00
Second—H. E. Krueger, Beaver Dam..... 3 00
Third—H. P. West, Ripon..... 2 00

Class 7a—Best ½ peck Black Soy beans.
First—H. P. West, Ripon..... $3 00
Second—R. N. West, Ripon..... 2 00
Third—C. H. Howitt, Randolph..... 1 00
Fourth—F. P. Grebe, Fox Lake..... 50

Class 7b—Best ½ peck Green Soy beans.
First—Wm. R. Leonard, Jefferson..... $3 00
Second—H. E. Krueger, Beaver Dam..... 2 00
Third—F. P. Grebe, Fox Lake..... 1 00
Fourth—C. H. Howitt, Randolph..... 50

Class 7c—Best ½ peck Yellow Soy beans.
First—T. S. Ward, Fort Atkinson..... $3 00
Second—Wm. R. Leonard, Jefferson..... 2 00
Third—Rob't Ward, Fort Atkinson..... 1 00
Fourth—J. G. Jones, Fort Atkinson..... 50

Class 7d—Best ½ peck Brown Soy beans.
First—T. S. Ward, Fort Atkinson..... $3 00
Second—C. H. Howitt, Randolph..... 2 00
Third—F. P. Grebe, Fox Lake..... 1 00
Fourth—F. G. Backus, Kewaskum..... 50

Class 8a—Best bundle of Soy beans.
First—J. G. Jones, Beaver Dam..... $3 00
Second—C. H. Howitt, Randolph..... 2 00
Third—F. P. Grebe, Fox Lake..... 1 00
Fourth—T. S. Ward, Fort Atkinson..... 50

Class 9a—Best ½ peck Alfalfa seed.
First—A. C. Holscher, Madison..... $4 00
Second—H. P. West, Ripon..... 3 00

Class 10a—Best sample Alfalfa hay.
First—W. L. Illian, Adell..... $15 00
Second—J. G. Jones, Beaver Dam..... 10 00
Third—P. A. Paulson, Hudson..... 2 00
Fourth—John Puls, Hartford..... 1 00

Class 11a—Best ½ peck Winter rye.
First—H. E. Krueger, Beaver Dam..... $3 00
Second—P. A. Paulson, Hudson..... 2 00
Third—H. P. West, Ripon..... 1 00

Class 11b—Best ½ peck Spring rye.
First—R. N. West, Ripon..... $3 00
Second—H. E. Krueger, Beaver Dam..... 2 00
Third—Rob't Ward, Fort Atkinson..... 1 00
Fourth—H. P. West, Ripon..... 50

Class 12a—Best ½ peck Timothy seed.
First—Anton Ochsner, Plain..... $3 00
Second—R. N. West, Ripon..... 2 00
Third—C. H. Howitt, Randolph..... 1 00
Fourth—Rob't Ward, Fort Atkinson..... 50

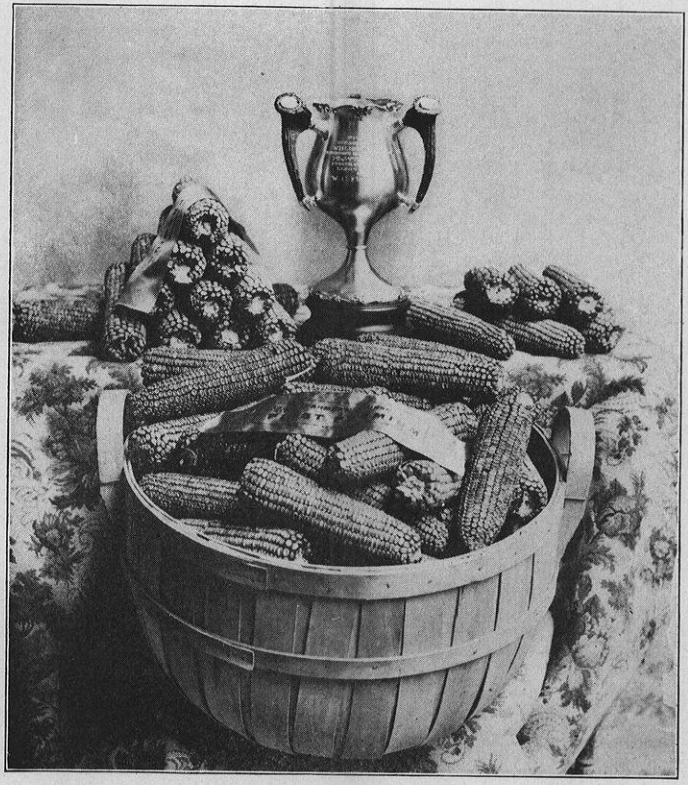
Class 13a—Best ½ peck Silver Hull buckwheat.
First—H. P. West, Ripon..... $3 00
Second—R. N. West, Ripon..... 2 00
Third—H. E. Krueger, Beaver Dam..... 1 00
Fourth—C. H. Howitt, Randolph..... 50

Class 13b—Best ½ peck Japanese buckwheat.
First—H. P. West, Ripon..... $3 00
Second—H. E. Krueger, Beaver Dam..... 2 00
Third—J. G. Jones, Beaver Dam..... 1 00
Fourth—F. P. Grebe, Fox Lake..... 50

WISCONSIN SILVER TROPHIES

Silver Cups valued at $400 given by people interested in the improvement of farm crops for prize awards at each annual grain display of the Experiment Association.

This magnificent silver cup, valued at $100, was awarded to William Schwandt, Secretary of the St. Croix County Order of the Experiment Association, Stanton, Wis., by the Corn Exposition held at Stillwater, Minn. Mr. Schwandt also took other valuable prizes.



GRANT COUNTY TROPHY

Prizes won by Walter J. Steinhoff at the Grant County competitive grain display. Best ten ears and best bushel of Golden Glow corn.

Besides the beautiful buckhorn silver cup, valued at $50, Mr. Steinhoff took several cash prizes on select seed grains. Mr. Steinhoff is president of the Grant County Order of the Experiment Association and ranks as one of the leading seed grain growers in Wisconsin.

Class 14a—Best ½ peck Winter wheat.
First—H. E. Krueger, Beaver Dam, Owens smut machine, value.....$15 00
Second—H. N. Longley, Dousman..... 2 00
Third—H. P. West, Ripon..... 1 00
Fourth—Wm. T. Neuberger, Reesville..... 50

Class 14b—Best ½ peck Spring wheat.
First—H. P. West, Ripon..... $5 00
Second—H. E. Krueger, Beaver Dam..... 2 00
Third—C. H. Howitt, Randolph..... 1 00
Fourth—G. A. Freeman, Sparta..... 50

Class 15a—Best bundle Winter wheat.
First—H. E. Krueger, Beaver Dam..... $3 00
Second—F. B. Joos, Fountain City..... 2 00
Third—Rob't Ward, Fort Atkinson..... 1 00
Fourth—T. S. Ward, Fort Atkinson..... 50

Class 15b—Best bundle Spring wheat.
First—Wm. Leonard, Jefferson..... $3 00
Second—D. R. Jones, Jr., Beaver Dam..... 2 00
Third—Walter J. Steinhoff, Platteville..... 1 00
Fourth—Rob't Ward, Fort Atkinson..... 50

Class 16a—Best sample of Navy beans.
First—H. P. West, Ripon..... $3 00
Second—J. C. Hans, Jefferson..... 2 00
Third—H. E. Krueger, Beaver Dam..... 1 00
Fourth—F. P. Grebe, Fox Lake..... 50

Class 17a—Best three single stalks with pods attached.
First—H. E. Krueger, Beaver Dam..... $3 00
Greatest and best display of threshed grain was awarded to Dodge county order of the Experiment Association.....$10 00
Greatest and best display of sheaf grains was awarded to Fond du Lac county order of the Experiment Association..... 10 00

SPECIAL PRIZES AND TROPHIES GIVEN AT THE LAST ANNUAL SEED GRAIN CONTEST BY FRIENDS OF THE ASSOCIATION.

Through the kindness of friends of the Wisconsin Experiment Association, we were able to offer at the last annual display of grain and forage plants, the following special prizes and trophies:

J. I. Case Company, Racine, offered a Corn Planter for the best fifty ears of Silver King (Wisconsin No. 7 Corn), valued at $50.00, won by S. P. Markle, La Crosse.

J. L. Owens Co., Minneapolis, Minn., offered a New Superior fanning mill for best half peck of Swedish Select oats (Wis. No. 4), valued at $45.00, won by James H. Sattler, Rosendale.

The Independent Harvester Co., Plano, Ill., offered a Corn Grader for best ten ears Wis. No. 8 corn, valued at $15.00, won by F. P. Grebe, Fox Lake.

J. L. Owens, Minneapolis, Minn., offered a complete smut machine with all attachments, for best half peck of Winter wheat, valued at $15.00, won by H. E. Krueger, Beaver Dam.

International Harvester Co. of America offered a combination spring tooth harrow for best fifty ears of any Wisconsin Standard Yellow Dent corn, valued at $30.00, won by Henry Anthes, Jefferson.

Fred Pabst, Oconomowoc, offered a Berkshire pig to the person taking the greatest number of cash prizes on pure bred corn, won by C. H. Howitt, Randolph.

A sterling silver trophy, for best sample Swedish Select oats, valued at $40.00, given by Chamber of Commerce, Milwaukee, won by James H. Sattler, Rosendale.

A sterling silver trophy, for best sample Spring Wheat, valued at $40.00, given by Chamber of Commerce, Milwaukee, won by H. P. West, Ripon.

W. F. Renk, Sun Prairie, offered a pure bred registered ewe lamb for best half peck Wisconsin pedigree barley; value $25.00, won by H. E. Krueger, Beaver Dam.

H. E. Krueger, Fair View Farm, Beaver Dam, offered a pure bred Yorkshire pig for best ten ears of Silver King corn, value $25.00. Won by F. B. Joos, Fountain City.

J. P. Bonzelet, Sunny Slope Farm, Eden, offered pedigree seeds for the best ten ears Golden Glow corn; value $10.00. Won by C. H. Howitt, Randolph.

J. A. Salzer Seed Co., La Crosse, offered $15.00 for best sample of alfalfa hay and $10.00 for second best alfalfa hay. Won by W. L. Illian, Adell, 1st; J. G. Jones, Beaver Dam, 2nd.

L. L. Olds Seed Co., Madison, Wis., offered $10.00 in cash for greatest and best display of threshed grains and $10.00 for best display of sheaf grains made by the county orders of the Experiment Association. Won by Dodge Co. Order. Five dollars was given to any member of the Association for best half peck of spring wheat. Won by H. P. West, Ripon.

A sterling silver trophy, for best sample of Winter rye, valued at $40.00, given by Chamber of Commerce, Milwaukee, won by H. E. Krueger, Beaver Dam.

A sterling silver trophy, for best bundle Oderbrucker barley, valued at $40.00, given by Chamber of Commerce, Milwaukee, won by H. E. Krueger, Beaver Dam.

A sterling silver trophy, for best sample of Oderbrucker barley, valued at $125.00, given by the Wisconsin Brewers' Association, won by H. E. Krueger, Beaver Dam.

A sterling silver trophy, for best ten ears of Golden Glow corn, valued at $60.00, given by Wisconsin Agriculturist, Racine, won by C. H. Howitt, Randolph.

A sterling silver trophy, for best ten ears Silver King corn, valued at $40.00, given by Chamber of Commerce, Milwaukee, won by F. B. Joos, Fountain City, Wis.

PREMIUM LIST, 1911.

(Awards to be made January, 1912.)

DEPARTMENT OF FARM CROPS.

Class 1. Oats.

Best ½ peck Swedish Select oats (Wis. No. 4), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ½ peck any other variety, $4.00. 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Class 2. Oats in Sheaf.

Best bundle Swedish Select oats (Wis. No. 4), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best bundle any other variety, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Class 3. Barley.

Best ½ peck Wisconsin Pedigree barley, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ½ peck Oderbrucker barley (Wis. 55), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ½ peck any other variety, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Class 4. Barley in Sheaf.

Best bundle of Wisconsin Pedigree barley, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best bundle of Oderbrucker barley (Wis. 55), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best bundle of any other variety, $4.00; 2nd ,$3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Practically all of the above special prizes and trophies will again be given for the 1912 contest. In addition James B. Cheeseman, Racine, offers the following:

For the best bushel (60 lbs.) of Alfalfa seed.....	$30 00
For the best bushel (60 lbs.) of Alsike clover.....	15 00
For the best bushel (60 lbs.) of Medium clover.....	15 00
For the best bushel of Swedish Select oats.....	20 00
For the best bushel of Wis. No. 12 ped. barley.....	20 00

Exhibits to become the property of the donor of the premiums.

Class 5. Corn.

Best ten ears, Clark's Yellow Dent (Wisconsin No. 1), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ten ears Silver King, (Wisconsin No. 7), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ten ears Early Yellow Dent (Wisconsin No. 8), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ten ears Golden Glow (Wisconsin No. 12), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ten ears Tooles North Star Yellow Dent (Wisconsin No. 11), $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ten ears Yellow Flint, 4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ten ears White Flint, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ten ears, any other variety, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best single ear of corn, any variety, 4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Class 5½. Special.

Best fifty ears of Silver King (Wisconsin No. 7) corn, $10.00; 2nd, $6.00; 3rd, $3.00; 4th, $2.00; 5th, $1.00.

Best fifty ears of any Wisconsin Standard Yellow Dent corn (Wisconsin No. 8, Clark's Yellow Dent, Golden Glow, Tooles North Star Vans Blue Ribbon), $10.00; 2nd, $6.00; 3rd, $3.00; 4th, $2.00; 5th, $1.00.

Class 6. Clover Seed.

Best ½ peck of medium red clover seed, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ½ peck mammoth red clover seed, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ½ peck alsike clover seed, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Best ½ peck of white clover seed, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Class 7. Soy Beans.

Best ½ peck (black) soy beans, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.
Best ½ peck (green) soy beans, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.
Best ½ peck (yellow) soy beans, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.
Best ½ peck (brown) soy beans, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 8. Soy Beans in Sheaf.

Best bundle of soy beans, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 9. Alfalfa Seed.

Best ½ peck of alfalfa seed, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Class 10. Alfalfa Hay.

Best sample of alfalfa hay, $4.00; 2nd, $3.00; 3rd, $2.00; 4th, $1.00; 5th, 50 cents.

Class 11. Rye.

Best ½ peck Wis. pedigree winter rye, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.
Best ½ peck spring rye, any other variety, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 12. Timothy Seed.

Best ½ peck timothy seed, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 13. Buckwheat.

Best ½ peck Silver Hull buckwheat, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.
Best ½ peck Japanese Buckwheat, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 14. Wheat.

Best ½ peck winter wheat, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.
Best ½ peck spring wheat, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 15. Wheat in Sheaf.

Best bundle winter wheat, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.
Best bundle spring wheat, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 16. Field Beans, Navy, Marrowfat or Kidney.

Best sample of Field Beans, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Class 17. Field Beans, Navy, Marrowfat or Kidney.

Best three single stalks with pods attached, $3.00; 2nd, $2.00; 3rd, $1.00; 4th, 50 cents.

Competitive Exhibits of the County Orders of the Wisconsin Experiment Association.

Greatest and Best Display of Threshed Grains.

1st, $10.00; 2nd, $5.00; 3rd, $3.00; 4th, $2.00; 5th, $1.00.

Greatest and Best Display of Sheaf Grains.

1st, $10.00; 2nd, $5.00; 3rd, $3.00; 4th, $2.00; 5th, $1.00.

RULES AND REGULATIONS UNDER WHICH PREMIUMS ARE GIVEN.

1. The exhibitor must be a member of the Wisconsin Experiment Association.
2. Grain or forage plants must have been grown the season previous to exhibition by the exhibitor.
3. No fees will be charged for exhibiting in any classes.
4. The samples of grain and forage plants exhibited are to be retained as the property of the Wisconsin Experiment Association unless otherwise provided and may be used by the association or sold at auction to the highest bidder after the awards are made.
5. Exhibits are to be brought in by members of the Association. If sent by express or freight all carrying charges should be prepaid.
6. Varieties of grain or forage plants not specifically named in the list can compete as "any other variety" in which case these different varieties compete against each other and not as an individual class.
7. Exhibitors cannot compete for two cash premiums on the same variety of grain or forage plant.
8. A proper entry of all grains, seeds, etc., must be made in the entry book at the Secretary's office before they are placed on exhibition tables.
9. Expert judges will be secured to place the awards.
10. Where doubt exists in regard to grains being entered according to rules and regulations the exhibitor may be required to verify by oath or affidavit to the correctness of the entries.
11. The grain exposition of the Association will be held at Madison in the Agronomy Building and rooms have been secured in that building for the exhibits.

ADDITIONAL RULES GOVERNING TROPHY AWARDS.

1. The Chamber of Commerce trophies must be won twice by one member before it becomes his permanent possession.
2. The Andrew Simonson trophy must be won three times by one member before it becomes his permanent possession.
3. The trophies must stay on exhibition in the Agronomy building, Madison, Wis., until they are permanently awarded. The name of each winner will be engraved on the trophy each year.

DIVISION OF FARM CROPS.

PLAN OF WORK FOR THE COMING YEAR.

R. A. MOORE.

The energy of the Experiment Association should be concentrated on the corn, wheat, barley and rye work the coming season. The call from all over the country for select seed grains grown by our Association leads me to see that the farmers are quick to perceive the importance of growing crops from pure bred seeds instead of continuing the mongrel bred varieties. The favor so far obtained for select seed grains can only be continued by observing strict rules of honest practice.

If for any reason our seed crop should be damaged or contaminated with noxious weed seeds we should at once notify the Secretary and refrain from selling such seed. All seeds of questionable character should be ground and fed on the farm or sold as feed and not listed as seed grains.

Our work in establishing standard varieties of corn for Wisconsin should be continued and push with the utmost vigor. No longer should we encourage the scoop-shovel method of supplying seed corn ,but insist that the only true way of furnishing seed corn is in the ear and that to be kiln-dried corn. No seedsman can advance a single argument of value for not selling seed corn in the ear. Where shelled corn is supplied the farmer for seed, the danger of mixing and getting an inferior grade of corn is too great to be safely advocated. The only true way of preparing seed corn for market is to fire dry it and then store safely in a room for shipment. All seed corn should be shipped in the ear for which the grower should receive ample returns for his extra labor. By adhering strictly to the above principle we will be able to throw new life and vigor into the corn plant and lead the world in production per acre.

Our experiments for the coming year are outlined in our last report and members of the Association who desire carrying on

these experiments can be governed by the outlines and will be furnished report blanks in due time for the purpose of reporting the experiments.

We should bear in mind that whatever experiment is undertaken the Secretary should have knowledge of the same so as to be able to compile the data for publication.

In my travels throughout the state, I frequently visit members of the Association who are growing and testing seed grains, but do not think it necessary to make a report. The value and importance of the work is lost entirely to others if we neglect so important a duty. In order to be placed on the seed grower's list one must notify the Secretary of the kind and amount of seed, the price per bushel, a pint sample of the seed, and any other data that may be well for the Secretary to know.

The grower of pure bred seed grains should be a business man in the strictest sense and should have business cards and letter heads for business correspondence. These cards and letter heads should be modest, giving the name of the farm, the owner's name, the seed grains grown, and any specialties, put in practice upon the farm.

OUTLINES OF COOPERATIVE EXPERIMENTS.

EXPERIMENT No. 1.

Wisconsin Seed Corn—Ten Ear Test.

Considerable has been done the past eight years in Wisconsin in the way of breeding good seed corn and taking care of the season's crop.

We feel that by judicious selection of seed and proper curing of the same, farmers of the state can increase the yield from ten to twenty-five bushels per acre. We know that members of the Experiment Association can do much good for the communities in which they reside by growing choice varieties of corn. Due care must be exercised in planting, cultivating the soil, harvesting and curing the crop as well as rigid selection of the

seed. No matter how good the seed, if planted on weedy or poor worn-out soil and not properly cared for we can not expect a good crop.

We expect to see great strides made in the improvement of corn within the next few years and may not the Wisconsin Experiment Association be the factor to bring this improvement about?

Twenty-five ears of corn are given to each member who desires to assist in corn improvement only ten ears of which will be used in the experiment proper. The corn from each ear is to be planted in a separate row.

Use the ear with the least number of kernels first. Plant in hills three and one-half feet apart in the row and the same distance between the rows. The corn left from the different ears after planting individual rows can be mixed with the corn shelled from the remaining 15 ears and planted in close proximity.

Plant at least forty rods from any other corn, a greater distance, if convenient. Avoid having a field of corn near the west or south of the plot as the prevailing wind during the pollenizing season is from that direction and the corn is liable to cross.

REPORT BLANK NO. 1.

Wisconsin Seed Corn—Ten Ear Test.

Name of experimenter.....
Post Office.....; County.....; State.....

1. Variety of corn planted.....
2. Where was seed secured? .....
3. Germinating test per cent.....
4. Date of planting.....
5. Nature of soil.....
6. Fall or spring plowed.....
7. Following what crop?.....
8. How planted? .....
9. When first noticeable above ground?.....
10. Did corn germinate evenly?.....
11. Give number of times and method of cultivation?.....
12. Did corn mature well?.....
.....
13. Total number of stalks in each row.....
14. Number of barren stalks in each row.....
15. How harvested? .....
16. Yield per acre, actual.....; estimated.....
17. Yield per acre, any other variety, actual.....
estimated .....
18. Compare yield with home variety of corn if possible.
19. The yield should be determined on the shelled corn basis, two bushels of ears being considered one bushel of shelled corn.

REPORT BLANK.—EXPERIMENT No. 1.

Wisconsin No. 7 Corn.

Name of experimenter.....
Post office .....; County.....; State.....

1. Where was seed secured?.....
2. Germinating test, per cent.....Date of planting.....
3. Nature of soil.....
4. Fall or spring plowed.....
5. Following what crop?.....
6. How planted? .....
7. When first noticeable above ground?.....
8. Did corn germinate evenly.....
9. Give number of times and method of cultivation.....
.....
10. Did corn mature well?.....
11. Did corn smut badly? Approximate amount of smut.....
.....
12. What per cent of barren stalks was noticeable?.....
To find per cent of barren stalks, count the whole number of barren and fruitful stalks present in a definite number of hills and divide the number representing the barren stalks by the number representing the whole number of stalks. Counts can be made in four or five places in the field and averaged.
13. How harvested. .....
14. How many acres harvested?.....
15. Yield per acre, actual.....; estimated.....
16. Yield per acre best other variety, actual.....
estimated .....
17. Compare yield with home variety of corn if possible. The yield should be determined on the shelled corn basis, two bushels of ears being considered one bushel of corn.
18. How many bushels of fire-dried corn in the ear will you have to sell for seed?.....

Give brief description of what you think of the No. 7 corn.

REPORT BLANK.—EXPERIMENT No. 1.

Wisconsin No. 12 Corn.

Name of experimenter.....
Post Office.....; County.....; State.....

1. Where was seed secured?.....
2. Germinating test, per cent.....Date of planting.....
3. Nature of soil.....
4. Fall or spring plowed.....
5. Following what crop?.....
6. How planted? .....
7. When first noticeable above ground?.....
8. Did corn germinate evenly?.....
9. Give number of times and method of cultivation.....
10. Did corn mature well?.....
11. Did corn smut badly? Approximate amount of smut.....
12. What per cent of barren stalks was noticeable?.....
To find per cent of barren stalks, count the whole number of barren and fruitful stalks present in a definite number of hills and divide the number representing the barren stalks by the number representing the whole number of stalks. Counts can be made in four or five places in the field and averaged.

13. How harvested? .....
14. How many acres harvested?.....
15. Yield per acre, actual.....; estimated.....
16. Yield per acre best other variety, actual.....
estimated . . ..
17. Compare yield with home variety of corn if possible. The yield should be determined on the shelled corn basis, two bushels of ears being considered one bushel of corn.
18. How many bushels of fire-dried corn in the ear will you have to sell for seed?.....

Give brief description of what you think of the No. 12 corn.

Experiment No. 2.

Treating Seed Oats to Prevent Smut.

Smut affecting oats is prevalent in all parts of this and adjoining states.

Method of Treating Seed Oats for the Prevention of Smut.— The method that has proven to be the most effective during the past ten years, and that now generally used by the farmers of this state, is the formaldehyde method. If the desire is to treat one hundred bushels of seed oats, purchase at least four pints of formaldehyde from your druggist, and make up the solution by pouring one pint of the formaldehyde into thirty-six gallons of water. Put the solution in barrels or in a tank and submerge the sacks of seed oats in the solution at least ten minutes. It is preferable to have the sacks about two-thirds full as the solution will then come in contact with each individual grain. Raise the sacks of oats from the solution and let them drain for a minute or two, in order to save solution, and then empty on a threshing floor, platform, or on a canvas to dry. Do not spread out immediately, but let the oats remain in a heap for two hours after treating. If the wet sacks or a canvas is spread over the pile of oats after treating it will prevent the rapid escape of the formaldehyde gas and make the treatment more effective. After the expiration of two or three hours the oats may be spread out and shoveled over at intervals, to facilitate drying.

It is the desire of the Association to know the effectiveness of this treatment by many observers, and to publish determinations in the next annual report.

Where smut has been noticeable in oats the previous year all seed should be treated to prevent a re-occurrence.

For the following experiment it will be necessary to treat about three bushels, sufficient to sow an acre, in accordance with plan outlined in its instructions.

Experiment.—1. Take three bushels, or the usual allowance for seeding one acre, that were threshed from a field that was badly affected with smut the past season, and treat as stated in directions.

If the experimentor has no oats, he probably can obtain some from a neighbor whose grain has been effected with oat smut.

2. Take the same quantity from the same lot of oats and do not treat.

3. Sow both quantities on adjoining plots of one acre each. Be sure to have a distinct separation from the plot sown with the oats treated and that on which the oats are not treated.

4. After the oats are headed take an ordinary barrel hoop and make several counts on the plot where oats were treated and on the plot where oats are not treated. This can be done by placing a hoop over the oats and counting all the heads within the circle and then note the number affected with smut thus getting data to determine the percentage.

REPORT BLANK, EXPERIMENT NO. 2.

Treating Seed Oats to Prevent Smut.

Name of experimenter.....
P. O. .....; County.....; State.....
1. Did you treat oats according to directions?.....
2. How much treated for the experiment?.....
Size of plot.....
3. How much was sown on experiment that was not treated?
Size of plot.....
4. Did you treat your seed that was sown for general purposes?..
. . . .
1. Date of sowing seed not treated.....
2. Date when smut was first noticeable.....
3. When were oats cut?.....
1. Date of sowing seed treated.....
2. Date when smut was first noticeable.....
3. When were oats cut?.....
5. Did you make several counts after the oats were headed using the hoop in the manner suggested?.....
6. What per cent of oats were affected with smut on plot where seeds were treated to prevent smut?.....
7. What per cent of oats were affected on plot where seed was not treated? . . . .
8. Per cent saved by treatment.....

The data can be obtained by counting the heads within the circle of a hoop that are affected and those not affected is a fairly accurate method of arriving at the percentage of oats affected with smut.

Experiment No. 3.

Tests with Wisconsin Pedigree Oats.

The Wisconsin pedigree oats have been carried through a 12 years' course of breeding now ready for dissemination. We are looking forward with a great deal of interest as to the outcome of the test made by the members of the Experiment Association. If the pedigree oats prove superior to the common and select oats now grown in the state they will be rapidly disseminated and grown in large quantities so that farmers in this and other states can secure them. The Station and the Experiment Association are desirous of having these pedigreed strains of oats tested by a large number of members over a wide range of territory, so as to determine if some strains are more suitable for Wisconsin conditions than others before a general distribution is made.

Every member receiving oats should be particular in recording the *pedigree number* so that no mistake will be made as to the identity of the oats when the time arrives to make the report.

Blanks for making the reports will be sent to the grower in due time.

Report Blank, Experiment No. 3.

Wisconsin Pedigree Oats, No.——

Name of experimenter.....
P. O. .....; County.....; State.....

1. Date of sowing .....
2. Amount of seed sown .....
3. Amount of land covered (approximately).....
4. Nature of soil?.....
5. Fall or spring plowed?.....
6. Sown with seeder or drill?.....
7. Were heads of any other grain noticeable within the plot on which the oats were sown?.....
8. Were they removed?.....
9. Did the oats stand up well.....
10. What is the number of your pedigree variety?.....
11. Did you notice any smut?.....
12. How much? .....

13. Was the ground on which oats were sown free form Canada thistles, mustard and quack grass?.....
14. Did oats rust? .....
15. When were oats cut? .....
16. Yield per acre of pedigree oats.....
17. Yield per acre of any other variety of oats grown.....
18. How many of the pedigree oats on hand do you intend to sell for seed oats? .....
19. Please give a brief description of what you think of the pedigree oats.

BARLEY.

BREEDING OF THE WISCONSIN PEDIGREE VARIETIES.

The State of Wisconsin grows approximately thirty million bushels of barley annually, a part of which is sold upon the market as a ready money crop, either for feeding or malting purposes. Many varieties of barley of poor grade and quality have been grown by our farmers. The Experiment Station has put forth much effort to correct the evil wrought by growing so many scrub varieties of barley. This has been accomplished by disseminating the select strains of barley bred by the Station. The Oderbrucker and Manshury seemed to respond most readily to the attention given them and soon led other varieties in yield and other desirable characteristics. These two varieties are now most generally grown throughout Wisconsin, and constitute at least three-fourths of the barley crop. The Manshury barley (Wisconsin No. 62) was developed from the old Manshury formerly introduced by the College, but which had become mixed to such an extent that many of its most valuable characteristics had become almost extinct.

The Oderbrucker barley (Wisconsin No. 55) is an improved variety developed from seed secured from the Guelph, Ontario College in 1899. For stiffness of straw, plumpness and quality of kernel, little difference can be noted between the select Oderbrucker and the Manshury barleys but in a five year test in which over fifteen hundred members of the Experiment Association took part, the Oderbrucker outyielded the Manshury over five bushels per acre. Oderbrucker barley centers have been established and encouraged in the barley growing districts, so it is now possible to

find whole communities growing the Oderbrucker barley to the exclusion of other varieties. It is our earnest desire that freak barleys be discarded and the energy of our farmers concentrated on the growing of not more than two good varieties. Our farmers canot afford to grow scrub barley any more than they can afford to bred scrub cattle, sheep or swine.

Pedigree barleys.—In 1902 the Hays method of cereal breeding was adopted by the Agronomy department of the Experiment Station as being more exact and preferable to the selection method used prior to that date. Under the Hays system two thousand kernels or over of grain are taken from some select stock and planted with special machinery so that the kernels will be an equal distance apart. After careful study the grain from the best twenty plants is selected and put into envelopes, weighed and the ten heaviest retained as seed for the following year's crop. The second step is to take one hundred of the seeds retained from each envelope and plant in separate beds, known as centgener plots, each plot being planted from the progeny of a single seed of the previous year. The best heads are selected from the best plants of each centgener plot and are retained for the next year's centgeners. The work is repeated the next year, and the following year the best six centgener plots are selected and the seed saved for trial plots. One year in the trial plots may reduce the number of varieties to four or even less, to be continued in the increase plots until such time as sufficient seed is secured for dissemination.

Experiment No. 4.

Test With Wisconsin Pedigree Barley.

The Wisconsin pedigree barleys were developed by twelve consecutive years breeding work put upon the Oderbrucker, Manshury, Golden Queen and Silver King, as foundation stock. The pedigree barleys are heavier yielders, more uniform in character and more perfect in the development than the barleys from which they were bred. The Station and the Experiment Association are desirous of having these pedigreed strains of barley tested by a large number of members over a wide range of territory, so as to determine if some strains are more suitable for Wisconsin conditions than others before a general distribution is made.

Every member receiving barley should be particular in recording the *pedigree number* so that no mistake will be made as to the identity of the barley when the time arrives to make the report.

Blanks for making the reports will be sent to the growers in due time.

REPORT BLANK, EXPERIMENT No. 4.

Pedigree Barley.

Wisconsin No. ——

Name of experimenter.....
P. O. .....; County.....; State.....

1. Date of sowing.....
2. Amount of seed sown.....
3. Amount of ground covered (approximately).....
4. Try and compare with some other variety.
5. Nature of soil?.....
6. Fall or spring plowed.....
7. Sown with drill or seeder?.....
8. Following what crop in rotation?.....
9. Were heads of any other grain noticeable within the plot on which barley was sown?.....
10. Were they removed?.....
11. Did the barley stand up well?.....
12. Was the ground on which the barley was sown free from Canada thistles, mustard, and quack grass?.....
13. Did the barley rust?.....
14. Was any smut noticeable?.....
15. When was barley cut?.....
16. Yield per acre of Pedigree Barley.....
17. Yield per acre of any other variety of barley grown.....
18. May we put you on the seed growers' list?.....
19. Please give a brief description of what you think of the pedigree barley.

EXPERIMENT No. 5.

Wisconsin Pedigree Rye.

For 12 years the Department of Agronomy has put forth special efforts in the improvement of rye. Wisconsin is a great rye state and annually produces five million bushels. The aim in the breeding of the ryes has been to produce uniformity in kernel and a high yield. We think we have both, so are desirous of having the two pedigree strains tested over a wide section of the state to determine if one or both varieties are worthy of wide dissemination.

Every member receiving rye should be particular in recording the *pedigree number* so that no mistake will be made as to the identity of the rye when the time arrives to make the report.

Blanks for making the reports will be sent to the growers in due time.

REPORT BLANK, EXPERIMENT NO. 5.

Pedigree Rye.

Wisconsin No. ——

Name of experimenter.....
P. O. .....; County.....; State.....

1. Date of sowing.....
2. Amount of seed sown.....
3. Amount of ground covered (approximately).....
4. Try and compare with some other variety.
5. Nature of soil?.....
6. When plowed? .....
7. Sown with drill or seeder?.....
8. Following what crop in rotation?.....
9. Were heads of any other grain noticeable within the plot on which rye was sown? .....
10. Were they removed?.....
11. Did the rye stand up well?.....
12. Was the ground on which the rye was sown free from Canada thistles, mustard, and quack grass?.....
13. Did the rye rust?.....
14. Was any ergot noticeable?.....
15. When was rye cut?.....
16. Yield per acre of Pedigree rye.....
17. Yield per acre of any other variety of rye grown.....
18. May we put you on the seed growers' list?.....
19. Please give a brief description of what you think of the pedigree rye.

EXPERIMENT NO. 6.

Soy Beans.

The soy bean was probably introduced into the United States from Japan about fifty years ago and has been cultivated with success in the southern states. In Japan and China it is used extensively as a human food, but in this country it is grown for the seed, as a forage plant, and a soil renovator. As a forage its use as a soiling crop is becoming recognized by stockmen and dairymen, as it withstands the drought exceptionally well and will give a good cutting of green forage at the time when other feeds are shriveled and wilted. Soy beans of the late variety gave a cutting of 9.9 tons green forage per acre at the Wisconsin Experiment Farm in 1900 and yielded thirty-eight bushels of seed per acre in 1902, and forty bushels per acre in 1903. It makes an excellent hay, and at the Kansas Station a yield of about three tons of well cured hay per acre was secured.

Like the clover the soy bean is a nitrogen gatherer and enriches the soil on which it is grown. It is said to grow on soil quite low in fertility, but a mellow, fairly rich soil is preferable.

It requires a well drained porous soil; in no case should the seed be sown on low ground that is saturated with water during most of the growing period or on a heavy clay soil that is inclined to bake.

When sown for hay or a soiling crop, a drill or broadcast seeder can be used to advantage. If sown for seed, use a corn or bean planter and sow in drills about thirty inches apart, and about three inches apart in the drill. When planted in drills as described, two or three pecks of seed per acre should be used.

Soy beans should not be planted while the ground is cold; immediately after corn planting is a favorable time.

Sow in accordance with suggestions above given, for growing soy beans for seed, one-tenth of an acre.

When desired for hay, soy beans should be cut when the pods are partly developed. Try a few square rods sown broadcast for a soiling crop and for hay. When grown for seed they should be harvested and threshed as our common variety of beans and put into a large open bin and shoveled over frequently to prevent heating.

If you have a silo try soy beans with corn. Plant in drills with the corn planter using one-third soy beans and two-thirds corn mixed. When planting with corn for the silo use the Medium Green variety as this variety is noted for its great leaf development. No difficulty will be experienced cutting the soy beans with the corn harvester at the time of harvesting corn. For pasture, hay or seed, the Ito San variety will give excellent satisfaction and will usually ripen before the fall frosts.

Secure a sack of bacteria laden soil from the Experiment Station and scatter on a portion of the field that you desire to plant to soy beans, and note the development of nodules. The roots of the soy bean plants growing on that part of the field adds much fertility to the soil. When a few square rods of ground are inoculated and soy beans are grown thereon, henceforth ground can always be secured from this source of supply to scatter on other fields where the desire is to have the nodules devolop.

REPORT BLANK, EXPERIMENT NO. 6.

Soy Beans.

Name of experimenter.....
P. O. .....; County.....; State.....
1. Date of planting soy beans.....
2. Character of soil.....
3. What crop had been grown the previous year?.....
4. Was the land used, fall or spring plowed?.....
5. Give your method of planting.....
6. How long after planting were beans first noticeable?.....
.....
7. Give your method of cultivation.....
8. Did you try a few square rods for forage?.....
9. How many pounds of green forage did you cut from a square rod?
10. How many pounds of cured hay did you get from a square rod?
11. Did the stock eat the green and cured forage readily?.....
12. What kind of stock did you feed it to?.....
13. Did the beans left for seed ripen evenly?.....
14. Date of harvesting?.....
15. Manner of harvesting .....
16. Method of threshing.....
17. Yield per acre of marketable beans.....
18. Did you use any bacteria-laden soil for inoculation purposes?.....
.....
19. Were nodules noticeable on the roots of the soy beans at any time during the growing period where such soil was used?...
20. Were they noticeable where the soil was not used?.....
21. Date of sending report.....
22. Give in a general way your opinion of soy beans as a seed and forage plant for Wisconsin.

EXPERIMENT NO. 7.

Field Beans.

No one important crop receives so little attention in Wisconsin as field beans. Annually the U. S. imports over three million bushels from Bulgaria and Austria and we pay a duty of forty-five cents per bushel on the same. Why not raise the needed quantity of beans in Wisconsin? Our lighter soils are admirably adapted to bean raising, and if farmers would plant such soils to beans instead of trying to raise cereal crops, their net returns would be much greater.

Beans are a good money crop to put on the market as the price is generally above two dollars per bushel. With the up-to-date bean machinery and with the growing and planting of improved varieties there is no reason why Wisconsin should not lead all states in America in bean production.

REPORT BLANK, EXPERIMENT No. 7.
Field Beans.

Name of experimenter.....
P. O.....; County.....; State.....
1. Date of planting beans.....
2. Nature of soil.....
3. How prepared? .....
4. How were the beans planted?.....
5. How many times were the beans cultivated?.....
6. How harvested and threshed?.....
.....
7. Were they in any way injured by insect enemies or fungus diseases? .....
8. Yield in bushels, per acre.....

FARM BUILDINGS.

C. A. OCOCK, MADISON.

The farm and its owner are judged by the buildings found upon the property. If the buildings are good, fences in order and the yards and paddocks trim and neat, then the farm is said to be a good one and the farmer a good manager.

It does not necessarily imply that good buildings shall be new and expensive, for an old building may be kept in such order as to appeal to the public eye.

The farm buildings should be of such number and character as to properly house the farm attendants, the farm animals, the farm machinery, and farm products.

One of the most essential buildings for the storage of forage is the silo. This is a necessity for every farm of such proportions as to accommodate ten or twelve cows. The judicious selection of a silo is an important factor and should be carefully considered. It is a difficult matter to advise the best kind of material to use in silo construction. This should be an individual matter, or possibly a locality problem depending upon the available material. Some localities present conditions which make necessary the construction of stave or wooden silos; others brick or stone, and another concrete. While these materials are all in demand there is more interest being manifested at present in reinforced concrete, and it may be of service to the members

of this association to have some information relative to concrete silos. The following is largely taken from bulletin 214 of the Wisconsin Experiment Station.

GENERAL CHARACTER OF CONCRETE SILOS.

Concrete silos are simple of construction, cheap, and durable. They are more easily constructed and require less skill in building than the Modern Gurler or the Old Wisconsin silo which has been in use for many years. They cost little, if any more, than the best wooden silo and about half as much as a brick or tile silo. Their period of usefulness is many times that of wooden silos and equals, or excells other materials. Concrete structures have been in constant use for hundreds of years.

The most common criticism of the concrete silo is that the silage freezes in it. There may be reason for such condemnation, but there is the same possibility of freezing in any silo. Where the silo is given proper attention, little if any freezing will be experienced. Some builders advocate silos without roofs, or those that are not tight. There are many states where such construction might be satisfactory, but in Wisconsin a good roof is needed. On a concrete silo it should be made of concrete.

TABLE I.—RELATION OF SIZE OF SILO TO SILAGE TO BE USED DAILY.

Number of cows.	Silage for 180 days at 30 lbs. per day.	Acres of corn at 15 tons per acre.	SIZE OF SILO.		Silage for 240 days at 30 lbs. per day.	Acres of corn at 15 tons per acre.	SIZE OF SILO.	
			Inside diameter.	Depth of silage.			Inside diameter.	Depth of silage.
	Tons.	Acres.	Feet.	Feet.	Tons.	Acres.	Feet.	Feet.
14	38	2 to 3	10	26	50	3 to 3½	10	32
15	40	3 to 3½	10	28	54	3½ to 4	10	33
20	54	3½ to 4	12	26	72	4½ to 5	12	32
25	68	4 to 5	14	26	90	6	14	31
30	81	5 to 6	14	28	108	7 to 8	14	34
35	95	6 to 7	16	26	126	8 to 9	16	32
40	108	7 to 8	16	28	144	9 to 10	18	29
45	122	8 to 9	18	26	162	10 to 11	18	32
50	136	9 to 10	20	26	180	11 to 12	20	30

It is necessary to have the silo about 5 feet higher than the depth given, to allow for settling. Silage will settle consider-

ably and the filling process should not be carried on too rapidly. The best method is to fill the silo to the top and then allow the silage to settle for three or four days, and then fill again. In this way the desired amount may be secured.

PLANNING THE DOORS.

The doorway of a silo seems, to many farmers to be the most difficult to construct. If there is any weakness in the silo wall it is pretty sure to be at the doorway. The silo often cracks open because the doorway is poorly made or the doors do not fit and air get in, spoiling more or less of the silage. There are two types of doorways: separate openings and continuous opening. These doorways are both good and it is a matter of individual preference as to the one to select although the separate openings are preferred by a great many silo users. These openings are usually 2 feet wide and 3 feet high and are spaced about 4 feet apart. This type of doorway makes a stronger wall but more difficulty is experienced in removing the silage for feeding than with a continuous door.

A good method in constructing a door form for a solid concrete wall silo is shown in Figure 1. Make a frame of 2x4 inch lumber as at A. Then prepare another set of 2x4 pieces and nail them flatwise to the frame A, as shown at B. This will provide an offset or jamb of 2 inches in the concrete when the form is removed, such as shown in the continuous door, Figure 2, to receive the door from inside. This form should be deep enough to fit closely between the inside and outside form of the silo molds.

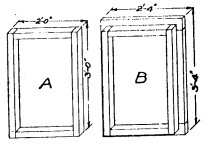


Fig. 1. Door forms for separate openings showing method of construction.

The doorway should be reinforced as shown in Figure 3, care being taken to see that all connections are well made. This makes a satisfactory doorway. The continuous doorway is used extensively and is undoubtedly the preference of the majority. Theoretically this is not the most desirable since it has a tendency to weaken the silo walls. If care is taken in placing the reinforcement and door rods, there will be little if any danger of weakness in the wall.

Figure 2. Door jams and ladder rods of a continuous doorway.

The method of constructing a form for a continuous door opening is similar to the one for separate openings. Two pieces of lumber 2x6 inches are cut 5 feet long. Two holes are then bored through each piece. These holes are 2 feet apart and 2 inches from the edge as shown in Figure 4, A, A, A. A piece of 2x2 inch lumber is then nailed to the 4-inch piece as shown at B. The pieces are then ripped through the holes, A, A, A. Cleats are nailed to the 4-inch piece as shown at C. These cleats are to hold cross-bars between the two uprights as shown, for the purpose of keeping the door forms the right distance apart.

When setting the form into the molds the ladder or door rods are placed in the holes of the door-form. This door form will, when removed, present door-jambs and ladder as shown from interior of silo in Figure 2. This method of door-jamb construction has been in use for 8 or ten years and has been found satisfactory. The doors are made up of 2-inch matched lumber fastened together in 3 foot sections. Hooks of heavy strap iron may be fastened to the door to hook over the door rods.

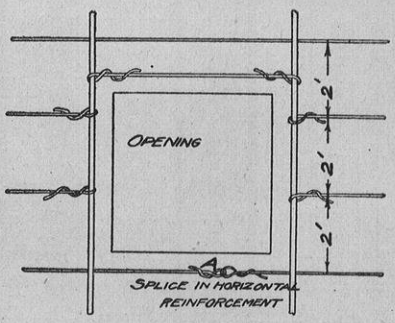


Figure 3. It is very essential that the reinforcement about the doorway is properly connected. Note how splices are made at A.

A good way to prevent any leakage of air about a door is to make a little clay putty by mixing water with red clay. This putty should be plastered along the door jamb when putting the doors in at filling time. The crack at the door and silo wall should then be filled. A piece of heavy roofing paper should then be cut somewhat larger than the

width of the door opening and put over the doors, letting the silage pack closely against the paper. This will insure a good air-tight door.

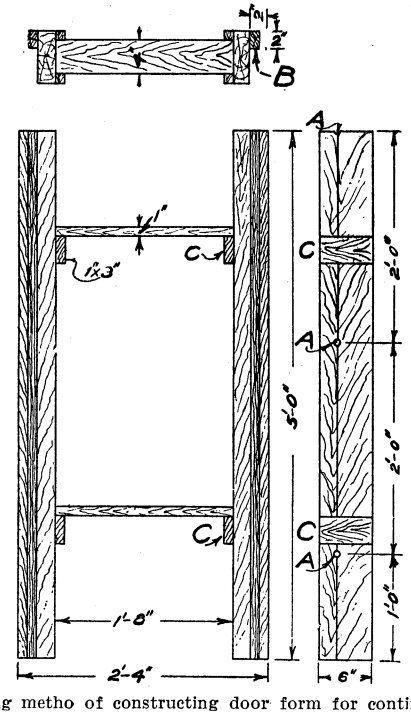


Figure 4. Showing metho of constructing door form for continuous doorway.

Roofs for Concrete Silos.

As a matter of economy every building should have a roof. This will prevent rain and snow from destroying the interior and will aid in preserving the material stored. There are sections of the country where a silo roof may not be absolutely necessary, but the probabilities are that if a roof were provided the silo would last many years longer. In cold climates it is highly important that a roof be provided.

A roof for a wooden silo is usually constructed by putting up 2x4 inch rafters around a center post, the post being supported by cross ties resting on the walls of the silo. The rafters are then covered with tapered matched sheathing running lengthwise of the rafter, sometimes covered with shingles, roofing paper, or iron,

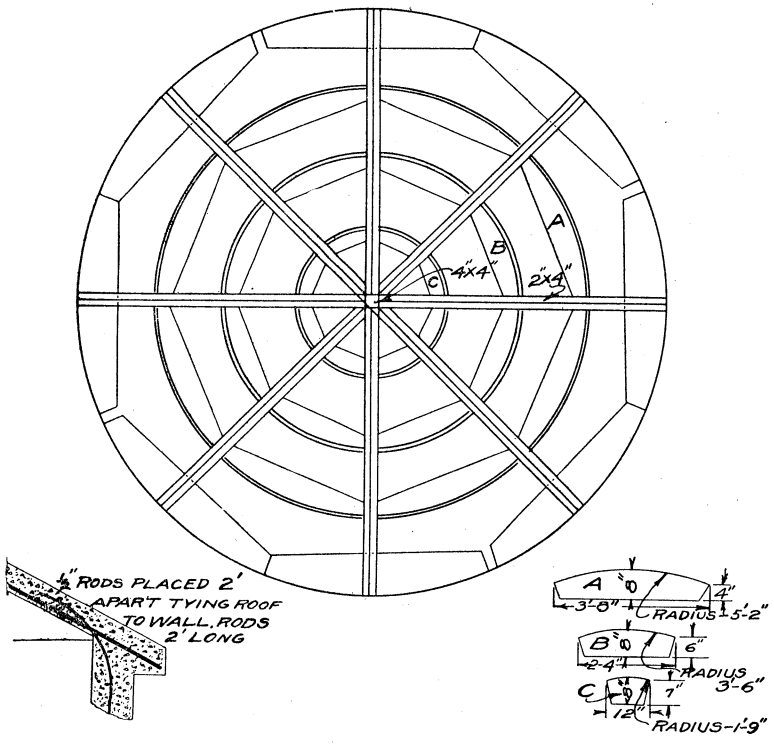


Figure 5. Form for making a round concrete roof. It is made up of eight sections, the side pieces of each section are made of 2x4's joined together by 2x8's shown at A, B, C, A, B, C. This form is shown in use in Figure 6. To secure the best results in connecting the roof to the wall, reinforcing rods two feet long should be used as shown at the lower left of Figure 5. These should be placed two feet apart all the way around the roof.

The best roof for a concrete silo is a concrete roof. Other material is quite generally used for these silos but with a little care and the necessary forms, a permanent roof may be easily constructed. The drawings shown in Figure 5 will aid in the construction of roof forms for a concrete silo. This form is best adapted to use with the Wisconsin silo form. They may be constructed so as to be used with other silo forms by studying the characteristics of each form.

The Wisconsin Silo Forms.

The construction of these forms is not difficult as it might first appear. Any good mechanic or a farmer who is mechanically inclined should be able to construct it.

MATERIALS FOR 14 FOOT SILO FORMS.

Main Frame—16 pieces 2x12 inches 12 feet long No. 1 pine. Outside Form—4 piece 2x8 inches 10 feet long No. 1 pine. 6 pieces 2x6 inches 10 feet long No. 1 pine.

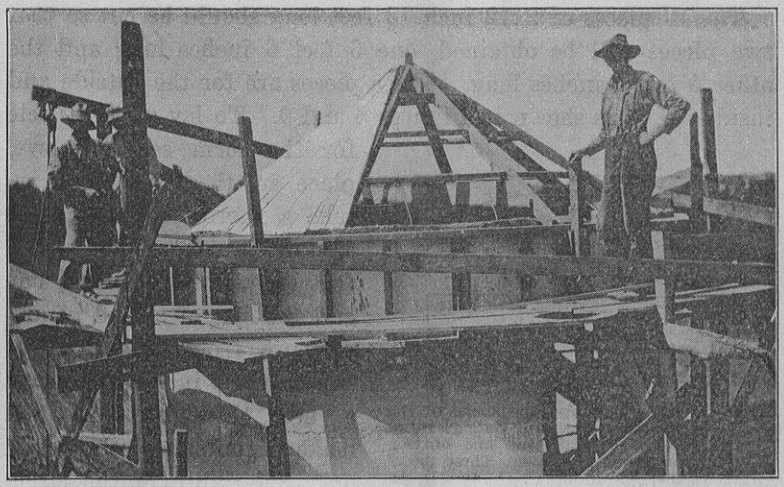


Figure 6.—Roof forms in place with part of the boarding ready to receive the reinforcing and concrete. To set these forms, first drop the inside form down enough to give the roof form a good footing against the silo wall. Then lower the outside a little so as to give a finished cornice similar to that shown in the lower left hand corner of Figure 5.

Inside Form—4 pieces 2x6 inches 10 feet long No. 1 pine. 6 pieces 2x4 inches 10 feet long No. 1 pine.

Connections—4 pieces 2x8 in. 10 ft. long No. 1 pine.

Roof Form—8 pieces 2x4 inches 18 feet long No 1 pine; 4 pieces 2x8 inches 14 feet long No. 1 pine; 2 pieces 1x6 inches 14 feet long No. 1 pine; 1 piece 2x4 inches 10 feet long No. 1 pine.

Door—1 piece 2x6 inches 10 feet long No. 1 pine; 1 piece 2x2 inches 10 feet long No. 1 pine.

Nails—15 pounds 20d wire spikes; 5 pounds 6d wire nails.

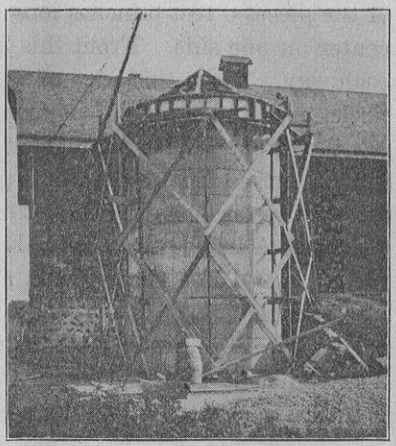


Figure 7. The silo in readiness for completing the reinforced concrete roof.

Bolts—Outside Form—16-½x4½ inch carriage bolts.

Bolts—Inside Form—96-½x4 inch carriage bolts.

Galvanized Sheet Iron No. 18—8 pieces 6 feet long by 2 feet 6 inches wide; 8 pieces 6 feet 6 inches long by 2 feet 6 inches wide.

The 16 pieces of 2x12 inch 12 feet long should be cut so that two pieces will be obtained, one 6 feet 6 inches long and the other 5 feet 4 inches long. These pieces are for the outside and inside forms as shown in Figures 8 and 9. To lay off the circle for the form select a level place in the shop or barn, take a narrow strip of wood 1½ or 2 inches wide and 8 feet long, bore a hole in one end the size of a lead pencil, measure from the center of this 7 feet 6 inches and drive a nail through This will make the outside circle. Since only one-eighth of the circle is required, it will not be necessary to make a complete circle at this time. The inner circle is made in the same way by shortening the distance 6 inches between the nail and the pencil.

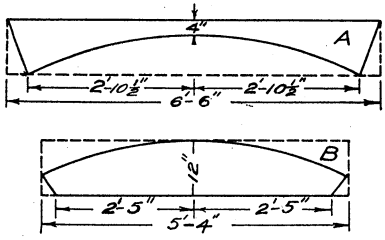


Figure 8. At A is shown the shape of the top and bottom pieces for outside form, at B the shape of the top and bottom pieces for the inside form. These pieces are further shown at C, C, and D, D, Figure 9.

Two patterns are necessary. B for the inside form and A for the outside form as in Figure 8. For the outside form take one of the pieces 6 feet 6 inches long. Using a steel square, locate the center on one side. From this center lay off 2 feet 10½ inches each way. Place this edge of the piece toward the center of the circle, and under the 8 foot arm which was prepared for drawing the circle. With the pencil at one of the points just made, draw a curved line to the other point. This will be one-eighth of the outside circle as shown at D in Figure 9. Cut this piece as shown at A in Figure 8, and the pattern for the outside is complete. Cut 16 of these pieces and they are ready for framing into sections.

Take the 16 pieces 5 feet 4 inches long as shown in B, Figure 8. The center is then determined as before. Measure off 2 feet 5 inches each way from the center. Lay this piece under the 8 foot arm, and with the pencil 6 inches nearer the center of the

circle, draw a curved line from one end of the piece to the other. This will be one-eighth of the inside circles as shown at C, Figure 9.

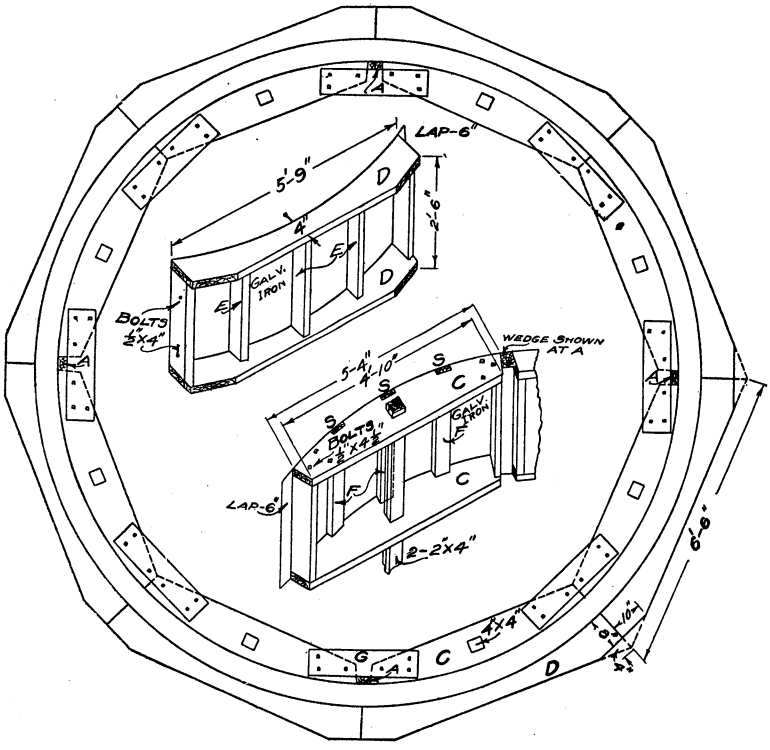


Figure 9. Sections C and D shown in circular position as they would appear from above. Note the wedges at A. These should always be released and the connections at these points unbolted when raising the forms preparatory to filling.

To complete the construction of the outside form, take four pieces of 2x8 inch 10 feet long, and six pieces of 2x6 inch 10 feet long and cut them into studding 2 feet 2 inches long as shown at E in Figure 9. Then spike the D's and E's together, using 2x8 pieces at the ends and the frame is ready to be faced with No. 18 galvanized iron. Care should be taken to square the frame before nailing the iron on. Use six penny wire nails for this purpose.

The studdings as shown at F, F, F, Figure 9, for the inside form are the same except that they are 2 feet 6 inches long. The framing of this form is the same as in the outside form, except

that three center studdings are mortised into the inside frames as shown at S, S, S, in Figure 9.

Cut 4x4 openings as shown in C, Figure 9. These openings are for the two pieces, 2x4, used to support the inside forms. By breaking joints these supports may be raised to the height of the silo. They must always be perfectly plumb.

The sections should be set and bolted together in a circle, placing the inside form first. To do this, describe a circle with a pencil and arm as before explained. From the four pieces 2x8 inches 10 feet long make 16 connections 2 feet 6 inches long, and bolt one at top and bottom of each section as shown at G, Figure 9. A second circle 6 inches outside of the other should then be drawn and the sections of the outside form set in place as shown at D in Figure 9. To keep the outside form just 6 inches from the inside form make up several pieces 6 inches long for spacers. These should be placed 4 or 5 feet apart.

Amount of Materials for Concrete Construction

Materials used in the construction of concrete silos are usually proportioned 1—2—4 or 1—2½—5, depending upon their character. That is, 1 part cement, 2½ parts sand, and 5 parts crushed stone or gravel are used in the 1—2½—5.

Table II. Materials for One Cubic Yard Concrete.

	Mixture 1—2—4	Mixture 1—2½—5.
Bbls. cement per cu. yd. of concrete	1.3	1.07
Cu. yds. sand per cu. yd. of concrete	.42	.44
Cu. yds. stone per cu. yd. of concrete	.84	.88

In order to determine the amount of cement necessary for any amount of concrete, estimate the number of cubic yards and multiply that number by the figure in the table opposite, "Bbls. cement per cu. yd. of concrete," and under mixture to be used. The amount of sand and of stone is determined in the same way.

Materials for the New Wisconsin Silo

The following is a bill of materials for a concrete silo 14 feet in diameter inside and 36 feet high with concrete roof as given in table.

MIXTURE 1—2½—5.

Silo Parts.	Cement bbls.	Sand cu. yds.	Gravel cu. yds.	Concrete cu. yds.
Foundation footings	1.87	.77	1.54	1.75
Floor	2.67	1.1	2.2	2.5
Foundation wall 4 ft. high	7.46	3.07	6.14	6.98
Wall 32 ft. high	28.99	11.92	23.74	37.1
Roof	3.21	1.32	2.64	3.0
Total	44.2	18.18	26.22	51.33

NOTE: If the sand and gravel are clean and care is exercised in mixing, a 1—2½—5 mixture is sufficient. If not, use a 1—2—4 mixture, in which case add 7 bbls. cement, 1 cu. yd. sand, and 1.1 cu. yds. gravel.

TABLE III. COST PER FOOT IN HEIGHT OF SILOS.

Mixture to be 1 part cement, 2½ parts sand, 5 parts gravel and wall to be 6 inches thick.

Diameter.	Cement.	Sand.	Gravel.
Feet.	Bbls.	Cu. yds.	Cu. yds.
10	.65	.269	.538
12	.778	.32	.642
14	.903	.372	.74
16	1.03	.422	.844
18	1.16	.475	.95
20	1.27	.525	1.05
22	1.4	.576	1.15

To determine the amount of material necessary for any silo, multiply the figures given after the diameter by the desired height; that is a silo 14 feet in diameter and 30 feet high requires: cement .903x30 or 27.09 barrels, sand .372x30 or 11.16 cubic yards, gravel. 74x30 or 22.2 cubic yards.

These figures do not include a foundation as soil characteristics vary and it is necessary to study individual conditions. For the wall above the foundation to the surface of the ground, usually one foot thick, double the figures in the table and multiply by the height. That is for a silo 14 feet in diameter placed in the ground 4 feet, .093x2x4 or 7.224 barrels cement are needed. For sand and gravel use same procedure as above, only multiplying by 2. No allowance has been made for roof or floor as these may be readily calculated by the use of Table II.

The cost of material can now be determined by multiplying the amount of material by the prices. The cost of reinforcement may be approximately determined by referring to Tables IV and

V and multiplying by the prevailing prices per 100 pounds of wire or iron.

The Reinforcement

The tensile strength of concrete is very much less than its strength under compression. Well aged concrete for reinforced work will stand a tensile strain of 200 to 500 pounds per square inch. With 200 as the minimum, a square foot would furnish a tensile strength of 28,800 pounds. With a silo wall 6 inches thick it is apparent that there is not pressure enough from the silage to produce any serious results. Experiments show an outward pressure at the bottom in a 32 foot silo of 352 pounds to the square foot. It would seem, then, that reinforcement were unnecessary, yet expansion and contraction, due to changes of moisture and temperature are to be considered. Just how little reinforcement might be used in silo construction has never been determined, but it is essential to use sufficient material to prevent cracking. Table IV is a guide in determining the amount of steel necessary for silos.

Placing the Reinforcement.

Pour about 1 foot of concrete into the forms all the way around, then lay in the reinforcement about 1 inch from the outside of the wall. The reinforcing bands must be continuous and the ends firmly fastened together as shown at A, in Figure 3. The size of reinforcement should be determined from Table V. Then pour on another layer of concrete, and add more reinforcement until the forms are full.

In Figure 10 is shown the method of attaching the ladder rods to the vertical reinforcement.

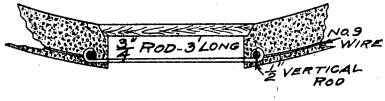


Figure 10.—Vertical reinforcing should be used on each side of the door. The rods which act as a ladder and tie the vertical rods together should be ¾ inch in diameter and placed 2 feet apart. The horizontal reinforcement which passes around the silo connecting the vertical rods should be either No. 9 wire or ⅜ inch mild steel rods. It is important that the door should be well reinforced.

In addition there are needed four ¾ inch rods 12 feet long cut in 3 foot lengths for ladder and continuous door frame and

four 16 foot vertical rods for attaching ladder rods and horizontal reinforcement.

Wire is rather unwieldy to use for vertical reinforcement but if used should be placed in short lengths. The ⅜ inch steel rods are more satisfactory to handle. They should also be cut short, preferably in 3 foot lengths, and fastened together with short hooks. The next section of reinforcement may then be tied to these lengths where they will not be in the way in raising the forms.

TABLE IV. AMOUNT OF REINFORCEMENT NEEDED FOR SILOS.

Size and Spacing of Horizontal Reinforcement Around Silo.

Distance in feet measured from top of silo.	For silos 14 ft. to 18 ft. in diameter, using No. 9 wire.		For silos 14 ft. to 18 ft. in diameter, using ⅜ inch mild steel rods.	
	No. of wires in cable.	Distance apart of cables.	No. of rods.	Distance apart of rods.
		Inches.		Inches.
0— 5	2	12	1	18
5—10	2	10	1	18
10—15	2	8	1	14
15—20	4	8	1	12
20—25	4	6	1	10
25—30	4	6	1	8
30—35	5	6	1	6
35—40	5	4	1	4

TABLE V. VERTICAL REINFORCEMENT.

Height of silo in feet.	For Silos 14 ft. to 18 ft. diameter.			
	No. of wires in each cable.	Distance apart of cables.	No. of rods.	Distance apart of rods.
		Inches.		Inches.
25—30	4	24	1	30
30—35	6	24	1	20
35—40	8	24	1	14

NOTE.—Silos 25 feet high and 14 to 16 feet or less in diameter need no vertical reinforcement.

SOIL PROBLEMS.

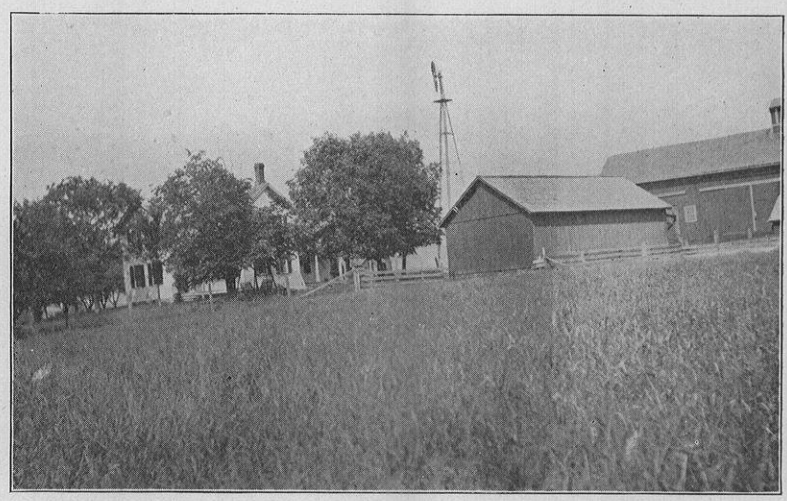
F. J. Sievers.

The department of soil in its extension work has made arrangements to co-operate with members of the Experiment Association where conditions are such that several people in one community may benefit by the results gotten from an experiment conducted on the farm of the members of this association. There are several interesting soil problems met by the farmer in ordinary practice which might be quite decidedly simplified by co-operation with this department. I will try to give you some of the more interesting phases of the department's work as applied to different soils.

On Sandy Soil.

In these soils nitrogen and moisture are generally the limiting factors in crop production and in order to increase the yield the farmer faces the problem of where to obtain the former most economically and how best to conserve the latter. The nitrogen as well as the moisture supply is largely dependent upon the growing of some leguminous crop like clover, alfalfa, etc., for green manure. Large areas of the sandy sections of the state have soils which are so depleted in fertility and so acid in nature that most legumes, being sensitive to both these conditions, will not do well. The acidity may be overcome quite easily by applying lime in one of its many forms but the problem of fertility is a harder one when you are dealing with farmers who are not in the dairy business. Here we try to demonstrate which forms of commercial potash and phosphate fertilizers may be used most economically and in what amounts the farmers can use them with profit. The beneficial results derived from firming the soil with a roller after seeding in order to assure better germination of seed is demonstrated. This applies especially to the seeds of small grains and clovers.

The problem of preventing the blowing of sand is also dealt with. In the early spring sand storms on these soils are sometimes so severe that it is impossible for the germinating seed



THE OAKLAND GRAIN AND STOCK FARM

Anton Bohl & Son, Proprietors, Beaver Dam, Dodge County

"The Oakland" is one of the most beautiful farms in southeastern Wisconsin, and through the excellent management has been kept in a high state of fertility. Pedigree and select seed grains are specialties, and the Oakland farm has become known far and near for the superior quality of seeds shipped to its customers. The farm has become noted for Silver King and Golden Glow seed corn and the management has a steady call for all that they can grow. Sufficient stock is kept upon the farm to utilize all the forage and grains that are not used for seed purposes. Pedigree barley and Swedish Select oats are grown in large quantities and shipped to many parts of the United States.

HARVESTING WIS. NO. 8 CORN ON THE FRAUENHEIM FARM, SHEBOYGAN COUNTY

O. R. Frauenheim, Owner and Manager, Random Lake, Wis.

Mr. Frauenheim is one of our wide awake seed grain growers and through careful growing and grading seed grains for the market has built up a magnificent trade. He is Secretary of the Sheboygan County Order and has been instrumental in building up one of the strongest Orders in the State. His Order took third prize in the State contest last year. He is making a specialty of Wis. No. 8 corn, Pedigree barley, Swedish Select oats, and Clover seed.

to get a foothold while later in the spring the growing plant may be either entirely covered over or otherwise cut off close to the ground by action of this sharp sand. Here we try to demonstrate what different systems of tillage and cropping will do to overcome this condition while laying the lands out in long narrow strips and thus alternating a cultivated crop with a strip of sod or pasture is another way in which the destructive effect of this sand is reduced.

On Marsh Soil.

Marsh soils are very distinctly different from upland areas in that they are exceedingly high in nitrogen and generally very decidedly low in the mineral elements. Consequently it would be a waste of material in most cases to apply nitrogen fertilizer on this kind of soil. The fact is that about two-thirds of the fertilizing value of barnyard manure exists in the nitrogen present and for this reason it would surely be poor economy to apply a complete fertilizer of this kind here when it can be demonstrated that the same results may be gotten and that more cheaply by applying commercial potash and phosphate fertilizers. The point is that no farmer should use barnyard manure on marsh soil if he is farming upland soil that needs a fertilization.

The method of cultivating and preparing these soils is very important and it may be demonstrated that by the use of a very heavy roller after the seeding a large increase in yield may be produced. If marsh soil is left loose on the surface it produces a break in the rise of capillary water, and plants on these soils being naturally shallow rooted will suffer very decidedly during the dry summer months. The farmer should understand that the roller is an implement to compact soil not to smoothen it by crushing clods.

Clay Soil

A large percentage of the clay and clay loam soils of this state and especially those that have been cropped for several years show a decided falling off in the production especially as far as the growth of grain is concerned. This is in most cases due to the fact that the phosphorous content of the soil has been gradually decreased by selling from the farm the seed, or that

part of the plant that contains most of the phosphorous. In order to keep up the production it becomes necessary to apply large amounts of barnyard manure to supply sufficient phosphorous which leads to a waste of nitrogen and potash. With this in mind it has been shown by experiment and may be shown by demonstration that a smaller amount of manure supplemented with a rock phosphate fertilizer will produce the same results as a large application of manure and do it at a great saving. On large areas of clay and clay loam soil it has become practically impossible to grow clover or alfalfa successfully and we all realize that agriculture in this state is practically dependent upon the growing of legumes. Consequently the solution of so serious a problem is very important. Soil acidity as well as perhaps a lack of fertility is the factor that stands back of all this trouble and consequently the problem must be attacked from this standpoint. Lime either in the form of ground limestone, marl, air slacked lime, ground shells, etc., when applied to the soil in sufficient quantity will destroy this "sourness" and thus clear the way for clover, alfalfa, etc.

The most economical handling of barnyard manure is also very important in so far as it may make a decided difference in crop production whether manure is put on the cultivated crop or on the clover field preceding it, or whether manure should all be applied at one time instead of applying one half of it every two years in a four year system of rotation.

These are only a few of the important problems that may be worked out from the standpoint of soil management. It will, however, readily occur to you that the expense of conducting cooperative work along this line is comparatively large and consequently it would be poor policy to conduct such work in a community where only one party may take advantage of the results. For this reason when arrangements are made for work of this kind we will only try and meet the call that comes from sections where the whole community will be benefited by any results that may be gotten. Such co-operation will in many cases result in ordering lime or rock phosphate by the car load for distribution among the farmers at a cost much lower than that paid if each farmer ordered his own small shipment separately.

THE COUNTY ORDERS AND THE EXTENSION SERVICE.

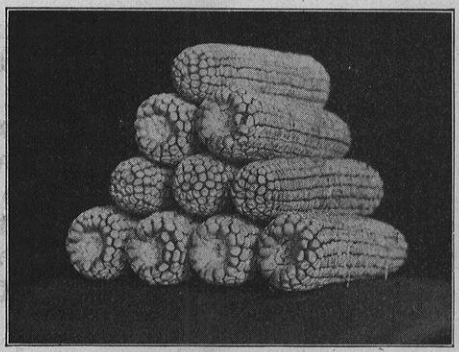
K. L. Hatch, Madison.

This association is to be congratulated upon its splendid achievements. Already it has exerted a powerful beneficent influence upon the agricultural welfare of the state. The elimination of scrub barley and the substitution of select Oderbrucker and pedigreed varieties have added not less than $100,000 annually to the value of the crop raised by members of this association alone. The increase in the value of the corn crop on the farms of the members of this association amounts to $200,000, as shown by your own reports. It is safe to say that the work of this organization had added many millions of dollars to the annual value of Wisconsin's agricultural products, but its work has just begun.

The next logical step in its development is the organization of a county order in every county of the state. Instead of 1,600 members in one central state organization we should have one of the same size in every county, then instead of an annual increase of $300,000 in the value of the corn and barley raised by members, we would have 20,000,000.

If the members of this association will co-operate with the Extension Service of the Agricultural College we may have a prosperous order in every county of the state. To illustrate how this co-operation results in mutual advantage to both parties, I will call your attention to the plan adopted by President Illian and Secretary Frauenheim of the Sheboygan County Order. The Extension Service arranged for a Farmers' Course under the auspices of the agricultural department of the Plymouth high school and invited the officers of the Sheboygan County Order to assist in making this Farmers' Course an event long to be remembered. With characteristic energy these men went to work. They found little difficulty in getting the business men of Plymouth to put up substantial prizes for pure bred grains with the result that over 200 entries were made. This helped to advertise the meeting, aroused great interest on the part of the farmers and resulted in bringing out 400 farmers to the course and adding fifty names to the membership of the association.

Whenever the Extension Service of this College enters a county to do its work it should find members of this association on hand to assist in every possible way. They should help to advertise the meeting, arouse interest, get out the crowd and secure an attractive display of high bred grains. This will advertise the work of the association and sell its products. At some appropriate time during the meeting an effort should be made to organize a County Order or to increase the membership of orders already organized. In this way the work of the Extension Service will become immediately effective and the county order increased in its potential efficiency.



Silver King, Wis. No. 7.
Grand Champion 10 ears of corn, grown by S. P. Markle, La Crosse. Awarded by Northwestern Corn Show, St. Paul—1910.

WISCONSIN SEED GRAIN GROWERS, 1911.

Members of the Experiment Association are rapidly becoming the seed growers of the state, and by systematic selection of seed and care in culture and curing of the crop, produce a fine grade of pure-bred seed grains. These seed grains are sold by the producers either in small or large quantities, at reasonable rates.

Growers of Pedigree Barley (Wisconsin Pedigree Barley).

Adams County

Buckley Lawrence.....Kilbourn
Jacobs, A. F .....Coloma
Johnson, Billie.....Strongs Prairie
Mikkelson, Wm. J.....Arkdale
Walker, Ray C.....Plainville

Ashland County

Hodan, A. B.....Friendship
Johnson, L. M.....Ashland

Barron County

Anderson, Thos. E.....Chetek, R. 1
Chrislaw, A. M.....Rice Lake
Howe, John O.....Comstock
Jorstad, Ed.....Cameron
LeJeune, Ernest.....Rice Lake, R. 2
Olson, Nalvin A.....Chetek
Otterholt, Henry.....Chetek
Plenty, Robert.....Rice Lake
Rauchenstein, Emil.....Rice Lake
Rauchenstein, John.....Rice Lake
Sackett, Clyde M.....Cumberland
Svacina, Jacob, Jr.....Rice Lake

Bayfield County

Hirsch, B.....Washburn
Nelson, John A.....Port Wing

Brown County

Anderson, Alfred.....Denmark R. 2
Dillon, Austin.....DePere
Dillon, James.....DePare
Kersten, Leo M.....DePere
Nulloy, John B.....Wayside
Nies, Peter.....Greenleaf, R. 3
Roffers, John H.....Green Bay, R. 7

Buffalo County

Arms, Edward.....Fountain City
Bilderbach, W. T.....Mondovi
Engel, George.....Fountain City
Fetting, Elmer.....Cochrane
Fetting, Romeo.....Cochrane
Haigh, Gerhard.....Cream
Jahn, Chas.....Cream
Kaste, Alfred H.....Cream
Kaste, Chas.....Cream
Kennedy, Bernard.....Nelson
Kennedy, Larry.....Nelson
Krampeter, Frank H.....Mondovi, R. 3
Loesel, Wm.....Cream
Muehleisen, Gottlieb.....Tell
Noll, Louis.....Alma
Quale, John H.....Mondovi
Reinhardt, R. F.....Nelson
Reinhardt, Chas. F.....Nelson
Suhr, A. A.....Cochrane
Suhr, Otto A.....Cochrane
Wendt, Reinhold.....Cream

Burnett County

Peterson, Conrad T.....Grantsburg
Rylander, Ed.....Shell Lake

Calumet County

Christolph, Theo. F.....Chilton
Koehler, John P.....Hayton
Peik, Arthur.....Chilton
Sevenich, Tony.....Hilbert
Tagge, Herman.....New Holsten

Chippewa County

Bekken, Oscar.....Bloomer
Christiansen, W. O.....Chippewa Falls
Cotton, B. L.....Chippewa Falls

Emerson, O. R.....Chippewa Falls
Finsnes, A. I.....Chippewa Falls
Freese, Edw.....Cornell
Harrison, Geo.....Chippewa Falls
Hendry, Robt. D.....Chippewa Falls
Herr, John G.....Stanley
King, Wm. T.....Jim Falls
Lebeis, F. J.....Bloomer
Martiny, L. P.....Chippewa Falls
Siepert, F. W.....Chippewa Falls

Clark County

Beyreis, C. E.....Dorchester
Buddenhagen, Elmer E.....Neillsville
Dallenbach, Chris.....Abbotsford
Hegge, Julius.....Galesville
Huckstead, A. A.....Neillsville
Korth, Leo R.....Neillsville
Krause, Wm. H.....Thorpe
Nelson, Carl A.....Greenwood
Portz, Herman.....Chili
Rued, Axel.....Curtiss
Steuerwald, Walter.....Loyal
Thompson, Theo.....Curtiss
Zerbel, Paul.....Humbird

Columbia County

Anderson, Adolph W.....Portage
Anoker, B.....Portage
Bancroft, Benj. T.....Rio
Bradley, Roy.....Randolph
Brereton, Hugh H.....Lodi
Brereton, Thomas D.....Lodi
Capener, Howard H.....Portage
Carncross, J. E.....Okee
Chipman, W. R.....Morrisonville
Chrisler, Elmer A.....Lodi, R. 4
Chrisler, Elvin A.....Lodi, R. 1
Chrisler, Harley E.....Lodi
Church, W. H.....Lodi
Ellickson, A. C.....Arlington
Gloeckler, Louis P.....Portage
Grove, Christian.....Columbus, R. 6
Lintner, Sam.....Arlington
Lloyd, Even B.....Cambria
Morse, Albert.....Kilbourn
O'Connor, Edward F.....Lodi, R. 1
Owen, Roger A.....Portage, R. 2
Richards, W. M.....Lodi
Sharpee, Alfred B.....Rio
Sharpee, Carl S.....Columbus
Sharpee, Endre A.....Rio, R. 1, Bx 34
Sharpee, Johanes A.....Rio
Verbeck, C. W.....Lodi

Crawford County

Accola, Lawrence.....Steuben
Bohoneck, John.....Prairie du Chien
Dousman, Louis.....Prairie du Chien
Brodt, Clarence D.....Bridgeport
Hjelle, Ole K.....Soldiers Grove
Johnson, E. T.....Soldiers Grove
Johnson, J. E.....Ferryville
Lintz, Willis.....Gays Mills
Wisenman, Paul.....Bridgeport

Dane County

Anderson, H. C.....Cambridge
Anderson, Lewis.....Morrisonville
Anderson, Henry.....Mt. Horeb
Angvick, Lars.....Cottage Grove
Anthony, David C.....Oregon
Barton, C. R.....Mt. Horeb
Bayles, Rollo.....Dane
Beck, J. D.....Madison
Berg, J. S.....Stoughton
Bergum, Albert P.....De Forest
Bergum, Andrew.....De Forest
Bergum, P. B.....De Forest
Bewick, W. M.....Sun Prairie
Bewick, Wm. W.....Madison
Blankensee, Clarence.....Riley
Bollig, F. A.....Black Eorth
Bollig, A. N.....Black Earth
Brickson, A. C.....McFarland
Brickson, Andrew.....Cottage Grove
Brereton, Lawson.....Dane
Brigham, Chas. I.....Blue Mounds
Britzke, Paul.....London
Brue, N. H.....De Forest
Chase, J. P.....Sun Prairie
Coldwell, John.....Mazomanie
Colladay, C. M.....Stoughton
Colladay, W. E.....McFarland
Daley, Thos.....McFarland
Damler, Walter F.....Sun Prairie
Damp, De Witt.....Dane
Davidson, W. L.....Verona
Davison, R. W.....Sun Prairie
Deneen, Michael.....Blue Mounds
Derke, Adolph.....Madison, R. 2
Derr, Gilbert.....Columbus
Dreger, Emil L.....Madison, R. 6
Elver, E. C.....McFarland
Fisher, Wm. G.....Middleton
Foll, Walter.....Deerfield
Ford, J. F.....Mazomanie
Gest, Chas.....Windsor
Gillette, Rufus.....Verona
Gillies, J. H.....Stoughton
Grady, Geo.....Oregon
Grove, Albert.....Columbus, R. 6
Guitzkow, Arthur.....Madison, R. 3
Hanna, Oliver O.....Mt. Horeb
Haugen, S. O.....Stoughton
Hill, Otto C.....Mt. Horeb
Hofmann, Carlie.....Mendota
Holscher, A. C.....Cottage Grove
Hopkins, B. F.....Morrisonville
Hopkins, J. W.....Morrisonville
Hougan, O. O.....Stoughton
Jones, E. F.....Sun Prairie
Juve, Oscar.....Stoughton
Kaltenberg, Anthony.....Waunakee
Kaltenberg, Jacob.....Waunakee
Kaltenberg, Joseph.....Waunakee
Kaltenberg, P.....Waunakee
Keenan, Wm. M., Jr.....McFarland
Kendell, Geo. W.....Sun Prairie
Kittleson, K. T.....Mt. Horeb
Kittleson, Knudt.....Mt. Horeb
Kittleson, Wm.....Mt. Horeb
Koch, Chris.....Waunakee
Koltes, Jos. F.....Dane
Lee, Lewis Johnson.....De Forest
Lee, Oliver.....Klevenville
Lee, Peter A. G.....Deerfield
Lukken, Amil.....Cambridge
McConnell, Oren S.....McFarland
Maeder, J. W.....Oregon
Maier, Wolfgang.....De Forest
Martin, Carl.....Madison
Mielke, F. D.....Windsor
Mielke, J. E.....Basco
Mitchell, Geo.....Cottage Grove
Mitchell, J. T.....Cottage Grove
Morse, E. H.....Edgerton
Nellen, P. J.....De Forest
Nellen, Joe.....De Forest
Nellen, W. A.....De Forest

Nellen, Jac.....De Forest
Nicholls, Harry C.....Stoughton
Nordlie, Alfred.....Deerfield
Norsman, Jerome O....Madison, R. D.
Ohustad, K. O.....Stoughton
Pierstorff, H. H.....Madison
Pope, R. W.....Sun Prairie
Radamacher, John.....Middleton
Rafterey, Agnes.....Windsor
Reindahl, A. K.....Madison
Renk, Wm. F.....Sun Prairie
Ruhrmann, B. J.....Cross Plains
Ruste, C. O.....Blue Mounds
Ruste, C. E.....Blue Mounds
Ryan, Gerald.....Sun Prairie
Sager, Milo.....Deerfield
Sharpee, P. A.....Morrisonville
Skalas, Herman.....Deerfield
Sime, J. O.....Stoughton
Strommen, Geo. K.....Cambridge
Sveul, S. O.....Stoughton
Tenjum, A. A.....De Forest
Thielke, Emil.....Madison
Thompson, Melvin.....Mt. Horeb
Tjugum, E. E.....Sun Prairie
Toepfer, Otto F.....Madison
Tverberg, Alf.....Stoughton
Veium, Even.....Stoughton
Vetter, Carl.....Madison, R. 3
Vetter, John.....Madison, R. 3
Vroman, H. E.....Verona
Wernick, Wm. H.....De Forest
Willmarth, E. E.....Sun Prairie
Woodward, John L.....Madison

Dodge County

Adams, Lester B.....Lowell
Barstow, Jas. E.....Randolph
Bohl, Anton.....Beaver Dam
Bremer, Felix E.....Hustisford
Bremer, Emil O.....Hustisford
Bussewitz, Orla J.....Juneau
Bussewitz, Raymond H.....Reeseville
Bussewitz, W. E.....Juneau
Craig, Chas. W.....Oconomowoc
Coulter, Harry S.....Randolph
Curphey, John R.....Ixonia
Dieckhoff, John.....Randolph
Gergen, John M.....Beaver Dam
Gilmore, Everett H.....Randolph
Goetsch, A. A.....Juneau
Gourlie, Forrest O.....Oconomowoc
Grebe, Fred P.....Fox Lake
Gunderson, Forrest D.....Oconomowoc
Gunderson, Lea.....Oconomowoc
Henke, Louis.....Lowell
Howitt, Chas. H.....Randolph
Hutchinson, Wm. D.....Rubicon
Indermuehle, Felix A.....Beaver Dam
Jones, Earl F.....Columbus
Jones, Arthur.....Randolph
Jones, John G.....Beaver Dam, R. 4
Jones, Owen R.....Beaver Dam
Jung, A. E.....Randolph
Kings, Benj. J.....Reedsville
Klatt, Fred.....Beaver Dam
Krueger, H. E.....Beaver Dam
Kuhlman, Arthur H.....Lowell
Kuhlman, Fred.....Lowell
Mahoney, David.....Juneau
Miller, A. H.....Waupun
Moldenhauer, Fred.....Oconomowoc
Neuberger, Wm. T.....Reeseville
Owens, H. C.....Fox Lake
Rex, Edgar H.....Beaver Dam
Roberts, Wm. E.....Randolph
Rockhill, W. E.....Waupun
Schiller, Claude E.....Beaver Dam
Schulz, Gerhard P.....Randolph
Schumann, Hugo W.....Beaver Dam
Sette, O. E.....Juneau
Steiner, W. H.....Brownsville
Young, Rudolph T.....Beaver Dam
Ziemann, Ernest F.....Beaver Dam

Door County

Boyd, Henry J.....Forestville
Delcorps, Louis.....Sturgeon Bay
Dreutzer, C. B.....Sturgeon Bay
McKernan, R.....Sturgeon Bay
Larson, Eli.....Sawyer

Douglas County

Webb, W. H.....Superior
Madoche, Leo J.....Sawyer

Mueller, Rudolph.....Forestville

Dunn County

Chase, A.....Knapp
Cramer, Joe.....Menomonie
Gerking, F. J.....Elk Mound
Hageseth, Frank.....Menomonie
Kent, J. S, and H. W.....Rusk
Kinney, G.....Colfax
Knapton, W. E.....Downing
Sampson, August.....Menomonie
Stevens, Ernest A.....Eau Galle

Eau Claire County

Burce, Ruth E.....Eau Claire
Carlson, A. T.....Augusta
Donaldson, H. A.....Eau Claire
Faast, Ben. F.....Eau Claire
Koll, C. A.....Eau Claire
Konz, John, Jr.....Fairchild, R. 2
McDermid, G, A.....Eau Claire
Schield, John.....Fall Creek

Fond du Lac County

Adams, A. E.....Eden
Adams, Richard F.....Campbellsport
Atwood, P. W.....Waupun
Beilke, Walter.....Fairwater
Block, A. F.....Brandon
Bonzelet, J. P.....Eden
Briggs, E. T.....Fond du Lac
Briggs, Lynn W.....Peebles
Briggs, J. W.....Peebles
Donovan, Frank.....Van Dyne
Ferguson, W. F.....Fond du Lac
Finder, Fred C.....Van Dyne
Hargrave, Robert.....Ripon
Hintz, George E.....Oakfield, R. 26
Hinz, A. F.....Ripon
Hoard, Harry H.....Waupun
Koenigs, Phillip.....Fond du Lac
Kuehn, Chas. A.....Brandon
Lehman, Edwin.....Ripon
Leith, Ray H.....Van Dyne, R. 9
Lother, O. A.....Waupun
Mathews, L. G.....Brandon
Maug, Arthur J.....Ripon
Meier, Edward F.....Eden, R. 26
Michels, Henry.....Malone
Michels, Math.....Peebles
Mihills, D. R.....Fond du Lac
Mihills, G. N.....Fond du Lac

Miller, Arthur.....Waupun
Miller, A. H.....Waupun
Miritz, O. F.....Fond du Lac
Moore, A. B.....Campbellsport
Nolan, J. H.....Eldorado
Northrup, J.....Waupun
O'Hearn, Dennis.....Eldorado
Oleson, James P.....Ripon
Patrick, Ed. H.....Waupun
Patrick, Robert.....Waupun
Pattee, Drew J.....Waupun
Pattee, John R.....Waupun
Peters, Hubert.....Calvary
Randall, S. M.....Waupun
Rather, Armand.....Peebles, R. 37
Rieman, Elmer W.....Ripon
Ruesink, H. G.....Waupun
Rupp, Herman.....Malone
Sattler, James H.....Rosendale
Sheldon, Ben F.....Brandon
Smith, Almer J.....Brandon
Smith, Harvey J.....Brandon
Smith, Samuel A.....Oakfield
West, H. P.....Ripon
West, Ray N.....Ripon
Whitney, R. A.....Eldorado

Forest County

Grandine, Lester D.....North Crandon
Grandine, Morton D.....North Crandon

Grant County

Barnen, R. E.....Boscobel
Barron, R. E.....Plattville
Booth, Guy A.....Cuba City
Brunner, Ed. Z.....Monroe
Carmody, Daniel.....Mt. Ida
Carmody, P. J.....Mt. Ida
Cubela, Jos. M.....Muscoda
Cull, James, Jr.....Mt. Hope
Dieter, Bert.....Montfort
Dieter, Wm. A.....Montfort
DiVall, W. F.....Montfort
Edwards, Elliot.....Glen Haven
Groom, Harvey L.....Cassville, R. 1
Kaiser, Wm. S.....Cuba City
Keating, P. H.....Mt. Hope
Kreul, Aug R.....Fennemore
Nagle, Lee.....Bridgeport
Niemer, Frank.....Cassville, R. 1
Orr, Lea B.....Bagley
Patten, W. H.....Boscobel
Preston, Geo. M.....Montfort.
Ralph, Will H.....Cuba City
Runde, Albert.....Hazel Green
Runde, Aloysius.....Cuba City
Schuler, John.....New Glarus
Simmons, Will.....Cuba City
Spink, L. O.....Platteville, R. 10
Steinhoff, W. J.....Platteville
Stivarius, Geo. A.....Fennimore
Taylor, Lewis.....Glen Haven
Trewartha, Edw. J.....Hazel Green
Wayne, Joseph.....Boscobel

Green County

Anderson, A. T.....Monroe
Austin, Elmer E.....Brodhead
Barker, W. H.....Brodhead
Bechtolt, A. B.....Browntown
Bechtolt, J. D.....Browntown
Biglow, L. F.....Brooklyn
Brunner, Ed. Z.....Monroe
Burt, Charley.....Brodhead
Cornelius, E. C.....Monroe
Dettwiler, John.....Monroe
Douglas, Robert J.....Juda
Doyle, W. E.....Brodhead
Gapen, Frank Wm.....Monroe
Gardner, Henry
.....Monroe, care E. C. Cornelius
Geigel, John.....Monroe
Gwynne, Sam.....Brodhead
Klassy, Henry.....Monroe
Klassy, Henry C.....Monticello
Klassy, Wm. E.....Monticello
Legler, L. G.....Juda
Marty, Mathias.....Monticello
Mau, H. G.....Brodhead
Nimnegger, J. Talmage.....Monroe
Ritschard, Emil.....Monticello, R. D.
Ritschard, Fred.....Monroe
Schuler, John.....New Glarus
Silver, C. R.....Belleville
Simmons, Geo. W., Jr.....Monroe
Thorp, Eugene B.....Monroe, R. 6
Tochterman, C., Jr.....Monroe
Trumpy, Fred.....Clarno
Willis, A. W.....Brodhead
Wood, H. D.....Brodhead

Green Lake County

Davies, Elias.....Markesan
Kutchin, Victor.....Green Lake
Page, G. F.....Berlin
Vine, Callice H.....Markesan

Iowa County

Anderson, Louis H.....Highland
Aavang, H. O.....Barneveld
Church, W. H.....Lodi
Convey, Thos.....Ridgeway
Davies, Llewellyn.....Mineral Point
Farwell, R. R.....Ridgeway
Hanson, Carl O.....Hollandale
Harker, Irving.....Dodgeville
Harker, John J.....Linden
Kelley, A. N.....Mineral Point
Ley, Nicholas.....Dodgeville
Ley, Peter.....Dodgeville
Morrissey Bros.....Arena
Paulson, H. E.....Hollandale
Smedsrud, Melvin C.....Hollandale
Thomas, Edw. J.....Ridgeway, R. 2

Jackson County

Anderson, Ubbe.....Melrose
Bullock, James P.....North Bend
Curran, W. T.....Taylor
Dettinger, Wm. F.....Hixton
Dietrich, John J.....Black River Falls
Engleman, John.....Hixton
Haag, Frank.....Melrose
Haag, Henry.....Melrose
Hecketsweiler, O. J.....Alma Center
Horswill, W. K.....Black River Falls
Jennings, Earl.....Pigeon Falls
Merrill, W. M.....Taylor
Patterson, Harvey.....Melrose
Patterson, J. D.....Melrose
Restow, C. S.....Black River Falls
Somerville, John.....Black River Falls
Thompson, Adolph....Black River Falls
Wallen, Sigur B.....Taylor

Jefferson County

Anthes, Henry.....Jefferson
Becker, Harry J.....Ft. Atkinson

Brown, A. A.....Waterloo
Brueckner, H. C.....Ft. Atkinson
Brueckner, Justus.....Jefferson
Graper, Arthur.....Helenville
Guttenberg, Frank, Jr.....Jefferson
Haus, Joe T.....Jefferson
Joice, G. W.....Waterloo
Krueger, Alexander....Watertown, R. 2
Lee, Gilbert A.....Ft. Atkinson
Lehmann, Theo.....Watertown, R. 7
Leonard, Wm. R.....Jefferson
Leonard, Geo. H.....Jefferson
Luebke, H. W.....Watertown, R. 1
McIntyre, Ivan.....Ft. Atkinson
Mathews, Milton D.....Helenville, R. 1
Milkee, Geo.....Ft. Atkinson
Neuberger, Frank G., Jr.....Jefferson
Niere, Stuart P.....Watertown
Parsons, Wm. A.....Ft. Atkinson
Perry, J. H.....Ft. Atkinson
Popp, Arthur.....Jefferson
Schultz, Rudolph.....Lake Mills
Stiles, N. F.....Lake Mills
Ward, Charles.....Ft. Atkinson
Ward, Harold L.....Ft. Atkinson
Ward, Robert W.....Ft. Atkinson
Ward, Theodore S.....Ft. Atkinson
Wollin, Albert.....Johnson Creek, R. 2
Wollin, H. B.....Lake Mills
Wollin, C. W.....Lake Mills

Juneau County

Curtis, J. C.....New Lisbon
Hall, W. H.....Wonewoc
Harvey, Caleb B.....Wonewoc
Hoover, Kenneth M.....New Lisbon
Lee, Royal D.....Arkdale
McNown, J. H.....Mauston
Mills, Milo E.....Mauston
Ritchart, Roy C.....New Lisbon
Solem, Edward.....Wonewoc

Kenosha County

Blumer, George.....Salem
Bradley, J. Frank.....Somers
Cole, Allen.....Kenosha
Myrick, M. O.....Bristol
Orvis, L. C.....Salem
Paddock, A. D.....Salem
Paddock, Alva.....Salem
Sheen, C. J.....Trevor
Sheen, Wray J.....Trevor
Swenson, Earl S.
.....Kenosha, 660 Pleasant St.
Thiers, L. M.....Kenosha
Thom, J. A.....Bristol

Kewaunee County

Barrett, Jos.....Casco
Boudnik, John.....Kewaunee, R. 7
Cherveny, Wenzel.....Kewaunee, R. 2
Collin, D. W.....Luxemburg
Defnet, Jule J.....Casco, R. 2
Dworak, H. A.....Kewaunee
Glandt, R. C.....Kewaunee
Katel, W. C.....Kewaunee
Koeniel, Ed.....Kewaunee
Koller, Wm.....Kewaunee
Krofta, Rudolph.....Kewaunee, R. 2
Murphy, Jac. H.....Kewaunee
Nemetz, Frank J.....Kewaunee
Pelisek, Frank W.....Kewaunee
Rohde, Henry.....Kewaunee
Runke, Rufus.....Algoma
Smithwick, James.....Kewaunee
Stangel, Richard.....Kewaunee, R. 1
Thibodeau, Elmer F.....Kewaunee

La Crosse County

Bosshard, Eugene.....Bangor
Brown, E. D.....West Salem
Davis, L. H.....Bangor, R. 3
Feneff, Wm. A.....Coon Valley
Griswold, H. W.....West Salem
Harr, Ernest B.....Bangor, R. 3
Hemker, Fritz.....West Salem
Jones, E. E.....Rockland
Lawrence, F. W.....Bangor
Lawrence, W. J.....Bangor
Nuttleman, Fred.....West Salem
Restow, Harry.....Onalaska
Sandman, W. D.....Holmen
Schaller, Frank.....Holmen
Schaller, Geo.....Holmen
Schilling, Harry W.....Onalaska
Van Loon, John.....La Crosse

Lafayette County

Andrews, A. L.....South Wayne
Gilberts, Clarence E.....Darlington
Glindinning, H. L.....Shullsburg
Hartsough, A. L.....Gratiot
.....Blanchardville
Jorenby, Carl O.....Blanchardville
Jorenby, Harold.....Blanchardville
Larson, Joseph S.....Woodford
Merriam, Leslie J.....Darlington
Perry, Will H.....Gratiot
Rood, Henry.....South Wayne
Rood, Minnick C.....South Wayne
Smith, Alva J.....Gratiot
Smith, John F.....Darlington
Strommen, Anton A.....Blanchardville
Thompson, Gilbert G.....Blanchardville
Usher, Earl.....South Wayne
Usher, J. M.....South Wayne
Usher, Carl.....South Wayne
Vamstad, Brady.....Blanchardville
Watrud, Hjelmer.....Blanchardville

Langlade County

Kalouner, Edward.....Antigo, R. 5
Leykom, J. Wallace.....Antigo
Person, Alfred.....Bryant

Lincoln County

Parrott, George.....Merrill
Weisner, L. R.....Merrill

Manitowoc County

Arnold, Arthur A.....Kiel
Axley, Walter.....Cleveland
Behm, Walter F.....Manitowoc
Bender, Fred.....Cleveland
Bauer, A. H.....Manitowoc, R. 3
Berge, Anton O.....Valders
Berge, Oscar O.....Valders
Berge, Otis J.....Valders
Brennan, Jos.....Cato
Bruhn, John F.....Two Rivers, R. 1
Clusen, Reinhold.....Manitowoc
Dexheimer, Henry.....Kiel
Eisenmann, Harvey.....Mishicot
Garey, James.....Grimms
Geraldson, Mervin.....Manitowoc
Gigstad, Benneth.....Manitowoc

Gunderson, Clifford.....Manitowoc, R. 4
Gustaveson, Chas.....Manitowoc
Halvorson, Arthur E.....Manitowoc
Hansen, Warner.....Manitowoc
Hayden, Thomas H.....Grimms
Heideman, Otto C.....Kiel
Johannes, Albert.....Two Rivers
Kielsmeier, Hugo C.....Cleveland, R. 3
Kirby, James J.....Grimms
Klann, Adolph.....Reedsville, R. D.
Klessig, Edwin O.....Cleveland
Knutson, Ed. A.....Manitowoc, R. 4
Koellmer, Gustav.....Cleveland
Kolb, Ed.....Cleveland, R. 2
Larson, John A.....Valders
Lutze, George.....Cleveland
Marken, Otis A.....Valders
Moldenhauer, W. C.....Manitowoc, R. 1
Nate, George B.....Grimms
Paulson, J. E.....Manitowoc
Peitzl, John A.....Cato, R. 1
Riederer, Blas.....Cato
Roethel, Herman.....Kiel
Salzmann, Ed.....Kiel, R. 2
Schulte, Peter J.....Cleveland, R. D.
Schuster, Chas.....Manitowoc
Straka, Edward E.....Maribel, R. 2
Strowig, Wm. A.....Cleveland, R. 1
Sullivan, Jas. A.....Grimms
Thielke, Ed. A.....Kiel, R. 2
Thompson, Geo. H.....Quarry
Tyler, James G.....Valders
Watt, Thos., Jr.....Grimms
Wesener, Wm.....Cleveland
Wiegand, Otto R.....Cleveland
Wigen, Andrew.....Quarry
Wigen, Walter E.....Manitowoc
Milkowske, Hugo.....Mishicot
Zill, Bruno.....Cleveland

Marathon County

Aderhold, H. F.....Athens
Arnold, Philip.....Edgar
Baesmann, Otto.....Edgar
Brehm, E. A.....Colby
Brotherton, Alvin.....Colby
Helmke, Theo. J.....Hamburg
McAdam, Cecil.....Schofield
Parsch, Gustav A.....Wausau

Marinette County

Falarsh, Frank.....Peshtigo
Gould, Guy.....Peshtigo
Gould, Merrill M.....Peshtigo
Magee, Ellis.....Coleman
Ramsey, R. C.....Peshtigo
Schneider, Gottlieb P.....Walsh

Marquette County

Dimond, Nicholas.....Montello
Hamilton, T. S.....Westfield, R. I.
Haskins, Leon O.....Montello
Johnson, Sam A.....Westfield
Judd, Jesse L.....Endeavor
Parrott, Alfred.....Endeavor

Milwaukee County

Basse, Wm. H.....West Allis, R. 5
Dennison, Nicholas.....
.....No. Milwaukee, R. 10
Diderrich, Nicholas A.....
.....No. Milwaukee
Duve, Henry F.....West Allis
Guenther, Nelson W.....
.....South Milwaukee
Hickcox, Gilbert.....Whitefish Bay
Kinney, Clinton.....Wauwatosa
Kurtze, Otto C.....West Allis, R. 15
Machimura, K.....
.....West Allis, care Rust Bros.
Mahler, Jacob.....Wauwatosa
Meyer, Alfred J.....Oakwood, R. 18
Pierner, Fred.....No. Milwaukee
Swan, Earling.....
.....Milwaukee, Station B. R. 6
Swan, Robert G.....
.....Milwaukee, Station B. R. 6
Unger, Edward F.....
.....North Milwaukee, R. 9
Unger, Ernest F., Jr.....
.....No. Milwaukee, R. 29

Monroe County

Aarness, O. C.....Cashton
Anderley, Louis.....Kendall
Benrud, Martin A.....Cashton
Foth, F. D.....Norwalk
Freeman, G. A.....Sparta
Funcan, Wm.....Kendall
Gamerdinger, John.....Kendall
Grassman, Alfred.....Kendall
Hale, Clayton T.....Tunnel City
Hanchett, W. H.....Sparta
Hansen, Henry.....Sparta
Hanson, Niel.....Cataract
Harris, R. E.....Warrens
Hibbard, W. E.....Norwalk
Hitchcock, Wm. P.....Sparta
Hitchcock, Clarence E.....Sparta
Hoard, L.R.....Cataract
Howell, Horace P.....Sparta
Kirst, Ernest J.....Tomah
Lee, L.....Leon
Leverich, J. W.....Sparta
Moseley, A. G.....Cataract
Nathan, Paul R.....Kendall
Pratt, Vernon.....Cataract, R. 2
Roy, Julius.....Sparta
Van Zandt, L.....Sparta
Von Haden, Eddie.....Kendall
Whitehead, H. W.....Leon
Wisner, L. R.....Merrill
Wyatt, E. E.....Tomah

Outagamie County

Bixby, Phil. T.....Appleton
Blake, Wm. G.....Black Creek
Jahnke, Albert.....Black Creek
Jamison, Howard.....Appleton
Jamison, Clarence.....Appleton
Jamison, Harvey.....Appleton
Jamison, Robert.....Appleton
Jamison, Stanley.....Appleton
Jamison, W. G.....Appleton
Johnson, Chas. G.....Welcome
Johnston, Oney.....Appleton
Klemm, Lewis J.....Welcome
Koss, Otto W.....Medina
Lemke, Albert.....Welcome
Letts, Edw. F.....Appleton
Merkel, Henry.....Appleton, R. 3
Mills, Roscoe C.....Appleton, R. 2
Mueller, Edward O.....Appleton
Ryan, Malachi.....So. Kaukauna
Schaefer, Geo.....Appleton
Schaefer, R. J.....Appleton
Schmit, Albert.....Appleton
Schmit, Alois E.....Hortonville
Schmit, A. W.....Appleton
Schmit, Geo.....Greenville

Schmit, Wm. F.....Appleton, R. 2
Thoma, Ernest.....Sugar Bush
Tubbs, J. Herbert.....Seymour
Wieckert, Walter.....Appleton
Wussow, Chas. A.....Seymour

Ozaukee County

Behrens, Bernh.....Grafton
Blank, Geo. A.....Grafton
Groth, Louis.....Cedarburg
Kieffer, Mike.....Fredonia
Meyer, A. H.....Grafton
Pierner, John W.....Thiensville
Quast, Arthur E.....Saukville

Pepin County

Fleishauer, C. K.....Arkansaw
Fox, Phil., Jr.....Durand
Gustafson, Theodore.....Stockholm
Jahnke, J. F.....Pepin
Pattison, H. A.....Durand, R. 2

Pierce County

Brown, Monroe.....Bay City
Brown, Wm.....Spring Valley
Carlson, N. T.....River Falls
Finstad, Frank.....Beldenville
Hanson, Henry O...Spring Valley, R. 4
Hinze, Louis.....Prescott
Lowe, James.....River Falls
Neystrom, Archie.....Maiden Rock
Peirce, W. O.....River Falls
Persons, W. B.....Plum City
Smith, Fred.....River Falls

Polk County

Elkins, Arthur O.....Amery
Ferris, Sherman.....St. Croix Falls
Germanson, Herbert.....Luck
Jerdee, Perry S.....Deronda
Lawson, A. C.....Luck
Lee, Oliver.....Amery, R. 2
Lindberg, Clinton H..Dresser Jct., R. 1
Miller, A. J.....Milltown
Nelson, Willie.....Milltown
Peterson, E. M.....Amery, R. 4
Raonholt, Ausgar.....Milltown
Rehbein, A. E.....St. Croix Falls, R. 1
Uhlin, Albin S.....Clayton
Uhlin, F. E.....Clayton

Portage County

Arnott, Grace M.....Stevens Point
Brekke, Anton B.....Steven Point
Clark, W. E.....Stevens Point
Gullickson, Gust.....Nelsonville
Hanson, N. P.....Amherst Jct., R. 2
Williamson, Boyd.....Amherst Jct.
Wrolstad, Alfred M.....Amherst Jct.

Price County

Anderson, Martin.....River Falls
Hoffmann, Conrad.....Phillips

Racine County

Chambers, O.....Union Grove
Cook, Joe C.....Burlington
Cooper, A. H.....Franksville
Dukleth, J. O.....Waterford
Gehrand, Arthur A.....Rochester
Holloway, Ed. M.....Union Grove
Jacobson, Clarence H..Waterford, R. 25
Klofanda, Reuben.....Racine, R. 1
Klofanda, Royal.....Racine, R. 1
Nelson, Harvey.....Union Grove
Odland, P. H.....North Cape
Renak, Edw.....Racine, R. 2
Robers, Wm. J.....Burlington
Rolfson, C. E.....Waterford
Rued, Axel.....Curtiss
Skewes, Edwin B.....Union Grove, R. 6
Spartz, N. A.....Union Grove

Richland County

Annear, Rolland.....Richland Center
Collins, Edmund.....Tavera
Collins, Robert.....Tavera
Cook, A. E.....Boaz
Ewers, Forest.....Boaz
Farwell, L. D.....Sylvan
Householder, Glen.....Richland Center
Ghastin, Floyd L.....Twin Bluffs
Ghastin, Wm. J.....Twin Bluffs
Oman, Carl.....Tavera
Post, H. L.....Sextonville
Schmitz, Edw.....Lone Rock
Schmitz, Hubert.....Lone Rock
Smelcer, F. C.....Lone Rock
Straug, Frank.....Lone Rock
Thorpe, J. R.....Tavera
Turgasen, J. H.....Richland Center
Welsh, S. L.....Tavera

Rock County

Austin, Alva G.....Janesville
Austin, A.....Janesville
Austin, Clifford P.....Janesville
Austin, Geo. M.....Janesville, R. 6
Austin, Henry L.....Evansville
Austin, Wilbur D.....Janesville
Austin, Willard O.....Milton
Benedict, E. L.....Beloit
Bingham, E. L.....Milton
Bingham, Howard L.....Milton
Caldo, Leslie.....Janesville, R. 1
Dougan, W. J.....Beloit, R. 30
Ellis, E. J.....Evansville, R. 19
Emery, Sydney L.....Edgerton, R. 2
Kimble, N. G.....Milton Jct.
Lathers, Chas. F.....Beloit
Latta, F. L.....Clinton Jct.
Lefeber, Wilbur F.....Evansville
McCoy, Geo. L.....Evansville
Marston, Albert E.....Beloit
Marston, Roy C.....Beloit
Moore, Fred W.....Beloit
Moseley, H. B.....Beloit
Mueller, M. J.....Edgerton
care of Emery Farm.
Newhouse, K. K.....Clinton
Porter, W. N.....Evansville
Porter, W. B.....Evansville
Shuman, Chas. F.....Koshkonong
Simpson, Lloyd S.....Edgerton
Smith, Lewis E.....Beloit
Smyder, Elmer G.....Clinton Jct.
Snyder, Elmer G.....Beloit
Tifft, J. Ringland.....Wauwatosa

St. Croix County

Alberts, Will.....New Richmond
Arnuist, J. T.....New Richmond
Bailey, H. E.....Hudson
Batten, S. E.....Hudson

Bennett, Wm. L.....Stanton
Boardman, Benj.....New Richmond
Bradley, H. C.....Hudson
Brunner, Fred F.....Hudson
Brunner, R. W.....Hudson
Cook, Winfred.....Deer Park, R. 1
Fay, Albert W.....New Richmond
Fulten, B. H.....New Richmond
Hargrave, W. E.....Roberts
Heebink, Wm.....Baldwin
Hogan, E. J.....New Richmond
Kruschke, Alvin C.....New Richmond
Kruschke, Geo. H.....New Richmond
Larson, Theo.....Hudson
Legrid, Henry E.....Deer Park
Paulson, P. A.....Hudson
Peterson, August.....Stanton
Schwandt, Wm.....Stanton
Utgaard, Peter W.....Cylon

Sauk County

Borck, Sam.....North Freedom
Capener, Clifford.....Baraboo
Capener, W. R.....Baraboo
Clavadatscher, T.....Sauk City
Enge, Eugene.....Prairie du Sac
Gade, Adolph.....Reedsburg, R. 2
Getschmann, Willie.....North Freedom
Grass, Christian F.....Prairie du Sac
Gravin, D. W.....Baraboo
Hatz, Jacob A.....Prairie du Sac
Henrichs, Ernest.....Reedsburg
Herwig, R. B.....Delton
Herwig, Theo. E.....Delton
Hill, J. L.....Prairie du Sac
Hood, D. L.....Spring Green
Johnson, Glenn.....Baraboo, R. 2
Kindschi, Edwin.....Prairie du Sac
Koenecke, A. E.....Reedsburg
Koenecke, Ed. H.....Reedsburg, R. 5
Moely, Conrad.....Prairie du Sac
Ochsner, Arthur C.....Plain
Pearson, Clarence.....La Valle
Riek, Anthony.....Plain
Rieser, Alfred E.....Spring Green
Rusch, E. W.....Reedsburg
Schuette, Herman W.....Reedsburg
Sherwood, Chas. B.....Spring Green
Steidtmann, Edwin.....Merrimac
Stone, Riley.....Reedsburg
Toole, W. A.....Baraboo
Vonder Ohe, William H.....Reedsburg
Weirich, Martin J.....Baraboo
Wichern Bros.....Baraboo, R. 4
Wischhoff, E. H.....Reedsburg

Sawyer County

Uhrenholdt, Jens.....Leonard
Uhrenholdt, S. J.....Leonard

Shawano County

Berg, Carl J.....Tigerton
Hildemann, Alex E.....Belle Plaine
Klovdahl, J. J.....Wittenberg
Norrbom, C. G.....Eland
Peterson, Walter.....Pulaski
Wedgwood, R. E.....Shawano

Sheboygan County

Dennerlein, Arthur J.....Plymouth
Frauenheim, O. R.....Random Lake
Garside, Harry R.....Cedar Grove
Illian, William L.....Adel
Knoener, Geo. C.....Plymouth
Lubbers, William.....Cedar Grove
Parrish, J. O.....Plymouth
Reineking, Rudolf H..Sheboygan Falls
Schaefer, Henry G.....Plymouth
Strauss, Norbert.....Sheboygan
Ubbeholde, Frank.....Sheboygan Falls
Veldboom, John.....Cedar Grove
Wagner, Arthur L.....Haven
Wunsch, Alfred J. C.....Haven
Wunsch, Hugo E.....Haven

Taylor County

Amacher, Fred.....Stetsonville
Schmoedt, Paul C.....Whittlesey

Trempealeau County

Gilbertson, C. P.....Arcadia
Grant, Geo.....Independence
Graul, Edw. J.....Independence
Hanson, Albert.....Whitehall
Hagestad, A. C.....Ettrick
Johnson, Frank L.....Osseo
Markham, F. C.....Independence
Mattison, Thos.....Blair
Paine, Allen.....Arcadia
Pederson, Peter.....Eleva, R. 3
Pederson, B. A.....Blair
Ristau, Emil O.....Osseo
Thompson, A. L.....Blair
Thompson, Paul.....Blair
Young, W. D.....Galesville

Vernon County

Aberg, Jacob.....De Soto
Amodt, Marcus.....Viroqua
Burris, W. E.....Kendall
Cade, Jos. M.....Viroqua
Dahl, A. J.....Viroqua
Fisher, Leslie.....Viroqua
Fisher, Perl.....Viroqua
Henden, Carl.....Viroqua
Henry, Ernest E.....Viroqua
Herold, Rudolph, Jr.....Stoddard
Hoilien, David.....Westby
Jasperson, Alf.....Viroqua
McClurg, Walter F.....Viroqua
Neprud, Nels O.....Coon Valley
Olson, G. C.....Westby
Schreiner, Alf.....Westby
Sebion, Cornelius.....Westby
Sebion, Stanley.....Westby
Sebion, T.....Westby
Smith, M. E.....Viroqua
Sherry, Selmer.....Viroqua
Staley, Orlo.....Hillsboro
Staley Bros.....Hillsboro
Stegne, Chris.....Viroqua
Swiggum, Neil.....Viroqua
Swiggum, Oscar.....Viroqua

Walworth County

Arnold, Walter C.....Lake Geneva
Besecker, Howard F.....Delavan
Brentner, George F.....Lake Geneva
Bromley, Fred G.....Whitewater, R. 4
Coates, Clinton J.....Elkhorn, R. 6
Coit, H. W.....Darien
Dow, Everett J.....Whitewater
Dunbar, Harry D.....Elkhorn
Ells, F. W.....Elkhorn
Ells, W. H.....Darien
Ells, R. H.....Darien

Foerster, M. F.....Whitewater, R. 2
Gile, Fred.....Sharon
Hodge, Roy.....Lake Beulah
Kiley, Walter E.....Darien
Kiteley, Leonard W.....Sharon, R. 2
Kuehne, Edw. H.....Lake Beulah
Lauderdale, Roy.....Elkhorn
Lewis, E. H.....Whitewater
McCarthy, Edw.....Walworth
McLeod Stanley.....Lake Geneva
Meurer, Paul.....Genoa, Jct.
Millis, T. H.....Whitewater
O'Dell, William.....Lake Beulah
Palmer, Earl.....Lake Geneva
Peters, Ezra.....Sharon
Peterson, Peter.....Walworth
Piper, Harry B.....Sharon
Robinson, A. S.....Lake Geneva
Schwartz, John A.....Troy Center
Smith, Carroll H.....Delavan, R. 3
Thacher, Louis E.....Zenda
Thompson, Alfred W.....Delavan
Utter, Delwin H.....Lake Beulah
Wright, John.....Whitewater

Washburn County

Busch, Andrew F.....Spooner
Carpenter, W. H.....Lampson
Soholt, Gustav L.....Madge
Soholt, O. S.....Madge

Washington County

Backus, Franklin G.....Kewaskum
Baer, A. C.....West Bend
Baertlein, V. J.....So. Germantown
Baertlein, William A...So. Germantown
Connell, Clarence James...Colgate, R. 1
Flynn, John W.....Hartford
Gerner, John.....Barton
Gutschenritter, F. J.....West Bend
Hoelz, Jac., Jr.....Rockfield
Klumb, Albert J.....Rockfield
Klumb, Hugo G.....Kewaskum
Klumb, Oscar.....Rockfield
Puls, John.....Hartford
Salter, Milo P.....West Bend
Schermerhorn, S. B.....Hartland
Schottler, Conrad J. S..So. Germantown
Schowalter, Alvin.....Jackson
Sleep, S. S.....Hartland, R. 21
Stuesser, Eugene.....Richfield
Ziemer, Paul.....Jackson, R. 2

Waukesha County

Baird, Robt. L.....Waukesha
Blackwell, Leslie E.....Waukesha
Blood, Ike.....Mukwonago
Boyd, James G.....Waukesha
Brown, R. P.....Hartland, R. 21
Butler, G. C.....Templeton
Cooper, Joe.....Pewaukee
Dance, Geo.....Brookfield
Dance, James.....Brookfield
Davies Even.....Waukesha, R. 8
Dibble, R. A.....Menomonee Falls
Dineen, C. F.....Pewaukee
Dobbertin, S.....Hartland
Dopp, Paul B.....Waukesha
Fuller, Albert.....North Lake
Fuller, Horace.....North Lake
Fuller, Roland.....North Lake
Gierke, Erwin A.....Waukesha
Gimler, Frank.....Calhoun
Graser, Adam H.....Waukesha, R. 4
Gurke, Erwin A.....Waukesha
Hall, Frank.....Hartland, R. 21
Hall, John M.....Hartland, R. 21
Hardy, John.....Waukesha
Hart, William C.....Brookfield
Heling, Paul....Menomonee Falls, R. 18
Hill, Charley.....Brookfield
Hill, Chas. T.....Brookfield
Hill, J. T.....Brookfield
Holt, Lester H.....Oconomowoc
Jones, Albert.....Dousman
Kaul, E. H.....Waukesha
Klussendorf, Fred E.....Waukesha
Knowlton, A. R.....Waukesha
Kraetsch, Alvin C.....Menomonee Falls
Kuhtz, Harvey A.....Waukesha
Lewis, Owen H.....Genesee Depot
Longley, H. N.....Dousman
McKenzie, Will.....Mukwonago
Mitchell, Dean.....Brookfield
Mitchell, Chas. J.....Brookfield
Mitwede, Henry.....Waukesha
Omann, C. H.....Nashotah
Peebles, John.....Oconomowoc
Peebles, Percy A....Oconomowoc, R. 26
Pokfuss, Edward H.....Waukesha
Price, W. Howard.....Waukesha, R. 9
Reyer, Walter R.....Templeton, R. 20
Rosenow, Arthur.....Oconomowoc
Rosenow, H. E.....Oconomowoc
Schumacher, John F.....Waukesha
Stuart, Joe H.....Wales
Swanton, John.....Oconomowoc
Swartz, Peter C.....Waukesha
Swoboda, F. G.....Dousman
Tempero, Roy J.....Menomonee Falls
Wagner, A. G.....Waukesha
Williams, Orson P.....Waukesha, R. 8
Williams, H. T.....Waukesha

Waupaca County

Bestul, Martin.....Scandinavia
Harrington, Forest.....Waupaca
Harrington, Myron.....Waupaca
Johnson, Hanford.....Iola
Kendall, Myron.....Iola
Kneip, William.....Iola
Knoke, Hugo.....Weyauwega
Kunkel, Arthur M.....Readfield
Larson, LeRoy.....Manawa
Nace, Franklin.....Iola
Piener, John, Jr.....Iola
Pinkerton, A. J.....Manawa
Pinkerton, Fred.....Waupaca
Rosholt, Jacob A.....Waupaca
Wall, Floyd.....Scandinavia
Wied, Edw.....Weyauwega
.....Waupaca

Waushara County

Bartleson, H. C.....Pine River
Evans, Edgar.....Will Rose
Larson, J. M.....Wautoma
Owens Edwin.....Wild Rose
Peterson, Emar A.....Milladore
Thorstad, Clarence.....Wautoma, R. 6

Winnebago County

Blakely, Albert J.....Neenah
Boss, Sam., Jr.....Oshkosh, R. 7
Boss, Ulrich.....Oshkosh
Bradley, Jacob.....Pickett
Bussey, W. P.....Omro
Cross, A. J.....Allenville
Davies, J. C.....Oshkosh

Ihrig, J. J.....Oshkosh
Marshall, A. C.....Omro
Miller, Henry C.....Allenville
Miller, Homer.....Pickett
Miller, Oren.....Pickett
Olson, Harry.....Larsen
Palfrey, John R.....Omro
Smith, Seymour L.....Oshkosh
Tanner, A. V.....Omro
Wood, Calvin D.....Oshkosh

Wood County

Allen, E. S.....Vesper
Kronholm, Edward.....Grand Rapids

NON-RESIDENTS

Illinois

Beitel, Perry A.....Rochelle, R. 3
Bennett, H. J.....Cherry Valley
Bruning, Jacob,.....Shermerville
Bryson, Donald L.....Elizabeth
Chetlain, Louis A.....Galena
Christensen, Emil.....Woodstock
Christenson, Emil.....Hartland
Cook, Oscar M.....Apple River
Corley, Fay H.....Tower Hill
Gaston, L. E.....Barrington
Hitchcock, H. R.....Pecatonica
Horton, James E.....Waukegan
Hoxsey, E. R.....Seneca
Jones, Ira P.....Hinckley
Kiner, E. C.....Marseilles
Lemberger, Ralph.....Warren
McGeachie, Edw. R.....Winnebago
Phillips, Jesse.....Elizabeth
Reed, Burt J.....Elizabeth
Richardson, Geo. J.....Spring Grove
Sargent, Lester.....Warren
Vullmann, Ernest F.....Edgebrook
Walker, Geo. B.....Elgin

Iowa

Anderson, Theo.....Waterville
Brandt, Elmer H.....Garnavillo
Brooks, Homer H.....Hopkinson
George, Russel.....Scranton
Kaiser, E. D.....Garnavillo
Klaus, C. S.....Colesburg
Thompson, T., Jr.....Wadena
Volker, Ed.....Farmerburg

Indiana

Dewire, M. E.....Hamilton
Fuller, Robt.....Mishawaka
Lindemann, J. H.....Mishawaka

Michigan

Meyer, A. J.....Howell, R. 7

Minnesota

Hillier, H. B.....Brownsdale
Peace, Jas. W.....Duluth, R. 3
Vollrath, Aug.....St. Bonifacious
Wiker, N. H.....Mabel

Missouri

Bliss, Geo. M.....Warrensburg

Montana

Meyer, Sidney.....Kalispell

Nebraska

Semb, Allen.....Schuyler, R. 1
Wrabetz, Frank.....Schuyler, R. 1

New York

Mills, Stanley.....Walden
Northrop, H. R.
.....East Hampton, Long Island

Ohio

Messerschmidt, S. H.....Flat Rock

South Dakota

Porter, W. L.....Madison

Texas

Smith, Ray K.....El Paso

Utah

Carey, James.....Fruitland

Growers of Golden Glow Corn (Wisconsin No. 12).

Adams County

Walker, Ray C.....Plainville

Barron County

Allen, Eugene S.....Cumberland
Bartlett, Ray.....Barron
Howe, John.....Comstock
Matthys, Peter.....Barron
Matthys, Walter.....Barron
Plenty, Robt. J.....Rice Lake
Poulter, Charley.....Cumberland
Poulter, C. J.....Cumberland
Rauchenstein, John.....Rice Lake
Sackett, Clyde.....Cumberland
Svacina, Jacob, Jr.....Rice Lake

Bayfield County

Daly, Richard E.....Washburn
Fleck, L. H.....Benoit
Yderstad, Thoralf.....Mason

Brown County

Anderson, Solomon.....Green Bay
Dillon, Austin.....De Pere, R. 2
Dillon, James.....De Pere, R. 2
Kings, Benj. J.....Reedsville
Mulloy, John B.....Wayside

Buffalo County

Fried, Willie J.....Fountain City
Kaste, Arthur.....Alma

Kennedy, Bernard.....Nelson
Linse, Edward.....Mondovi, R. 2
Pattison, H. C.....Durand, R. 2
Petersen, Hy.....New Holstein
Rosenow, Arthur.....Alma
Walters, Herman.....Alma
Wilk, H. F.....Alma

Burnett County

Olson, A. H.....Grantsburg

Calumet County

Christoph, Theo. F.....Chilton
Veers, Ernst.....New Holstein
Weber, Clifford.....New Holstein

Chippewa County

Bailey, Alfred B.....Jim Falls
Cherrier, Percy.....Chippewa
Christianson, W. O.....
.....Chippewa Falls, R. 6
Cotton, Floyd.....Chippewa Fall
Hanson, Fred.....Chippewa Falls
King, William.....Jim Falls
Schroeder, Herman F.....Jim Falls
Thorpe, Henry.....Stanley

Clark County

Baehr, Harry.....Withee, R. 1
Frane, Victor.....Colby
Korth, Leo R.....Niellsville
Nelson, Carl.....Greenwood
Rued, Axel.....Curtiss
Steimand, Theo.....Colby
Smith, Jesse.....Loyal
Sorenson, John.....Greenwood
Zerbel, Paul.....Humbird

Columbia County

Cannon, E. A.....Pardeeville
Chrisler, Elvin A.....Lodi, R. 1
Chrisler, Harley E.....Lodi
Coulter, Harry.....Randolph
Gilmore, Everett H.....Randolph
Hughes, John W.....Columbus
Jones, Arthur.....Randolph
Richards, Roy E.....Lodi
Richards, W. M.....Lodi
Verbeek, Chas. W.....Lodi, R. 1

Crawford County

Accola, Lawrence.....Steuben

Dane County

Anderson, J. R.....Mt. Horeb, R. 6
Brue, N. H.....De Forest
Chatterton, Ray W.....Basco
Chatterton, W. E.....Basco
Davison, R. W.....Sun Prairie
Derr, Gilbert E.....Columbus R. 3
Elver, E. C.....McFarland
Ford, J. F.....Mazomanie
Gay, John.....Madison
Hofmann, Carlie.....Mendota
Holscher, A. C.....Madison
Keenan, Wm. M., Jr.....McFarland
Kendell, Geo. W.....Sun Prairie
Kolte, O. P.....Stoughton
Lindas, Theo. A.....Marshall
Lukken, Peter.....Mt. Horeb
Luther, Ernest L.....Madison
Lyman, Chas. A.....Sun Prairie
Ryan, Gerald.....Sun Prairie
Sanborn, Eugene H.....Middleton
Silver, C. R.....Belleville
Stamm, G.....Mt. Horeb
Stubley, Floyd.....Black Earth
Thorstad, N. H.....Deerfield
Wernick, Wm. H.....De Forest

Dodge County

Adams, Alvin W.....Lowell
Bradley, Roy.....Randolph
Bohl, Anton.....Beaver Dam
Brown, A. Abbott.....Waterloo
Bussewitz, Ray H.....Reeseville
Grebe, F. P.....Fox Lake
Henke, Coms. A.....Lowell
Howitt, Chas. H.....Randolph
Hoard, Harry.....Waupun
Jones, John G.....Beaver Dam
Jones, O. B., Jr.....Beaver Dam
Jung, J. W.....Randolph
Krueger, H. E.....Beaver Dam
Kuhlman, A. H.....Lowell
Lehmann, Mrs. Eva.....Woodland
Neuberger, Wm. T.....Reeseville
Owens, H. C.....Fox Lake
Randall, S. M.....Waupun
Steiner, W. H.....Brownsville
Yates, Willard N.....Burnett

Door County

Delcorps, Louis.....Sturgeon Bay
Herrbold, J. W.....Sturgeon Bay
Hocks, Walter.....Sturgeon Bay
Larson, Eli.....Sawyer
Madoche, Leo J.....Sawyer
Mueller, Rudolph.....Forestville
Sorenson, Camillo.....Sturgeon Bay

Dunn County

Cramer, Joe.....Menomonie, R. 10
Gerking F. J.....Elk Mound
Hanson, Carl H.....Elk Mound
Knapton, W. E.....Downing
Snell, Earl D.....Downing
Stevens, Ernest.....Eau Galle

Eau Claire County

Gullickson, Horace.....Eau Claire
Hanson, Warren.....Eau Claire
Konz, John, Sr.....Fairchild
Loether, E. J.....Eau Claire
Mayo, John H., Jr.....Eau Claire
McDermid, J. A.....Eau Claire
Thompson, Ingvold.....Elva

Fond du Lac County

Adams, A. E.....Eden
Bonzelet, J. P.....Eden
Briggs, Lynn W.....Peebles
Giebel, Karl.....Fond du Lac
Hills, Lucien.....Waupun
Kitchen, J. H.....Eldorado
Maug, Arthur J.....Ripon
Meekin, H. W.....Fond du Lac
Michels, Henry.....Malone
Root, Alvin.....Fond du Lac
Smith, Elmer J.....Brandon
Smith, Harvey J.....Brandon
West, R. N.....Ripon

Grant County

Andrew, Geo., Jr.....Livingston
Groom, Harvey L.....Cassville
Runde, Aloysius.....Cuba City
Schlaegel, Victor V....Plattville, R. 25
Stienhoff, Walter.....Platteville
Stivarius, G. A.....Fennimore
Zeng, John P.....Lancaster

Iowa County

Aavang, H.....Barneveld
Brunker, Joseph A.....Ridgeway
Doyle, Wm. E.....Cobb
Graber, Laurence F.....Mineral Point
Grimstad, William.....Blue Mounds
Dimler, Otto.....Barneveld
Swenson, Olin.....Hollandale
Thomas, Willie.....Ridgeway
Watrud, H. O.....Blanchardville

Jackson County

Anderson, Ubbe.....North Bend
Bullock, James P.....North Bend
Hecketweiler, O. J.....Alma Center
Jennings, Roy.....Hixton
Patterson, Harvey J.....Melrose
Patterson, John D.....Melrose
Peterson, Carl.....Black River Falls

Jefferson County

Brown, A. Abbott.....Waterloo
Brueckner, H. C.....Ft. Atkinson
Gottschalk, Charlie.....Lake Mills
Graper, A. F.....Helenville
Graper, E. J.....Helenville
Kracht, A. E.....Jefferson
Lean, G. A.....Palmyra
Linton, Gilbert A.....Ft. Atkinson
Machovec, Joseph A.....Mauston
Moore, Henry F.....Mauston
Stacey, John.....Palmyra, R. 1
Whiting, F. H.....Lake Mills

Kewaunee County

Kocmich, Ed.....Kewaunee, R. 2
Koller, Wm.....Kewaunee, R. 2
Prochnow, Frank....Luxemburg, R. 2
Stangel, Richard.....Kewaunee, R. 2
Thibodeau, Elmer F.....Kewaunee, R. 6

La Crosse County

Markle, S. P.....La Crosse
Hass, Reinhold.....La Crosse
Nuttleman, Adolph.....West Salem
Schilling, Harry W.....Onalaska
Van Loon, John.....La Crosse

Lafayette County

Bridgeman, C. R.....Darlington
Buss, Arch.....Mineral Point

Langlade County

Kalouner, Edward.....Antigo, R. 5
Schwartz, John, Jr.....Antigo

Manitowoc County

Arnold, Arthur A.....Kiel
Axley, Walter.....Cleveland
Bauer, Adolph H.....Manitowoc, R. 2
Bender, Fred., Jr.....Cleveland, R. 1
Clusen, Reinhold.....Manitowoc
Eisenman, Ben.....Michicot
Eisenman, Harvey.....Michicot
Geraldson, Mervin.....Manitowoc, R. 4
Gigstad, Benneth.....Valders
Gloe, August L.....Two Rivers
Gunderson, Clifford.....Manitowoc, R. 4
Gustaveson, Chas.....Manitowoc
Hanson, Warner.....Manitowoc
Hetzel, Gilbert.....Cleveland
Hoefner, Herbert.....Manitowoc
Klann, Adolph.....Hayton, R. 1
Klessig, Edwin O.....Cleveland
Knutson, Ed. A.....Manitowoc, R. 4
Reddin, Thomas E.....Cato
Riederer, Blasius.....Cato
Schulte, Peter J.....Cleveland
Straka, Edward E.....Maribel
Strowig, Wm. A.....Cleveland, R. 1
Sullivan, Jas. A.....Grimms
Wehrwein, Walter.....Manitowoc, R. 2
Wigen, Andrew .....Quarry
Wilkowske, Hugo .....Mishicot

Marathon County

Aderhold, Herman .....Athens
Arnold, Phil. J.....Edgar
Brehm, E. A.....Colby
McAdam, C. .....Scofield

Marquette County

Houslet, Neal .....Packwaukee
Johnson, Sam .....Westfield

Milwaukee County

Mahler, Eugene H.....Milwaukee
Margolies, Nathan.....Milwaukee
Mower, H. Poyson.....Wauwatosa
Swan, Earling.....Milwaukee, R. 6
Swan, Robert G.....Milwaukee, R. 6

Monroe County

Ebert, F. E.....Tomah
Errickson, Henry N.....Cashton
Foth, Frank D.....Norwalk
Hansen, Carl F.....Sparta
Hansen, Henry T.....Sparta
Harris, Ruthven E.....Warrens
Kirst, Alfred E.....Tomah
Dee, L. .....Leon
Leverich, E. S.....Sparta
Leverich, J. W.....Sparta
Nathen, Paul K.....Kendall

Oconto County

Doyle, Henry.....Oconto
Hawley, Merton.....Oconto
Magee, Ellis.....Coleman

Oneida County

Schoeneck, Grant, Jr.....Whittlesey

Outogamie County

Bleek, Walter A.....Black Creek
Kavanaugh, John.....Kaukauna, R. 12
Keenan, M. L.....Leeman
Jamison, W. G.....Appleton
Koss, Otto W.....Medina

Letts, E. F.....Appleton
Mills, Roscoe C.....Appleton, R. 2
Ryan, Malachi.....So. Kaukauna
Schmidt, A. W.....Appleton, R. 2
Tubbs, Herbert.....Seymour

Ozaukee County

Bittner, John A.....Saukville
Blank, George A.....Grafton
Clausing, Adolph .....Thiensvlile
Meyer, A. H. .....Grafton

Pierce County

Brown, Wm.....Spring Valley
Carpenter, F. W., Jr.....Spring Valley
Dunbar, Geo. W.....River Falls
Hanson, Henry O.....Spring Valley
Kuehn, Herbert F.....Spring Valley
Martin, Arthur W.....River Falls
Nelson, Fred.....River Falls
Nelson, Nels J.....River Falls
Neystrom, Archie.....Maiden Rock
Nyeggen, Henry.....Spring Valley

Polk County

Carlson, John E.....Luck
Cook, Albert .....Deer Park
Germanson, Herbert .....Luck
Jerdee, Perry S.....Deronca
Legrid, Henry E.....Deer Park
Lindberg, Clinton H..Dresser Jct., R. 1
Loberg, Almer .....Nelsonville
Miller, A. J.....Milltown
Nelson, Wm. .....Milltown
Uhlin, Albin.....Clayton, R. 1
Uhlin, Frank E.....Clayton, R. 1

Portage County

Haus, Enoch.....Junction City
Parsons, Harry E.....Almond
Siegert, A.....Junction City

Price County

Hoffmann, Conrad .....Phillips

Racine County

Adland, P. H.....North Cape
Erbe, George .....Caledonia
Foxwell, Everett.....Union Grove
Gehrand, Arthur A.....Rochester
Jacobson, Arthur .....Burlington
Klofanda, Royal.....Racine, R. 1
Rued, Axel.....Curtiss
Willey, J. Leslie.....Burlington, R. 17

Richland County

Ghastin, Floyd.....Twin Bluffs
Ghastin, Wm. J.....Twin Bluffs
Lord, Karl W.....Richland Center
Post, H. L.....Sextonville
Schmitz, Edw. H.....Lone Rock
Welsh, S. L.....Tavera

Rock County

Caldo, Leslie .....Janesville
Donner, Charles F.....Janesville
Godfrey, Allen.....Milton Junction
Marston, A.....Beloit, R. 30
Smith, L. E.....Beloit, R. 30

St. Croix County

Alberts, Will.....New Richmond
Arnquist, J. F.....New Richmond
Boardman, B. H.....New Richmond
Brunner, Fred F.....Hudson
Brunner, R. W.....Hudson
Carlson, Nels. P.....Hudson, R. 1
Heebrink, Henry .....Baldwin
Kruschke, Geo. .....New Richmond
Peterson, Arthur W.....Roberts
Schwandt, Wm. .....Stanten
Utgaard, Peter W.....Cylon

Sauk County

Borck, Sam.....North Freedom
Clingman, E. S.....Reedsburg
Enge, Eugene .....Prairie du Sac
Gonsolin, Fred.....Reedsburg
Harvey, Caleb B.....Wonewoc
Johnson, Glenn .....Baraboo
Kindschi, Edwin O.....Prairie du Sac
Koenecke, A. E.....Reedsburg
Koenecke, Ewald.....Reedsburg, R. 2
Koenecke, E. H.....Reedsburg
Lachmund, Robert.....Sauk City
Morley, Edwin.....Prairie du Sac
Ochsner, A. C.....Plain
Rodewald, Walter C.....Baraboo
Rusch, Albert .....Reedsburg
Schuette, Herman W.....Reedsburg
Steidtmann, Edwin .....Merrimac
Toole, W. A.....Baraboo

Sawyer County

Uhrenholdt, Jens .....Leonard

Shawano County

Norrborn, C. G.....Eland, R. 1

Sheboygan County

Hoppert, Martin J.....Sheboygan, R. 4
Illian W. L.....Adell
Remeking, Rudolf.....Sheboygan Falls
Wunsch, Hugo E.....Haven

Trempealeau County

Chrisler, Harvey.....Osseo
Lund, George L.....Arcadia
McCauley, Rex .....Osseo
Pederson, Peter .....Eleva
Thompson, A. L.....Blair

Vernon County

Cade, Jos. M.....Viroqua
Henry, Ernest E.....Viroqua
Johnson, Roy M.....De Soto, R. 1
Lake, Clifford .....Viroqua
McClurg, Walter .....Viroqua

Walworth County

Bromley, Fred G.....Whitewater, R. 4
Dow, Everett J.....Whitewater
Kiteley, Leonard W.....Sharon
Krause, Wm.....Whitewater, R. 4
Lean, Ivan F.....Elkhorn, R. 5
Piper, Harry .....Sharon
Smith, Canoll .....Delavan
Sturtevant, Robert H.....Delavan, R. 2
Thacher, Louis E.....Zenda

Washburn County

Fredrick, William.....Lampson

Washington County

Baertlein, V. J.....S. Germantown
Baertlein, Wm. A.....S. Germantown
Connell, Clarence James...Colgate, R. 1
Connell, Wm. A.....Colgate, R. 1
Groth, C. A.....Cedarburg
Klinka, Joseph.....West Bend
Klumb, Oscar .....Rockfield
Kressin, Gustav R.....Cedarburg
Puls, Joseph .....Hartford
Weiss, Glen C.....West Bend
Woldt, Hugo .....Jackson
Ziemer, Joseph .....Jackson

Waukesha County

Bartlett, Geo. W.....Menomonee Falls
Boldt, Henry C.....Calhoun
Cooper, Joe .....Pewaukee
Fuller, Albert A.....North Lake
Fuller, Horace.....North Lake
Fuller, Roland.....North Lake
Omann, Holger.....North Lake
Price, W. Howard.....Waukesha
Reyer, Walter R.....Templeton, R. 20
Schley, E. G.....Waukesha
Swoboda, F. G.....Dousman

Waupaca County

Howland, Howard H.....Waupaca
Johnson, Hanford .....Fremont

Waushara County

Thorstad, Clarence .....Wautoma

Winnebago County

Boss, S. J.....Oshkosh, R. 7

Wood County

Howard, A. E.....Marshfield
Kronholm, Edward.....Grand Rapids
Peterson, Anton W.....Milladore
Peterson, Emer .....Milladore
Schroeder, Herman .....Marshfield

NON-RESIDENTS

Illinois

Beitel, P. A.....Rochelle
Christensen, Emil .....Chicago
822 N. 53rd Ave.
Hendry, M. James.....Chicago
24.8 Hamilton Court
Jones, Ira P.....Hinckley
MacBride, Harold L.....Chicago
5700 Drexel Ave.
Pierce, Ross .....Stockton
Smith, Russel .....Crystal Lake
Webbe, W. E.....Barrington

Iowa

Hawkins, A. B.....Farley

Maine

Fernald, Paul E.....West Oldtown

Michigan

Eskil, Odin .....Iron Mountain
Meyer, A. J.....Howell, R. 7

Minnesota

Gunderson, Gehard .....Duluth
117 W. First St.

New York

Coleman, Chas. H.....Perry Center
Schermerhorn, G. B.....Keeseville

North Dakota

Smith, Gerry W.....Battineau

Ohio

Barker, W. F.....South New Lynne

Growers of Silver King Corn (Wisconsin No. 7).

Adams County

Elliott, D. P.....Westfield
Jarosh, Ben J.....Westfield
Lee, Royal D.....Arkdale
Markham, F. C.....Independence
Mickelson, W. J.....Arkdale
Rodger, Ray .....Endeavor
Walker, Ray C.....Plainville

Barron County

Bartlett, Ray .....Barron
Christlaw, A. M.....Rice Lake
Matthys, Matt .....Barron

Bayfield County

Kinstler, Clarence L.....Washburn

Brown County

Clark, Jas. E.....Greenleaf
Nies, Peter .....Greenleaf, R. 3

Buffalo County

Arms, Edward.....Fountain City
Bilderbach, W. T.....Mondovi
Engel, Geo. H.....Fountain City
Joos, Frank B.....Fountain City
Kennedy, Larry J.....Nelson
Suhr, A. A.....Cochrane
Whelan, John .....Mondovi

Calumet County

Kircher, H. W.....Chilton, R. 3
Koehler, John P.....Hayton

Peik, Arthur .....Chilton
Peik, Edmund .....Chilton
Peterson, Hy. N.....New Holstein
Sevenich, Tony .....Hilbert

Chippewa County

Pekken, Oscar .....Bloomer
Martiny, L. P.....Chippewa Falls

Clark County

Beach, Glenn H.....Loyal

Columbia County

Anderson, Edwin .....Morrisonville
Cannon, F. A.....Pardeeville
Capener, Howard .....Portage
Chipman, W. R.....Morrisonville
Cook, S. C.....Portage
Dalton, Ernest E.....Pardeeville
Dalton, Roy E.....Pardeeville
Ellickson, A. C.....Arlington
Emery, Geo. Q.....Poynette
Gloeckler, Theo. .....Portage
Grove, Christian .....Columbus
Grove, Albert .....Columbus
Grover, Albert.....Columbus, R. 6
Jones, John R.....Columbus
Keebaugh, Oliver .....Poynette
Lloyd, Evan B.....Cambria
Sharpee, Alfred .....Rio
Sharpee, P. A.....Rio
Sharpee, Carl .....Columbus
Sharpee, Endre A.....Rio, R. 1
Sharpee, J. A.....Rio, R. 1
Steuber, L. J.....Lodi
Stewart, Geo. L.....Lodi
Young, Rudolph.....Beaver Dam

Crawford County

Accola, Lawrence .....Steuben
Bannen, R. E.....Boscobel
Bohonek, John F.....Prairie du Chien
Hjelle, Ole K.....Soldiers Grove
Johnson, J. E.....Ferryville
Stevenson, Carl.....Soldiers Grove
Zintz, Willis.....Gays Mills

Dane County

Angvick, Lars.....Cottage Grove
Anthony, David C.....Oregon
Aslakson, Alfred.....Mt. Horeb, R. 4
Baker, O. E.....Madison
Bendickson, I. E.....Cambridge
Bergum, A.....De Forest
Bewick, Wm. W.....Madison
Bewick, W. M.....Madison
Birkinbine, Frank P.....Sun Prairie
Bollig, F. A.....Black Earth
Brigham, Chas. I.....Blue Mounds
Brue, N. H.....De Forest
Chamberlain, Geo. C.....Windsor
Chase, J. P.....Sun Prairie
Chatteron, Ray W.....Basco
Christianson, Andrew .....Deerfield
Christianson, Irvin .....Deerfield
Clayton, A. W.....So. Madison
Coldwell, John .....Mazomanie
Colloday, W. E.....Stoughton
Damler, Walter.....Sun Prairie
Davidson, Wm. L.....Verona
Davison, R. W.....Sun Prairie
Donahue, M. J.....Madison, R. F. D.
Dreger, Emil .....Madison, R. 6
Elvehjem, O. J.....McFarland
Elver, E. C.....McFarland
Ford, J. F.....Mazomanie
Gay, John .....Madison
Gillies, J. H.....Stoughton
Gillette, R. A.....Verona
Graves, E. H.....Madison
Heineck, W. E.....Madison
Hill, Otto C.....Mt. Horeb
Hogan, Dominic .....Waunakee
Holmen, O. .....Belleville
Holscher, A. C.....Cottage Grove
Holzhuter, Walter .....Marshall
Hopkins, J. W.....Morrisonville
Howe, T. R.....Sun Prairie
Jones, E. F.....Sun Prairie
Kalscheur, Lawrence .....Klevenville
Kaltenberg, Anthony .....Waunakee
Keenan, W. M., Jr.....McFarland
Kendall, Geo. W.....Sun Prairie
Kittleson, K.....Mt. Horeb
Kittleson, Wm.....Mt. Horeb
Koltes, Leo J.....Dane
Koltes, Jos. F.....Dane
Lee, N. A.....Deerfield
Lee, Oliver .....Klevenville
Lee, Severt A.....Deerfield
Lee, Peter A. G.....Deerfield
Lunde, Gunder .....Stoughton
Lyman, C. A.....Sun Prairie
Mandt, Lawrence .....Sun Prairie
Mickelson, Thos. .....Deerfield
Mielke, J. O.....Basco
Mielke, F. L.....Windsor
Mikkelson, Carl .....Deerfield
Mitchell, Geo.....Cottage Grove
Mitchell, J. T.....Cottage Grove
Moore, H. G.....McFarland
Morgan, H. H.....Madison
Morris, Geo. C.....Madison
Nordlie, Alfred .....Deerfield
Nordlie, C. K.....Rockdale
Notseler, Otto .....Deerfield
Ohman, Alfred .....Deerfield
Ohman, S. S.....Deerfield
Outhouse, R. J.....Madison, R. D. 5
Patterson, Harley.....Cottage Grove
Pope, Roy W.....Sun Prairie
Radermacher, John .....Middleton
Raftery, Agnes, ...Windsor
Reindahl, A. K.....Madison
Rhiner, Albert .....Riley
Royston, Thos. .....Mazomanie
Ruhrmann, B. J.....Cross Plains
Ryan, Gerald.....Sun Prairie
Schlotthauer, G. P.....Madison
Schroeder, Robert .....Morrisonville
Sharpee, P. A.....Morrisonville
Showers, Milton W.....Mazomanie
Simonsin, S. K.....Deerfield
Simpson, L. L.....Edgerton
Skare, Albert .....McFarland
Smithback, Marvin .....Cambridge
Stensly, Anton.....Cottage Grove
Stensly, Ed. P.....Cottage Grove
Swalem, P. O.....De Forest
Thielke, Emil.....Madison, R. 6
Thorstad, Harlon .....Deerfield
Thorstad, N. H.....Deerfield
Toepfer, Otto.....Madison, R. 6
White, F. G.....Oregon
Willmarth, E. E.....Sun Prairie
Woelffer, Herbert .....Waterloo
Zabel, Edward.....Deerfield, R. 1

Dodge County

Adams, Lester B.....Lowell
Baird, Bert.....Fox Lake
Barstow, Jas. E.....Randolph, R. 1
Bohl, Anton, Jr.....Beaver Dam, R. 1
Bohl, Jos. N.....Beaver Dam
Bremer, Felix .....Hustisford
Brooks, Ed. J.....Watertown
Bussewitz, Raymond .....Reeseville
Bussewitz, W. E.....Juneau
Goetsch, Albert A.....Juneau
Grebe, Fred P.....Fox Lake
Henke, Louis .....Lowell
Indermuehle, Felix .....Beaver Dam
Joice, George .....Waterloo
Johnston, Oney .....Watertown
Jones, John G.....Beaver Dam, R. 4
Jones, Owen R., Jr.....Beaver Dam
Jones, Seneca T.....Watertown, R. 1
Klatt, Ernest.....Beaver Dam
Krueger, H. E.....Beaver Dam
Kuhlman, A. H.....Lowell
Lehmann, Theo. .....Watertown
Lindemer, Geo. H.....Juneau, R. 2
Mahoney, David .....Juneau
Miller, A. H.....Waupun, R. 24
Neuberger, Wm. T.....Reeseville
Owens, H. C.....Fox Lake
Randall, S. M.....Waupun
Roberts, Wm. E.....Randolph, R. 3
Schiller, Claude E.....Beaver Dam
Schumann, Hugo .....Beaver Dam
Sette, O. E.....Juneau
Steele, John, Jr.....Oconomwoc
Ulrich, Erwin C.....Horicon
Voigt, Alvin .....Oconomwoc

Door County

Bowman, Wallace.....Detroit Harbor
Hocks, Walter.....Sturgeon Bay

Dunn County

Meacham, C. .....Downing

Eau Claire County

Allen, Chas. L.....Eau Claire
Carlson, Axel T.....Augusta, R. 4
Faast, Ben F.....Eau Claire
Konz, John, Sr.....Fairchild
Mayo, John, Jr.....Eau Claire
Oliver, C. S.....Eau Claire
Wright, W. C.....Eau Claire, R. 4
Wyman, A. E.....Eau Claire

Fond du Lac County

Adams, Richard F.....Campbellsport
Adkins, M. V.....Ripon
Boyd, R. A.....Waupun, R. 24
Briggs, E. T.....Fond du Lac
Briggs, L. W.....Peebles
Briggs, J. W.....Peebles
Donovan, Frank.....Van Dyne
Fisher, W. J.....Fond du Lac, R. 7
Halterman, R. K....Fond du Lac, R. 5
Hendricks, J. H.....Campbellsport
Hintz, Geo. E.....Oakfield, R. 26
Hintz, Wm.....Oakfield, R. 26
Hinz, A. F.....Ripon
Holterman, D. W.....Waupun, R. 25
Hunter, Hobart R...Fond du Lac, R. 5
Kastein, Herman .....Waupun
Kitchen, J. H.....Eldorado
Koenigs, Phillip.....Fond du Lac
Lawson, W. A.....Rosendale
Leith, Roy.....Van Dyne
Maug, Arthur J.....Ripon
McCormick, Fred W.....Fond du Lac
Meekin, H. W.....Fond du Lac
Meier, Edward F.....Eden, R. 36
Michels, Henry .....Malone
Oltery, Henry.....Fond du Lac
Peebles, E. C.....Peebles
Peebles, C. E.....Peebles
Rather, Armand.....Peebles, R. 37
Rather, W. A.....Peebles, R. 37
Rieman, Elmer .....Ripon
Root, Alvin W.....Fond du Lac
Root, Frank W.....Fond du Lac
Schultz, Otto .....Eden
Smith, Samuel A.....Oakfield
Stauchfield, S. C.....Fond du Lac
Stroup, Fred G.....Fond du Lac
West, R. N.....Ripon
Whittaker, Horace E.....Fond du Lac

Grant County

Barron, R. E.....Platteville
Bennett, Ora F.....Glen Haven
Booth, Guy A.....Cuba City
Bryant, Clinton A.....Hazel Green
Carmody, Daniel.....Mt. Ida
Carmody, P. J.....Mt. Ida
Childs, S. S.....Boscobel
Dieter, Bert .....Livingston
Dieter, Wm. A.....Montfort
Di Vall, W. F.....Montfort
Draves, Henry F., Jr.....Montfort
Foley, Jas. A.....Muscoda
Graham, P. S.....Fennimore
Kaiser, Wm .....Louisburg
Matthews, Ralph .....Livingston.
Millman, D. R.....Platteville
Orth, A. F.....Muscoda
Ralph, Will.....Cuba City
Rodda, Matt.....Hazel Green
Runde, August .....Sinsinawa
Runde, Martin C.....Cuba City
Searles, Wm. L.....Boscobel
Sekhart, J. G.....Muscoda
Shemak, J. F.....Muscoda
Simmons, Will .....Cuba, R. 1
Spink, L. O.....Platteville
Stivarius, Geo. A.....Fennimore
Taylor, Orlo L.....Glen Haven
Trewartha, Edw. J.....Hazel Green
Wayne, Joseph.....Boscobel
Wieland, Charles .....Lancaster
Wilkins, Lee .....Platteville
Wiseman, Paul .....Bridgeport
Zenz, Arthur .....Lancaster

Green County

Austin, Elmer E.....Brodhead
Bechtolt, A. B.....Browntown
Bechtolt, J. D.....Browntown
Brown, Wm. A.....Monroe, R. 2
Collintine, Arthur.....Monroe
Dettwiler, John .....Monroe
Douglas, Robert .....Juda
Gapen, C. E.....Monroe
Iverson, C. M.....Browntown
Klassy, Henry .....Monroe
Kundert, Wm. .....Monroe
Marty, Mathias .....Monticello
Mau, H. G.....Brodhead
Murdock, C. R.....Brodhead
Murdock, John C.....Brodhead

Olson, Wm.....Browntown, R. 2
Preston, W. N.....Juda
Roderick, Lee M.....Juda
Smiley, Jas. B.....Albany
Stauffacher, A. J.....Monroe
Strommen, A. .....Blanchardville
Thompson, G. G.....Blanchardville
Thorp, G. E.....Monroe
Thorp, Eugene B.....Monroe
Tochtermann, C., Jr.....Monroe
Tschudy, B. O.....Monroe, R. 5
Waelti, John.....Monroe, R. 4
Ward, Harold .....Brodhead
Wood, John .....Albany

Green Lake County

Block, Albert F.....Markesan
Davies, Elias .....Markesan
Page, G. F.....Berlin
Vine, Callice H.....Marquette

Iowa County

Aavang, Henry O.....Barneveld
Berryman, Chas. H.....Dodgeville
Buss, Will G.....Mineral Point, R.
Coldwell, John .....Mazomanie
Davies, Llewellyn.....Mineral Point
Dolphin, Clarence .....Cobb
Farwell, R. R.....Ridgeway
Fitzsimmons, Ira A.....Mineral Point
Gordon, A. L.....Mineral Point
Gordon, C. D.....Mineral Point
Gordon, J. Roy.....Mineral Point
Graber, Edward.....Mineral Point
Jones, Chas. Lloyd.....Hillside
Jones, Orren Lloyd.....Hillside
Kitchen, Jos. H.....Edmund
Ley, Nicholas.....Dodgeville, R. 4
Paulson, H. E.....Hollandale
Smith, C. B.....Edmund
Thomas, Roy E.....Dodgeville

Jackson County

Curran, W. F.....Taylor
Dietrich, John.....Black River Falls
Engleman, John .....Hixton
Haug, Henry .....Melrose
Horswill, W. K.....Black River Falls
Lambert, E. F.....Taylor
Sims, Orley F.....Melrose
Smith, Elden J.....Taylor
Somerville, John.....Black River Falls
Thompson, Adolph...Black River Falls

Jefferson County

Anthes, Henry .....Jefferson
Becker, Harry J.....Ft. Atkinson
Bell, Wm. E.....Oconomowoc, R. 27
Brueckner, Justus.....Ft. Atkinson
Church, A. P.....Whitewater
Emmert, H. L.....Johnson Creek
Emmert, V. J.....Johnson Creek
Guttenberg, Frank, Jr.....Jefferson
Hans, Joe .....Jefferson
Joice, Geo. F.....Waterloo
Klement, Otto C.....Ft. Atkinson
Lehmann, Theo.....Watertown, R. 1
Leonard, Wm. R.....Ft. Atkinson
Malin, H. A.....Ft. Atkinson
McIntyre Bros.....Ft. Atkinson
Niere, Stuart P.....Watertown
Nouman, Frank .....Helenville
Parsons, Wm. A.....Ft. Atkinson
Popp, Arthur.....Jefferson, R. 2
Schultz, R.....Lake Mills
Trachte, Cornelius .....Watertown
Ward, Charles E.....Ft. Atkinson
Ward, Harold L.....Ft. Atkinson
Wollin Albert .....Johnson Creek

Juneau County

Curtis, J. C.....New Lisbon
Hall, W. H.....Wonewoc
Hansen, Harry.....Camp Douglas
Macomber, Stephen D.....New Lisbon
Mead, R. E.....New Lisbon
Moore, Henry G.....Mauston
Remington, Merl .....Mauston
Ritland, Carl .....Elroy
Schulz, A. C.....Mauston
Solem, Edward .....Wonewoc
Wagner, J. M.....Union Center

Kenosha County

Bradley, J. Frank.....Somers
Cole, Mrs. Allen.....Kenosha
Cropley, W. R.....Kenosha, R. 34
Dexter, Walter S.....Kenosha, R. 34
Myrick, Mead O.....Bristol
Northway, M. J.....Kenosha
Orvis, L. C.....Salem
Paddock, Aena .....Salem
Paddock, Alvin .....Salem
Price, Robert .....Bristol
Sheen, C. J.....Salem
Sheen, W. J.....Trevor
Swenson, Earl .....Kenosha
Thiers, L. M.....Kenosha
Thom, J. A.....Bristol

Kewaunee County

Collin, D. W.....Luxemburg
Defnet, J. J.....Casco, R. 2
Hoffman, Jacob .....Algoma
Jerabek, Frank.....Kewaunee, R. 7
Kocmich, Ed. .....Kewaunee
Krofta, R.....Kewaunee, R. 2

La Crosse County

Bonsack, F. M.....La Crosse
Bonsack, Theo.....West Salem
Eggler, Victor H.....La Crosse, R. 1
Griswold, H. W.....West Salem
Harr, Ernest B.....Bangor
Herold, Rudolph .....Stoddard
Jewett, Harry .....Bangor
Jones, E. E.....Rockland
Kammlade, Stephen G.....Bangor
Lawrence, F. W.....Bangor
Mueller, Walter E.....La Crosse
Mulder, B. W.....Midway
Nelson, Osan .....La Crosse
Nuttleman, Adolph.....West Salem
Nuttleman, Alfred L.....West Salem
Ristow, Harry .....Onalaska
Sandman, W. D.....Holmen
Van Loon, John.....La Crosse

Lafayette County

Boyle, William .....Calamine
Bridgman, C. R.....Darlington
Bryant, Clinton A.....Hazel Green
Ingwell, Albert..... Blanchardville
Jorenby, Carl .....Blanchardville

Rood Bros.....South Wayne
Ruskell, L. E.....Belmont
Usher, J. M.....South Wayne
Vinger, Milo J.....Argyle

Manitowoc County

Behm, Walter .....Manitowoc
Berg, Anton .....Valders
Berge, Oscar .....Valders
Berge, Otis I.....Valders
Garey, James .....Grimms
Geraldson, M.....Manitowoc, R. 4
Heidemann, O. C.....Kiel, R. 2
Kielsmeier, R. C.....Timothy
Kielsmeier, H. C.....Cleveland, R. 3
Klann, Adolph.....Hayton, R. 1
Klessig, Otto .....Cleveland
Lutze, Geo.....Cleveland
Paulson, J. E.....Manitowoc, R. 4
Pederson, Cornelius .....Cato
Pritzl, John .....Cato
Roethel, Herman .....Kiel
Tyler, James .....Valders
Milkowske, Hugo .....Mishicot

Marathon County

Aschbrenner, H. H.....Stratford

Marinette County

Gould, Guy.....Peshtigo
Gould, Merrill .....Peshtigo
Schneider, G. P.....Walsh

Marquette County

Houslet, Neal .....Packwaukee
Judd, Jesse L.....Endeavor
McDowell, D. P.....Packwaukee
McMillen, C. A.....Endeavor, R. 1
Parrott, Alfred .....Endeavor

Milwaukee County

Baden, Rober J.....Milwaukee
Basse, Wm. H.....West Allis, R. 5
Butler, Ed.....North Milwaukee, R. 11
Diderrick, N. A....No. Milwaukee, R. 10
Fuller, S. L.....Milwaukee, 126 26th St.
Gridley, Ben .....Wauwatosa
Guenther, Nelson W.....So. Milwaukee
Jelinek, Benj. .....Milwaukee
935 Feutonia Ave.
Kroeger, B. C.....Milwaukee
403 1st Ave.
Kurtze, Otto C.....West Allis, R. 15
Mahr, Henry .....Caledonia
Meyer, A. J.....Oakwood, R. 18
Mower, Arba .....Wauwatosa
Muller, Geo. C.....Milwaukee
232 Grove St.
Pierner, Fred.....North Milwaukee
Schlapman, Fred W.....No. Milwaukee
Swan, Earling..Milwaukee, Sta. B, R. 6
Tifft, J Ringland.....Wauwatosa
Unger Edw.....No. Milwaukee, R. 9
Unger, E. F., Jr....No. Milwaukee, R. 9

Monroe County

Andrew, J. S.....Wilton
Babcock, H. E.....Sparta
Brokopp, Ernest.....Kendall, R. 4
Boeder, Otto .....Milton
Ebert, Edmund D.....Tomah
Ebert, Francis E.....Tomah
Foth, F. D.....Norwalk
Freeman, G. A.....Sparta
Fox, C. L.....Leon
Gamerdinger, John.....Kendall
Grassman, Irwin.....Kendall
Hanchett, W. H.....Sparta
Hansen, Carl F.....Sparta, R. 3
Hitchcock, C. E.....Sparta
Hoard, L. R.....Cataract
Howell, Horace P.....Sparta
Kirst, Ernest J.....Tomah
Lee, L.....Leon
Leverich, J. W.....Sparta
Miller, Louis A.....Sparta
Mistele, W.....Kendell
Mlsna, Thos.....Cashton
Moseley, A. G.....Cataract
Nathen, Paul R.....Kendell
Peterson, John H.....Cashton
Pratt, Vernon.....Cataract
Pratt, Ross.....Cataract
Steinbach, Otto.....Kendell, R. 2
Whitehead, H. W.....Leon

Outagamie County

Dietz, Ed.....Greenville
Hanson, H. Edward.....Appleton
Jamison, Robert.....Appleton
Jochman, Peter.....Greenville, R. 16
Letts, Edward F.....Appleton, R. 4
Penn, Jos., Jr.....South Kaukauna
Ryan, Malachi.....So. Kaukauna
Ryan, Wm.....So. Kaukauna
Schmit, A. W.....Appleton
Schmit, Geo.....Greenville, R. 16
Schmit, John A.....Hortonville
Schmit, Wm. F.....Appleton
Taege, John.....Appleton, R. 4
Wussow, C. A.....Seymour

Ozaukee County

Ahlers, Walter.....Grafton
Bichler, Nic J.....Belgium
Groth, Hugo.....Cedarburg
McCarthy, Geo.....Fredonia
Wulff, Fred.....Grafton

Pepin County

Hicks, Earl L.....Pepin

Pierce County

Aastrum, Chas. J....Spring Valley, R. 3
Bailey, H. E.....River Falls
Jacobson, Chas.....Spring Valley
Nelson, Emil.....River Falls
Scheid, Byron J.....Bay City
Smith, Fred.....River Falls, R. 6

Polk County

Christenson, Herman.....Milltown
Cook, Winfred.....Deer Park, R. D. 1
Hedlund, Adolph.....Clayton
Hecker, Paul.....Osceola
Holliday, Edw.....New Richmond
Lee, Oliver.....Amery, R. D. 2
Peterson, Eni.....Amery, R. 4

Portage County

Arnott, Grace M.....Stevens Point
Biekke, Anton B.....Rosholt

Boston, W. J.....Stevens Point
Gullickson, Gustave.....Nelsonville
Gullickson, Thomas.....Nelsonville
Hicks, S. E.....Almond
Katerndahl, Carl.....Stevens Point
Shelburne, Arthur H.....Bancroft
Wagner, Raymond G.....
.....Stevens Point, R. 18
Williamson, Boyd.....Amherst Junction
Wrolstad, Alfred M.....Amherst Jct.

Price County

Frank, Dismar.....Phillips
Hoffmann, Conrad.....Phillips

Racine County

Chambers, O. Q.....Union Grove
Cook, J. C.....Burlington
Gehrand, Arthur A.....Rochester
Holloway, Ed. M.....Union Grove, R. 8
Jacobson, Clarence..Waterford, R. D. 25
Karcher, Gilbert.....Burlington
Klofanda, Reuben.....Racine, R. 1
Nau, Ray H.....Franksville
Odell, W. G.....Lake Beulah
Renak, Edw.....Racine, R. 2
Robers, Wm. J.....Burlington
Skewes, Edwin.....Union Grove
Sorenson, Hilbert.....Franksville
Spartz, N. A.....Union Grove
Wilson, Wm. C.....Burlington

Richland County

Annear, Rolland.....Richland Center
Durnford, G. A.....Rockbridge
Ellsworth, Raymond.....Tavera
Ghastin, Wm. J.....Twin Bluffs
Ghastin, Floyd.....Twin Bluffs
James, Geo. A.....Richland Center
Janecek, Cyril.....Bloom City
Keys, Glenn C.....Richland Center
Nourse, Glen.....Sextonville
Post, H. L.....Sextonville
Schmitz, Hubert.....Lone Rock
Thorpe, J. R.....Tavern

Rock County

Austin, Alpheus.....Janesville
Austin, A. G.....Janesville, R. 6
Austin, A. L.....Evansville
Austin, W. B.....Janesville
Bingham, E. L.....Milton
Bingham, H. L.....Milton
Caig, Ernest M.....Milton Jct.
Caldo, Leslie.....Janesville
Chase, Albert L.....Milton
Coit, Henry.....Evansville
Cooper, M. W.....Edgerton
Crandall, W. T.....Milton
Devine, C. B.....Evansville
Dougan, W. J.....Beloit
Ellis, E. J.....Janesville
Emery, Sydney.....Edgerton
Godfrey, Burt K.....Janesville, R. 1
Greene, J. I.....Clinton
Hemingway, Geo. L.....Hanover
Hoague, Chas. C.....Janesville, R. 7
Howe, Louis H.....Brodhead
Lathers, Chas. F.....Beloit
Latta, F. L.....Clinton Jct.
Marston, Albert.....Beloit, R. 30
Marston, Roy C.....Beloit
Moseley, H. B.....Beloit
Peacock, Ray Jas.....Lima (?)
Peik, Edmund.....Edgerton
Pierce, Henry.....Milton Jct.
Seeger, Carl.....Beloit
Shuman, Chas. F.....Koshkonong
Smith, L. E.....Beloit. R. 30
Snyder, Clyde L.....Footville
Snyder, R. B.....Clinton

St. Croix County

Batten, Sidney.....Hudson
Bennett, Wm. L.....New Richmond
Boardman, F. H.....New Richmond
Brunner, R. W.....Hudson
Hecker, Paul.....New Richmond
Inholt, B. A.....Houlton
Jerdee, Alfred O.....Deer Park
Kruschke, Geo. H.....New Richmond
Kruschke, Alvin.....New Richmond

Sauk County

Accola, John.....Prairie du Sac
Clavadatcher, T.....Sauk City
Capener, Walter A.....Baraboo
Frederickson, Fred.....Spring Green
Gade, Adolph.....Reedsburg
Gallagher, J. F.....Reedsburg
Gasser, Benj.....Plain
Gasser, Geo. W.....Spring Green
Gasser, Roy.....Prairie du Sac
Getschman, Willie.....No. Freedom
Grub, C. H.....Baraboo
Hascheider, H. G.....Plain
Harvey, C. B.....Wonewoc
Hatz, Jacob.....Prairie du Sac
Herwig, Theo.....Delton
Hood, D. L.....Spring Green
Houghtan, F. T.....Reedsburg
Koenecke, Edw. H.....Reedsburg, R. 5
Lachmund, Robert.....Sauk City
Luetscher, Irvin.....Plain
Marshall, W. S.....Delton
Palmer, H. P.....Baraboo
Pearson, Clarence.....La Valle, R. 4
Raltzman, A. L.....Reedsburg
Rich Bros.....Baraboo
Riek, Anthoney.....Plain
Robson, Melvin.....Spring Green
Rodewald, W. C.....Baraboo
Rusch, E. W.....Reedsburg
Shaefer, Ervin S.....Black Hawk
Schuette, H. W.....Reedsburg, R. 3
Sherwood, Chas. B.....Spring Green
Seidtmann, Edwin.....Merrimac
Sprecher, Elias B.....Plain
Stone, Riley.....Reedsburg
Weirich, Martin J.....Baraboo
Wichern, L. M.....Reedsburg
Wischoff, Edwin.....Baraboo

Shawano County

Berg, Carl.....Tigerton
Jahnke, H. F.....Regina

Sheboygan County

Athorp, Willie.....Sheboygan, R. D. 1
Blonien, Peter.....Elkhart
Frauenheim, O. R.....Random Lake
Garside, Harry R.....Sheboygan
Gorsege, M. E.....Haven
Herdrich, S. F.....Aden
Leonard, M. J.....Plymouth
Ogle, James L.....Waldo

Oosterhuis, Alvin C....Sheboygan Falls
Pafke, Arthur J.....Plymouth
Schaefer, Henry G.....Plymouth
Swart, Wett.....Plymouth
Wagner, Arthur L.....Haven
Wunsch, A. J.....Haven

Taylor County

McMillan, H. N.....Medford

Trempealeau County

Graul, Edward J.....Independence
Hegge, Julius.....Galesville
Hermann, F. F.....Osseo
Thompson, Ben.....Blair

Vernon County

Aberg, Jacob.....De Soto
Bean, R. P.....De Soto
Burris, W. E.....Kendall, R. 5
Cass, Leonard E.....Viroqua
Dach, C. B.....Viroqua
Everson, Fred.....De Soto, R. 2
Grimsrud, J. A.....Coon Valley
Haverley, H. L.....Victory
Herold, Rudolph.....Stoddard
Neprud, Selmer.....Westby
Salem, Edw.....Wonewoc
Staley, John N.....Hillsboro
Staley, Leo.....Hillsboro

Walworth County

Anderson, Alvin M.....Whitewater
Coates, Clinton J.....Elkhorn
Cusack, M. E.....Darien
Downey, U. J.....Whitewater
Dunbar, Harry D.....Elkhorn
Forester, M. F.....Whitewater
Fuller, Leroy.....Lake Geneva
Gile, Fred.....Sharon
Harris, Ben F.....Delavan
Harris, Jesse S.....Delavan
Ingalls, Howard.....Walworth
Ledger, David.....Lake Geneva
Mack, Warren.....Whitewater
Meurer, Paul.....Genoa Jct.
Mitchell, Edward H.....Delavan
Nichols, Vernon.....Walworth
Palmer, Earl.....Lake Geneva
Peterson, E. C.....Whitewater
Peterson, Ezrah.....Sharon
Peterson, Peter.....Walworth
Petrie, Merton.....Elkhorn
Piper, Harry.....Sharon
Ranney, P. C.....Elkhorn
Robinson, A. S.....Lake Geneva
Thacher, Ed. T.....Zenda
Thompson, A. N.....Delavan
Utter, Delwin.....Lake Beulah
Warmington, Prentice.....Honey Creek

Washington County

Backhaus, Franklin G.....Kewaskum
Bast, Paul J.....Rockfield
Berg, Jacob.....So. Germantown
Braun, John.....So. Germantown
Dhein, Henry.....Rockfield
Flynn, John W.....Hartford, R. D. 5
Gerner, E. W.....Barton
Hayes, Thomas, Jr.....Richfield
Juergens, Henry.....Hartford
Klinka, John S.....West Bend
Klumb, Albert.....Rockfield
Klumb, Hugo G.....Kewaskum
Klumb, Arthur.....Rockfield
Puls, John.....Hartford
Schoedel, Arthur.....Barton
Schottler, Conrad J....So. Germantown
Schultz, Nelson F.....West Bend, R. 3
Stuesser, Eugene.....Richfield
Ziemer, Paul.....Jackson

Waukesha County

Allen, Arthur J.....Wales, R. 31
Baird, J. W.....Waukesha
Baird, R. L.....Waukesha
Baird, W. L.....Waukesha, R. F. D. 2
Bartlett, Geo. W.....Menomonee Falls
Blackwell, Leslie.....Waukesha
Boller, J. F.....Nashotah
Burton, Roy.....Eagle, R. 35
Butter, G. C.....Templeton, R. D. 20
Christensen, John L.....Hartland
Daebel, F. W., Jr.....Waukesha
Dance, George.....Brookfield
Dibble, Roy A.....Menomonee Falls
Dopp, Paul B.....Oconomowoc
Dustrude, Geo. O.....Oconomowoc
Evans, Wm. H.....Wales, R. 1
Fuller, Horace.....North Lake
Graser, Adam H.....Waukesha
Greengo, A. L.....Menomonee Falls
Gunderson, Forrest.....Oconomowoc
Hall, Frank.....Hartland, R. 21
Hart, C. B.....Brookfield
Hart, Wm. C.....Brookfield, R. 12
Heling, Paul.....Menomonee Falls
Hicken, Alfred B.....Pewaukee
Hill, Chas. T.....Brookfield
Hill, J. Thos.....Brookfield
Holt, Lester.....Oconomowoc
Jeffery, H. B.....Menomonee Falls
Kaul, E. H.....Waukesha, R. 7
Kuhtz, Harvey H.....Waukesha
Longley, H. N.....Dousman
Mitchell, Dean.....Brookfield
Mitwede, Henry.....Waukesha
Montague, C. R.....No. Prairie
Morris, Leslie D.....Waukesha, R. 8
Peebles, John.....Oconomowoc
Polsfuss, Edw.....Waukesha
Rosenow Bros.....Oconomowoc
Rowlands, R. W.....Waukesha
Ryan, Geo.....Brookfield, R. 12
Schafer, Chas. H.....Waukesha, R. 7
Schley, E. G.....Waukesha
Schroeder, F. C.....Hartland
Seitz, Adam.....Waukesha
Shultis, A. D.....Waukesha
Sleep, S. S.....Waukesha, R. 21
Smith, Geo.....Nashotah
Spaulding, C. F.....Oconomowoc
Stewart, J. H.....Wales
Stewart, E. T.....Wales
Swan, L. W.....Mukwonago
Swoboda, F. G.....Dousman
Tempero, Roy J.....Menomonee Falls
Van Buren, E. W.....Waukesha, R. 2
Weir, R. J.....Mukwonago
Wetzel, Henry.....Brookfield
Wollpel, Fred.....Waukesha, R. F. D. 6

Waupaca County

Ashuun, C. S.....Waupaca, R. 2
Bestul, Otto O.....Scandinavia
Bigford, W. W.....Manawa
Gorges, H. F.....New London

Harrington, Myron.....Waupaca
Heinrich, Otto W.....New London
Klemm, Louis J.....Welcome
Kneip, William.....Weyauwega
Larson, LeRoy.....Iola
Olson, Nels E.....Iola
Pirner, Fred.....Sugar Bush
Rosholt, Jacob A.....Scandinavia, R. 1
Suhs, John, Jr.....Waupaca, R. F. D. 7
Spencer, Earl H.....Waupaca, R. 3

Waushara County

Anderson, Thos. E.....Wild Rose
Bartleson, Harvey.....Pine River, R. 1
Bell, L. C.....Wautoma
Clark, J. J.....Berlin
Eagan, J. J.....Wautoma, R. 6
Harris, A. M.....Plainfield
Jacklin, B. H.....Redgranite
Knuteson, Ernest L.....Wautoma
Peterson, James.....Pine River
Selsing, Andrew.....Wautoma
Tice, Ray.....Redgranite
Tice, Roy.....Redgranite
Winge, Wm.....Wild Rose

Winnebago County

Bussey, W. P.....Omro, R. 24
Cross, A. J.....Allenville
Hoeft, Chas. A.....Oshkosh, R. 1
Ihrig, J. J.....Oshkosh
Jackson, H. H...Oshkosh, 104 Main St.
Jennings, Edwin.....Picketts
Michels, Math.....Picketts
Miller, Henry C.....Allenville
Palfrey, John.....Omro
Rasmussen, Fred.....Neenah, R. 11
Schaefer, R. J.....Appleton
Smith, Seymour L.....Oshkosh
Tanner, A. V.....Omro, R. 24
Treleven, Guy T.....Omro
Waite, Summer R.....Oshkosh, R. 7

Wood County

Clark, Chas. F.....Babcock
Leu, O. J.....Grand Rapids
Rector, Carroll V.....Grand Rapids

NON-RESIDENTS

Connecticut

Haas, Geo. H.....Meriden

Illinois

Bruning, Jacob.....Shermerville
Bryson, Donald L.....Elizabeth
Charles, Fred.....Woodstock
Coffin, Russell H.....Rockford, R. 7
Dienst, Arthur H.....Hinckley
Fellows, Samuel H.....Rockford
George, W. R.....Sterling
Green, Evert.....Durand
Greely, Helen.....
.....Chicago, 4388 Woodlawn Ave.
Hitchcock, H. R.....Pecatonica
Hoxsey, Edw. H.....Serena
McGeachie, E. P.....Winnebago
Martin, Walter I.....Barrington
Miller, Ralph.....Antioch
Richardson, G. J.....Spring Green
Russell, E. Allen.....Lake Forest
Swift, M. Earl.....Waterman, Ill.
White, Arthur.....Rockford
.....503 N. Church St.
Winker, Harold.....Antioch

Indiana

Carman, Edw. G.....Mishawaka
Dewire, M. E.....Hamilton, Ind.
Fuller, Robt.....Mishawaka
Lindenman, J. H.....South Bend
Perry, R. D.....Columbus, Ind.

Iowa

Anderson, Theo.....Waterville
Berns, Xavier.....Guttenberg, R. 1
Brooks, Homer H.....Hopkinton
Thompson, Thos., Jr.....Wadena

Massachusetts

Hayward, Edward C.....South Easton

Michigan

De Forest, Theo. R.....Ann Arbor
Johnston, R. M.....Hancock, Mich.
Meyer, A. J.....Howell, R. 7

Minnesota

Meyer, Wm.....Ellsworth

Nebraska

Wrabetz, Frank.....Schyler, R. 1

New York

Curtis, Frank J.....Binghampton
Mills, Stanley.....Walden

Ohio

Doerschuk, John J.....Shanesville
Ernst, Claude....Thompson, Flat Rock

Pennsylvania

Niesen, H. P.....Carbondale, Penn.

Growers of Select Winter Wheat.

Clark County

Daellenbach, Chris.....Abbotsford
Einfeldt, Alb.....Greenwood

Dodge County

Jung, J. W.....Randolph
Owens, H. C.....Fox Lake

Door County

Parson, Eli.....Sawyer

Eau Claire County

Donaldson, H. A.....Eau Claire

Fond du Lac County

Bonzelet, J. P.....Eden
Ruesink, H. G.....Waupun

Grant County

Patterson, J. L.....Glen Haven

Iowa County

Ley Peter.....Dodgeville

Jefferson County

Emmert, H. L.....Johnson Creek
Lehmann Theo.....Watertown

Kewaunee County

Defnet, Jule J.....Casco
Oestreich, R. C.....Kewaunee
Ray, W. F.....Kewaunee, R. F. D. 1
Stoller, Louis.....Kewaunee

La Crosse County

Jones, E. E.....Rockland
Lawrence, F. W.....Bangor
Nuttleman, Aifred.....West Salem

Manitowoc County

Wilkowski, Hugo.....Mishicot

Marathon County

Baesemann, Otto.....Edgar

Monroe County

Leverich, J. W.....Sparta
Miller, Lewis A.....Sparta

Pepin County

Gustafson, Theo.....Stockholm

Racine County

Spartz, N. A.....Union Grove

St. Croix County

Brunner, R. W.....Hudson

Sauk County

Gallagher, J. F.....Reedsburg

Sheboygan County

Illian, W. L.....Adell

Trempealeau County

Graul, Edw. J.....Independence

Vernon County

Aberg, Jacob.....De Sota
Lawrence, W. J.....De Sota

Waushara County

Winge, Wm.....Wild Rose

Winnebago County

Boss, Sam. J., Jr.....Oshkosh

Wood County

Prausa, F. A.....Milladore

Growers of Pedigree Rye.

Adams County

Lee, Royal D.....Arkdale
Johnson, Billie.....Strongs Prairie

Ashland County

Johnson, L. M.....Ashland

Barron County

Chrislaw, A. M.....Rice Lake
Sackett, Clyde M.....Cumberland

Bayfield County

Kinstler, C. L.....Washburn

Brown County

Nies, Peter.....Greenleaf R. F. D. 3

Buffalo County

Mehleisen, Gottlieb.....Tell
Arms, Edw.....Fountain City

Chippewa County

Christianson, W. O.....Chippewa Falls
Kramer, Henry F.....Bloomer

Clark County

Lee, E. W.....Granton
West, W. B.....Neillsville
Zerbel, Paul.....Humbird

Crawford County

Post, H. L.....Sextonville

Dane County

Koltes, Jos. F.....Dane

Dodge County

Bohl, Anton.....Beaver Dam
Bussewitz, Orla J.....Juneau
Goetsch, A. A.....Juneau R. F. D. 1
Kreuger, Henry E.....Beaver Dam
Lehmann, Mrs. A. W.....Woodland
Voigt, Alvin H.....Oconomowoc

Dunn County

Kent, H. W.....Rusk

Eau Claire County

Burce, Ruth E.....Eau Claire
Wyman.....Eau Claire

Fond du Lac County

Bonzelet, J. P.....Eden
Briggs, Lynn W.....Peebles
West, H. P.....Ripon

Green County

Bechtolt, J. D.....Browntown
Bechtolt, A. B.....Browntown

Iowa County

Thomas, Roy E.....Dodgeville

Jackson County

Dettinger, Wm. F.....Hixton
Dietrich, John J.....Black River Falls

Jefferson County

Krueger, Alexander.....Watertown
Leonard, Wm.....Ft. Atkinson
Linton, Gilbert A.....Ft. Atkinson

Juneau County

Moore, Henry G.....Mauston

Kenosha County

Bradley, J. Frank.....Somers

Kewaunee County

Cherveny, Wenzel..Kewaunee, R. F. D. 2
Collin, D. W.....Luxemburg
Stoller, Louis.....Kewaunee

La Crosse County

Van Loon, John.....La Crosse

La Fayette County

Rood, M. C.....So. Wayne

Manitowoc County

Roethel, Herman.....Kiel
Wehrwein, Walter.....Manitowoc
Wiegand, Otto R.....Cleveland

Marathon County

Bean, J. J.....Wausau

Marinette County

Christenson, C. A. M.....Walsh
Falarsh, Frank.....Peshtigo
Grandy, D. E.....Wausaukee

Marquette County

Johnson, Sam.....Westfield
McDowell, David P.....Packwaukee

Monroe County

Freeman, G. A.....Sparta

Outagamie County

Kieffer, Mike.....Fredonia
Schaefer, R. J.....Appleton

Pierce County

Bailey, H. E.....River Falls
Heinze, Louis.....Prescott

Polk County

Haus, Enoch...Junction City, R. F. D. 2
Jerdee, Perry S.....Deronda
Sieger, A.....Junction City

Price County

Hoffman, Conrad.....Phillips

Rock County

Austin, Alva G.....Janesville
Benedict, E. L.....Beloit
Hemingway, Geo. L.....Hanover

St. Croix County

Fay, Albert W.....New Richmond
Paulson, P. A.....Hudson
Schwandt, Wm.....Stanton

Sauk County

Wichern Bros.....Baraboo

Shawno County

Hildemann, Alex.....Belle Plaine

Sheboygan County

Frauenheim, O. R.....Random Lake
Illian, Wm. L.....Adell
Wagner, Arthur L.....Haven

Trempealeau County

Dutton, C. A.....Trempealeau

Vernon County

Cade, Jas. M.....Viroqua

Walworth County

Dunbar, Harry D.....Elkhorn

Washington County

O'Connell, James.....Hartford
Puls, John.....Hartford

Waushara County

Eagan, J. J.....Wautoma
Larson, J. M.....Wautoma

Winnebago County

Blakely, Albert J.....Neenah
Boss, S. J., Jr.....Oshkosh, R. F. D. 7
Miller, Henry.....Allenville
Treleven, Guy T.....Omro

Wood County

Prausa, F. A.....Milladore

New York

Mills, Stanley.....Walden, New York

Growers of Wisconsin Pedigree Oats.

Ashland County

Delwiche, E. J.....Ashland

Clark County

Zerbel, Paul.....Humbird

Chippewa County

Martiny, L. P.....Chippewa Falls

Dane County

Dreger, Emil.....Madison

Dodge County

Grebe, F. P.....Fox Lake
Howitt, C. H.....Randolph
Kreuger, H. E.....Beaver Dam

Eau Claire County

Russell, A. C.....Augusta

Fond du Lac County

Bonzelet, J. P.....Eden
Meekin, H. W.....Fond du Lac
Michels, Henry.....Fond du Lac
West, H. P.....Ripon

Forest County

Armfield, John H.....Armstrong Creek

Green Lake County

Lehner, Philip.....Princeton

Jackson County

Dietrich, John.....Black River Falls

Jefferson County

Longley, H. N.....Dousman

Kewaunee County

Katel, W. C.....Kewaunee
Thibodeau, E.....Kewaunee

Manitowoc County

Wiegand, O. R.....Cleveland

Marinette County

Davies, L. R.....Marinette

Ozaukee County

Bichler, Wm. J.....Belgium

Richland County

Martin. J. W.....Gotham

Rock County

Benedict, E. L.....Beloit

St. Croix County

Paulson, P. A.....Hudson

Sheboygan County

Allen Seed Co., John.....Sheboygan
Dennerlein, A. J.....Plymouth
Fischer, Louis.....Haven
Frauenheim, O. R.....Random Lake
Illian, W. L.....Adell
Parish, J. O.....Plymouth

Vernon County

Neprud, N. O.....Coons Valley

Washburn County

Baker, B. E.....Spooner

Waushara County

O'Conner, M.....Hancock

Walworth County

Dunbar, H. D.....Elkhorn

Wood County

Prausa, F. A.....Milladore

GROWERS IN OTHER STATES

New York

Mills, Stanley.....Walden, New York

TENTH ANNUAL REPORT

OF THE

WISCONSIN

Agricultural Experiment Association

ANNUAL MEETING

Madison, Wis., January 26, 27, 1912

ADDRESS OF PRESIDENT, SECRETARY'S REPORT WITH PAPERS AND ADDRESSES GIVEN BY MEMBERS OF THE ASSOCIATION AND OTHERS INTERESTED IN PROGRESSIVE AGRICULTURE

COMPILED BY

R. A. MOORE, *Secretary.*

MADISON, WIS.
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1912

LETTER OF TRANSMITTAL.

WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION.

MADISON, WIS., 1912.

To His Excellency, FRANCIS E. MCGOVERN,

Governor of the State of Wisconsin:

SIR—I have the honor to submit for publication, as provided by law, the Tenth Annual Report of the Wisconsin Agricultural Experiment Association, showing the receipts and disbursements the past year, also outlines for experiments, and addresses and discussions given at the annual meeting at Madison, January 26, 27, 1912.

Respectfully submitted,

R. A. MOORE,

Secretary.

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OFFICERS, 1912.

President.....C. P. NORGORD, Madison
Vice President.....WILLIAM LEONARD, Jefferson
Secretary.....R. A. MOORE, Madison
Treasurer.....H. N. LONGLEY, Dousman
Clerk and Stenographer.....NELL W. LORIGAN, Madison

COMMITTEES.

Program:
Officers of the association.

Executive:
Presidents and Secretaries of the County Orders of the Wisconsin Experiment Association.

Resolutions:
J. B. Cheesman.....Racine
H. P. West.....Ripon
C. A. Lyman.....Sun Prairie

Coöperative Experiments:
Farm Crops.....R. A. Moore
Soils.....A. R. Whitson
Farm Engineering.....C. A. Ocock
Agricultural Chemistry.....E. B. Hart
Agricultural Extension.....K. L. Hatch

CONSTITUTION AND BY-LAWS.

CONSTITUTION

Article I.—Name.

This organization shall be known as the Wisconsin Agricultural Experiment Association.

Article II.—Object.

The object of this association shall be to promote the agricultural interests of the state:

1st. By carrying on experiments and investigations that shall be beneficial to all parties interested in progressive farming;

2d. To form a more perfect union between the former and present students of the Wisconsin College of Agriculture so as to enable them to act in unison for the betterment of rural pursuits in carrying on systematic experiments along the various lines of agriculture;

3d. By growing and disseminating among its constituency new varieties of farm seeds and plants;

4th. By sending literature bearing upon agricultural investigations to its membership, and

5th. By holding an annual meeting in order to report and discuss topics and experiments beneficial to the members of the association.

Article III.—Membership.

Section I. All former, present and future students and instructors of the Wisconsin College of Agriculture shall be entitled to become members of this association.

Sec. II. Honorary membership may be conferred upon any one interested in progressive agriculture by a majority vote at any annual or special meeting of the association.

Article IV.—Dues.

A fee of fifty cents shall be collected from each member annually.

Article V.—Officers.

The officers of this association shall consist of a president, vice president, secretary, and treasurer, whose terms of office shall be one year or until their successors are elected.

Article VI.—Duties of Officers.

Section 1. It shall be the duty of the president to preside at all meetings of the society and enforce the observance of such rules and regulations as will be for the best interest of the organization; to appoint all regular committees as he may deem expedient for the welfare of the association.

Sec. II. In the absence of the president, the vice president shall preside and perform all duties of the president.

Sec. III. It shall be the duty of the secretary to keep all records of the association; to report the results of all coöperative experiments carried on by its membership and the experiment station, plan the experimental work for the members of the association, and labor for the welfare of the society in general.

Sec. IV. The treasurer shall collect fees, keep secure all funds of the association and pay out money on the written order of the secretary, signed by the president. He shall furnish bonds in the sum of two thousand dollars with two sureties, for the faithful performance of his duties.

Article VII.—Amendments.

This constitution may be amended at any annual meeting by a two-thirds vote of the members of the association present.

Amendment No. 1.—Adopted Feb. 9, 1906.

Any person residing within the state having completed a course in agriculture in any college equivalent to that given by the Wisconsin University may become a member of this association under the same regulation as students from the Wisconsin College of Agriculture.

Amendment No. 2.—Adopted Feb. 11, 1909.

Any County Agricultural School within the state may be admitted to membership of the Experiment Association upon request by the principal of such school and the payment of an annual fee of $1.00.

BY-LAWS.

Article I. The officers of this association shall be elected by ballot at the annual meeting.

Art. II. The president and secretary shall be ex officio members of the executive committee.

Art. III. This association shall be governed by Roberts' Rules of Order.

Art. IV. All members joining at the organization of this association shall be known as charter members.

Art. V. The time and place of the annual meeting shall be determined by the executive and program committees.

Constitution adopted and organization effected Feb. 22, 1901.

TENTH ANNUAL REPORT

OF THE

Wisconsin Agricultural Experiment Association

PRESIDENT'S ANNUAL ADDRESS.

C. P. NORGORD, MADISON.

The past fifteen years has witnessed the discovery of a number of botanical principles which have been of great benefit in the improvement of agricultural plants.

In Mendel's law this was brought to light. By means of this law, we are able to unite valuable characters possessed by different plants by hybridization and to segregate and separate these characters in the offspring and thus make stable the progeny of such crosses within reasonable periods of time.

DeVries, a Dutch botanist, discovered that new characters arise from common plants suddenly and remain permanent in the form in which they thus suddenly appeared.

Probably the most useful and important of these principles is the discovery made by Dr. Hjalmer Nielsson, of Svalof, Sweden; and Prof. Wm. Hays, of Minnesota. This discovery is the fact that every individual plant growing in any field from any variety of plants is an individual entirely separate and different from its neighbors in its characteristics, qualities, and yielding power. A further important part of this discovery is the fact that each plant transmits to its progeny perfectly and regularly every characteristic that it possesses.

Every common variety is therefore a mixture. It consists of innumerable distinct and different strains each of which differs from the others in many particulars. If a short strawed, stiff strawed, large headed strain of oats is desired a plant fulfilling these requirements can be found in the fields

sown with some of our common varieties. If a heavy yielding, high protein strain of barley is desired, it can be found on the fields sown with some common variety of barley. Since these individual plants breed true to themselves, to breed a new variety possessing any desired characteristic it is only necessary to search for a plant having the desired characteristic and to propagate a new pure strain in its progeny.

This principle underlies nearly all of the important methods of improving crops by selection and breeding at this and other Stations throughout the world.

The work of improving the field crops has therefore consisted of searching for high yielding and desirable plants and of propagating from each of these plants new, pure and highly yielding strains. This is the principle also upon which the Wisconsin system of breeding is based.

By this method the Department of Agronomy of the Wisconsin Experiment Station has discovered and bred sixteen high yielding strains of barley, five strains of oats, four strains of rye and sixteen strains of wheat.

What will be the effect on the state of introducing these high yielding strains of grain throughout the state? Reports from members of this Association and results of tests on the Agronomy fields indicate that the pedigree barleys, pedigree oats and pedigree ryes will out yield common varieties by a margin of approximately seven bushels per acre. We are annually producing 816,000 acres of barley in Wisconsin. When we shall have replaced present varieties with pedigree varieties in the state we will have increased the yield of barley by 5,700,000 bushels, a value of $2,850,000 annually.

No. 7 corn has out yielded common varieties throughout the state by ten bushels per acre. The Golden Glow corn has yielded eight bushels more per acre than any other variety. We are annually growing approximately 2,000,000 acres of corn in Wisconsin. When we shall completely have replaced scrub varieties of corn in Wisconsin with these pure high yielding strains we shall increase the annual yield of corn in Wisconsin by 20,000,000 bushels or a value of $10,000,000 increase annually in the Wisconsin corn crop due to the breeding and dissemination work of the Wisconsin Experiment Station.

While the breeding of these new varieties is the fundamental work nevertheless there is a long step from the breeding of a variety to its location on the soil and in the climate to which it is adapted.

It is a long and difficult step from the production of a variety to its acceptance by the majority of the farmers of a state and to its permanent establishment as one of the standard varieties of the state. Many seed breeding stations have failed to appreciate the importance of this part of the work and have thus failed to secure the confidence of the people in their work, and to obtain the large place in the practical world for the good varieties which by diligent, painstaking effort they have produced.

The stations which have signally succeeded in placing their new varieties in the hands of the farmers are those that have established distributing associations similar to ours. In Sweden the Svalof Seedbreeding Institute has wonderfully improved the conditions of cereals by its productions and introductions through the Swedish Seed Breeders' Association. Grains have been found adapted to the various climates of that northerly country and to the variations, elevations and soils there found. In Canada the Guelph and Ottawa Stations have accomplished a great work. They have distributed their seeds through the central experimental farms and the Dominion Experimental Union. Through this work the varieties of farm crops have been completely changed. Even we in the United States have seen the effect of this work in the Baxter Barley and Preston Wheat.

Our Neighboring Stations. The Minnesota Experiment Station has accomplished a great work in originating the Hays Systems of Breeding. This system has furnished the fundamentals of nearly every system of breeding used in the United States. The varieties bred at the Minnesota Station have out yielded and replaced common varieties in Minnesota. Yet the work of this station would not have been effective had it not been for the support and means of distribution found in the Minnesota Crop Breeders' Association.

The Wisconsin Station in breeding work accomplished need take no backward place. Its varieties are more widely known and more uniformly liked than those of any other Station. If we are to judge by the places taken at our fairs we have

reason to feel proud of our record. Yet the recognition this work has received and the rapid distribution which has been accomplished could not have been possible without the loyal support of this association.

We are therefore one of the five great seed distributing organizations of the world, connected with the five great seed breeding stations of the world. When we understand correctly our position in the world of plant improvement we quickly realize, that we need to consider more carefully our opportunities and duties for the future and lay plans for a greater work in the future than we have done in the past. We no longer need work with varieties of poor breeding and minor importance. We are now fairly launched in the work with the new pedigree varieties. The breeding work of this Station is continually going on; each year will see the distribution of new varieties. The future will no doubt see varieties bred which will be more desirable and have higher yields than any thus far put out.

We have in our great State a variety of altitudes, latitudes, soils and conditions of moisture. The work of other Stations shows that certain strains are adapted to certain particular climatic conditions. We must expect the same in our work; we must expect that certain strains will be adapted to clay soils and others to sandy soil; that others will be adapted to high altitudes and others to lowlands; that certain strains will be adapted to northern latitudes and others to southern latitudes. This condition places a great responsibility and a great work upon this Association and in the hands of each individual member for it must of necessity be through the Association that we shall discover the facts and properly locate these strains. We therefore must have accurate work and absolutely true reports in regard to yields, soils and location. Let no fancied desire for a favorable report by the officers of this association lead you to report otherwise than the exact facts. An unfavorable report shows to us what conditions are unfavorable to a certain strain and is therefore just as valuable as a favorable report. Let us not forget that we have a great work to do.

We need the public sentiment, moral support and the truthful, effective advertising for our seeds that this Association of 1,500 young, trained and active farmers can give.

We need the entire strength of this organization to help in the sale of our seed grains.

The time has come when in addition to studying methods of increasing our crops we should also work hand in hand for the solution of the mighty problems confronting us in the successful marketing of our products. We must properly and judiciously advertise our products. A new and effective means of bringing our products to the buyers and at the same time disseminating useful information lies in the seed car. We have just closed a very effective campaign with this at various points in the State. This work has been made possible by the increased appropriation which the last legislature made for us, in the magnificent aid from the railroads, the Wisconsin Advancement Association and the Experiment Station.

Our seed lists are this year more complete than ever before. In spite of an adverse fall for seed corn we see quantities of seed corn for sale in three hundred to eight hundred bushel lots. These lists have been published and sent broadcast throughout the land and through these great demands great markets and good prices are being found. The splendid exhibitions of our grains have attracted world-wide attention. Our grain this year went to Russia, South Africa and many other foreign countries as well as to all parts of our own country. Let us have larger amounts for sale in the future and more of the same good work.

We have met here to-day, the one great organization in Wisconsin whose sole purpose is the promotion and improvement of general agricultural crops. We have met as one of the few great organizations of this kind in the world. The annual value of the agricultural crops in the state amounts to nearly $150,000,000. The live stock industry is likewise important and has done a great good for the state in building up our soils and promoting the prosperity of our people, yet after all the crops are the feeders of the world. They are fundamental. We have therefore a great work to perform. On the morning of the great battle of the South Sea Admiral Togo signalled this motto to the ships of his fleet—"The fate of our nation depends on this day's action." The battle was won and Japan became a great world power. When Lord Nelson went out to meet the dreaded Spanish Armada he sig-

nalled to his men "This day England expects every man to do his duty." So let the annual meeting be the signal to our members of a new awakening to the proper realization of the function of our association and the importance and world-wide relation of its work and with this high ideal before him let each member go back to his work to properly plan and execute, that a full measure of prosperity, and usefulness may be ours.

REPORT OF THE SECRETARY, 1912.

R. A. MOORE.

Fellow Members of the Experiment Association:

For eleven successive years it has been my privilege to present this annual message and never during this period has there been a single doubt in my mind as to the great achievements that would be accomplished by this body of trained men in displacing the scrub grains of Wisconsin and in their stead place the pedigree strains within easy reach of every farmer of the state. For eleven years this work has been in progress and many of you are becoming veterans in the fray for seed grain improvement. Many of you who started in in a feeble way, merely establishing a seed grain center here and there, are now putting on the market thousands of bushels of pedigree seeds to bring better returns to every farmer who grows them.

We are living in a changeable and reckless age. The rapid increase in cost of living has set men to thinking seriously as to the best possible method to pursue to alleviate the suffering occasioned by the constant increase in price of all necessaries of life. The high water mark has not as yet been reached. People in the past decade have been on the search for ease and luxuries, hence have left the farms for a more congenial and pleasure seeking life in the cities.

A hundred years ago approximately 90% of our population were upon the farms assisting in production—at the present time I think less than 40% are upon the farms assisting in producing for the other 60% of the population. It doesn't seem with the decrease in population from our productive element that prices on the necessaries of life are to wane in the

least but keep on soaring. I am firmly convinced, as I never was before that happy is the man who owns a farm and produces largely the necessaries of life for his family.

I think through our efforts the past 10 years that we have built up an industry in the pure-bred seed work that will be an inducement for many of our young men to stay on the farm who would otherwise leave for inducements held out by the cities. In other words, I think the association has been instrumental in paving the way for opportunities for the young men on the farm.

CALL FOR PURE BRED SEED GRAINS.

The great call for seeds the past year and the prospects for selling great quantities this year are very encouraging. The European countries after testing the Wisconsin pure bred seeds are now sending in substantial orders. The little German province in South Africa after testing the most promising varieties of corn in the United States, found that the Wis. No. 1, 7 and 12 met her requirements and last July a shipment of seed was made to that far away country to be planted November 1st. Many of the members of the association are selling annually from one to ten thousand dollars worth of pure bred seed grains, thus the good work goes on and the Wisconsin pedigree seeds are being shipped to all parts of the world.

THE EXPERIMENT ASSOCIATION WIDELY KNOWN.

I am pleased to report that the work of the Association is widely known and appreciated. People especially interested in the work, from foreign countries as well as from the states have visited the Secretary during the past year and secured full information as to the working and management of the Association. It has been the privilege of your Secretary the past year to help organize a similar association for upper Michigan, Lower Michigan soon followed suit and organized, also Massachusetts and several other states have put in organizations closely allied to ours and with the same noble purpose in view. I feel that it would be a great advantage to every state in America to have an Experiment Association with the aims and purposes of ours. Some of our members may feel that as soon as other states are organized that the call for ped-

igreed seeds will cease. Not so—every time a state organizes an additional call for seeds will come streaming in for our association seeds.

BREEDING WORK AT THE STATION.

The breeding work at the station is being pushed vigorously and seeds of different varieties of plants are reaching the point for dissemination. This year the Wisconsin pedigree oats upon which the station has put 14 years work will be disseminated throughout the state and in 1913 grown in large quantities. By a continuous process of improvement on farm seeds the rapid method of dissemination and the great quantities that can be grown by the association will always make Wisconsin the leading state in America for pedigree seed grains. Our watchword should always be "Quality of seeds and fair dealing".

MEMBERSHIP.

The membership has gradually increased, and January 1, 1912 reached the 1348 mark, an increase of 32 over that of 1911. There are more members of the Association than the number given as we have only counted those whose dues have been fully paid within the year. We have no dead timber in our association, all are live and enthusiastic workers in the cause for better seed grains.

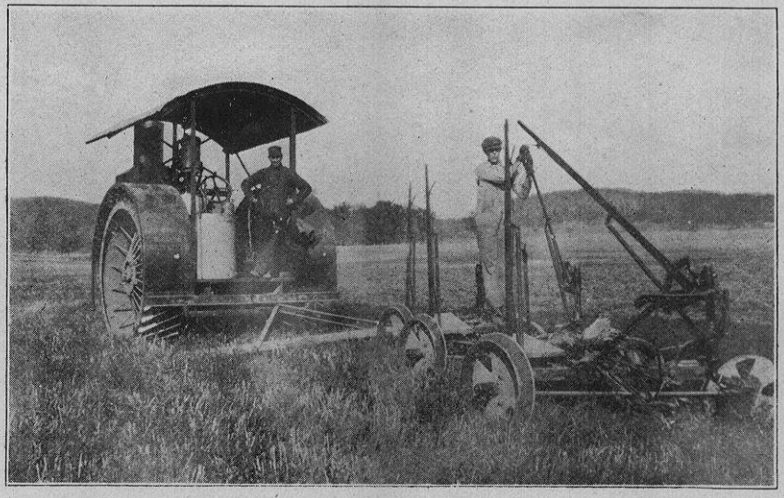
ORGANIZATION OF COUNTY ORDERS OF THE EXPERIMENT ASSOCIATION.

The number of counties under organization has increased from 7 to 27 since our last meeting and we look for a very substantial increase from this on. The cities have become interested in the work of the County Orders and are offering assistance and encouragement. The St. Croix County Board appropriated $100 to aid the County Order in placing a commendable exhibit at the State Fair in 1912. Other counties will do likewise as soon as they find out about the nature of the good work undertaken for the general good of the county in which the Order is located. The County Orders are prime movers at all agricultural meetings and have been instrumental in doing great work for the uplift of the County Fairs. The work of the County Orders in systematizing the growing

VALLEY VIEW FARM.

Home of Tracy Randall.

This beautiful farm is pleasantly located on the north bank of the Baraboo river 3½ miles west of the city of Baraboo and is owned and operated by C. W. Randall assisted by his son Tracy. Shropshire sheep, Guernsey cattle, Shetland ponies and White Wyandotte poultry are specialties on the farm. The son Tracy is making a specialty of pure bred seed grains and has done excellent service in banishing scrub grains from the entire neighborhood. For two years he has won first honors in the corn contest and has received scholarships in the Young Peoples' Grain Course given at Madison. He is also a member of the Wisconsin Experiment Association and has taken many prizes in the annual grain shows. The Association regards him as the leader among the younger pure bred grain growers of the state.



PLOWING ON THE OSCHNER FARM.

Home of A. C. Oschner, Sauk county

This beautiful farm is considered one of the most fertile farms in Sauk county and has been kept so by rotation of crops. Mr. Oschner is a former student of the College of Agriculture and has always been an active member of the Experiment Association. He is known far and near as one of the foremost growers of Golden Glow seed corn and has been instrumental in disseminating this high yielding corn well over Sauk county.

and dissemination of pedigree seeds has been of lasting benefits to the respective counties in which they are located.

The County Orders exhibited at the State Fair and put up the greatest display of select grains and forage plants wit-

THE COLLADAY FARM.

A field of Silver King Corn, Wis. No. 7

This beautiful farm is pleasantly located on the west shore of Lake Kegonsa, Dane county and is owned and operated by our veteran pure bred seed grain grower Mr. William Colladay. Mr. Colladay takes great pride in the select seed grain work. He is regarded as one of the most conscientious and painstaking seed grain growers of the Experiment Association.

nessed in the history of State Fair exhibitions. The great work should continue and we trust the Experiment Association will make the Wisconsin State Fair known throughout the world for its exhibits of pure bred seed grains. In order to make the State Fair exhibits of farm products commensurate with the great industry it represents our association has

asked the Governor to appoint a representative of our association on the State Board of Agriculture.

NATIONAL EXHIBITIONS.

The National Corn Expositions and the International Barley exposition have been held since we last met, the former in Columbus, Ohio and the latter in Chicago. The Experiment Association and the College of Agriculture made joint educational displays at these expositions which won the admiration of competitive states. The Wisconsin Pedigree barley won first place in both National and International contests, placing our barley well in the lead of all rivals. The individual exhibitors made fine records for the state at these expositions and won for us highest honors.

THE LAND SHOW.

The Experiment Association took an active part in the coöperation with the Emigration bureau in putting up a great display of grains and forage plants at the International land show. It was conceded by all to have been the best display of seed grains ever witnessed and was instrumental in advertising Wisconsin seeds far and near.

AN EXHIBIT ON WHEELS.

In coöperation with the National Crop Improvement Association and the College of Agriculture a tour was made through ten counties with an educational exhibit of pedigree seeds. Meetings were held at the following places along the route:

Platteville, Darlington, Brodhead, Janesville, Elkhorn, Waukesha, Fond du Lac, Beaver Dam, Watertown, Richland Center and Madison. In those counties where no County Order existed one was formed and everything possible done to start them right by giving the experience of County Orders in the past and encouragement for the future.

CORN.

Silver King (Wis. No. 7)

Number members reporting	127
Average per cent germination of seed	96%
Number reporting corn as well matured	134
Number reporting corn failure to mature	17
Average yield per acre No. 7	62.6
Average yield per acre other varieties	54.8
Difference in yield in favor of No. 7	7.8

GOLDEN GLOW (Wis. No. 12)

Number members reporting	122
Average per cent germination of seed	95.6%
Number reporting corn as well matured	105
Number reporting corn failure to mature	17
Average yield per acre No. 12	60.12
Average yield per acre other varieties	56.8
Difference in yield in favor of No. 12	3.3

PEDIGREE BARLEY.

Number members reporting	231
Number reporting that barley remained erect	174
Number reporting that barley lodged	57
Number reporting that barley developed smut	79
Number reporting that barley was not smutted	152
Average yield of Pedigree Barley	30.71
Average yield of other varieties	27.35
Difference in favor of Pedigree barley	3.36

PEDIGREE FALL RYE.

Number of members reporting	46
Average yield per acre Pedigree rye	24.5
Average yield per acre other varieties	19.96
Difference in favor of Pedigree rye	4.54

ADDRESS.

HON. DUNCAN McGREGOR, MADISON, WIS.

Mr. President and Members of the Wisconsin Experiment Association, Ladies and Gentlemen: In the absence of Governor McGovern I appear before you to discharge a duty that cannot be pleasing to you. He who brings unwelcome tidings can hardly expect a warm welcome. I am exceedingly sorry to be obliged to present his regrets. Misery is said to love company, and it may comfort you to know that I keenly share in your disappointment. I fully realize too as you do that a heavy responsibility rests upon any one who would appear as a substitute for our eloquent and popular executive. I bring you greetings from the Governor together with the assurance that he sympathizes with you in your great work.

I think it was Dean Swift who made the remark, no less wise than witty, that the most dangerous animal abroad is the man who undertakes to talk and has nothing to say. The man who undertakes to talk with nothing to say that is suitable to the occasion is equally dangerous, for in each case there is a misfit, a discord, that endangers both patience and temper. It would add much to my comfort, as I know it would to yours could I feel that I had anything to add to the rich store of valuable knowledge you have acquired through the process of ex-

perimentation in which you are engaged. For fifty years past whatever farming I have engaged in has been at long range and by proxy at that. True, the garden and the lawn, with their shrubs and vines and flowers and fruits and vegetables, have never ceased to call me, and I have never dreamed of disobeying that call. The farm is or ought to be a garden on a large scale, but it may not be safe to assume that the garden is a farm on a small scale. Regularly in my experience as the spring approaches catalogues are perused, orders of seeds and plants and trees are made, planting is done, fitful cultivation follows, and then the harvest. But let us pass that lightly, for usually the harvest is light,—at least not up to expectations. But though crop returns may be small, there are large returns in enjoyment, and in rich blood and fairly good brawn. You observe that I say nothing of better brain, and for the reason that we know personally very little about that organ. That we have a brain is largely a matter of faith. We infer that we have one because other people are so equipped. We are even without the means by which Carlyle first learned that he had a stomach. It is more than likely, however, that whatever passes for brain will be of more value to the owner and to others when blood is rich and muscle strong. These,—health and strength,—are the chief rewards of the amateur gardner, and that is enough.

But fifty years ago I, too, was a farmer. At least we called it farming in that day. We plowed and harrowed the ground, much of the power being furnished by the patient ox; the stimulus by the gad in the hands of the impatient driver; we sowed the seed broadcast by hand,—the man who could use both hands had the advantage; we cultivated the corn by hand hoe and single shovel cultivator often with a boy for outrider; we cradled the grain while it sometimes happened that a rosy-cheeked young woman followed to bind into bundles. Everybody had to help to save the scanty crop. The young women could not help being rosy; the summer sun took care of that. It will do the same thing to others if given the opportunity. We stacked the grain carefully and fenced the stack yard from the depredations of stock until the threshing machine with its horse power could come our way and a threshing bee could be organized. To attempt to protect the grain from the ravages of rats and mice was useless. They got more than their

just due. We took the grain, what we saved of it, to the near-by grist mill as it was needed. That same grist mill is now a ruin if not a memory. The miller took his toll, and bran and shorts were returned with the flour. You need not be reminded that all this has been changed. Until you reach the very frontier or the lumber camp not a yoke of oxen can be seen, and even there they are very few. The wooden yoke and bows, and the strong but clumsy chain are treated as antiques. The grain cradle is a relic of a by-gone age; the steam or gasoline engine has superseded the horse power; the grain goes to the elevator and the flour is of the patent variety bought at the neighboring store and bears the brand of a corporation or great milling company. Expensive and complicated machinery has taken the place of the simpler implements of an earlier day. More and better work is now done in a given time and it is done much more easily than in times past. These changes have come as an evolution, that tendency to betterment that finds its chief stimulus in example, and in this case has been materially aided by the protection afforded by laws relating to patent rights. No man or set of men, no organization, no predetermined purpose can take credit for the advance to which I have referred. It has come as a part of the general improvement in industrial and economic life.

About 275 years ago the blind Milton in his tractate on education, in writing of sound knowledge, that is I presume knowledge that is fertile, that will not only endure, but like good seed increase, based it upon the trinity of activities, experiment, experience and observation. Milton was but repeating in different form what had been said by Lord Bacon but a few years before. Since that day of giant intellects, under the marvelous impetus they imparted, nature in countless ways has yielded to these three activities an unlimited wealth of material for man's delight as well as for his advancement. You, my friends, have come under the spell of the wonderful revelations that farm experiments accompanied by intelligent observation have yielded. Sciences have multiplied wonderfully with the experiments of later years. Instead of the original and broad generalization into physics and metaphysics, we have to-day a bewildering number of divisions and subdivisions, each rich enough and more than rich enough to engage attention for a life time. Physics has relinquished much of its

original content; it no longer claims undisputed authority over the material world, but leaves to other sciences, each a specialty, to consider the varied workings of nature. Division of the science of nature has kept pace with division of labor among industries and serves a like purpose. This work of building up a classification of knowledge that comes through experiment, by its very nature, must be slow. Three hundred years have been none too long for the achievement. The application of the sciences will without doubt be marvelously rapid. By subdividing the physics of the long ago it has become possible, even easy, to select from the vast array of subordinate or minor sciences such individual sciences as may serve the purpose in hand. The farmer, for instance, looks around for those particular sciences that give him better control of that complicated organism, the farm, and many of the sciences lend themselves to his purpose. There was a time when a farm meant little more than so much land, to be proved fertile or barren by a long term of cultivation, trying one crop and then another. To-day, before you plow a furrow, or trust the seed to your soil you can get a chemical analysis by experts that will show with the certainty of science for what crop your field is best fitted. What an advantage is here gained over the old method of trial and error! It took one year for each trial. You can now save years by the aid of chemical science that reports its conclusions in a few days at most. Further, at the same time you can learn what you must add to the soil to fit it for some particular crop. I understand that the science of analysis and preparation of soil has reached such a point that inoculation is resorted to for insuring the presence of bacteria suited to the desired growth. So a piece of land uncongenial to alfalfa is made hospitable by inoculation with sweet clover soil. The culture of clovers generally can be promoted by like treatment. Within comparatively recent years a compact has been consumated between clover and potatoes for the purpose of transforming the sandy loam of several counties in the center of the state into fields noticeable for their fertility. Some of us can remember when this same region was conspicuous for abandoned farms and was supposed to be adapted only to the culture of buckwheat and the white bean.

Prominent among the achievements of your Association and of immense value is the breeding of pure bred, a high type of seed. The farmer who is unfamiliar with the character of different seeds is likely to take simply what is offered without regard to its real value. At any of your stations he is gladly furnished with information enabling him to select seed, and I am informed that he is supplied, not unfrequently, with the very seed he needs. This high grade seed produces a more certain and more abundant crop and thus adds to the wealth of the community.

The art of irrigation is probably as old as farming. It was early learned that moisture was indispensable to most forms of vegetable growth. Ancient Egypt, the granary of the ancient world, long maintained its agricultural supremacy through the abundance of moisture furnished by the periodical rains or distributed as needed from her capacious reservoirs. Where distribution of water is not possible, seasons of drought bring disaster to both crops and herds. In some regions the rainfall is so limited that science has been enlisted to save loss by evaporation. As the result of experiments a new species of farming, called dry farming has arisen. Could we keep a blanket of cloud over a field deficient in moisture, what little water was in the ground would be protected from evaporation and thus be saved for use of the plants. Even the up-to-date farmer does not expect that he can command a cloud to save his crop, but he has learned to fashion a substitute. So he works the surface into a blanket of fine dust, which at once conserves the moisture and permits the air to reach the roots.

But I feel that so far as this audience is concerned I am simply bringing coal to Newcastle. You know these things much better than I do, for you have had an active part in making them what they are. The possibilities of further and greater achievements in these and many other lines are boundless. Your ambition and fitness for service in this great work is proved by the success already attained. Greater successes yet await you.

With most hearty thanks for your courteous attention, I wish you the reward that comes with successful effort directed in the interest of the greatest producing class in existence. "He who makes two blades of grass grow where there had been but one is a public benefactor."

ROTATION OF CROPS.

PROF. J. F. WOJTA, MENOMINEE, MICH.

It appears that the desire among progressive farmers for the practice of a careful and a systematic rotation in farm crops was never more evident than it is to-day. Good farmers realize that fields must be kept clean of weeds and insects, and the soils when farmed properly must attain the ability to produce a better crop from year to year, and they also realize that increased yields of crops due to proper rotations, should be commensurate with the effort expended in the work, and that proper rotation means the practice of cultivating an orderly succession of different crops on the same land.

If for example, we study the plant life growing in a given country or particular section of that country, we find that the nature of climate and soil, will largely determine what kind of plants are best fitted to grow there. Nature in her natural way, tends to rotate crops on the same piece of land in due course of time. When large trees of pine and hemlock in virgin forests are removed and made into logs, firewood and ties, or are destroyed by fire, the land does not remain long barren but will soon be covered by a thick second undergrowth of alder, poplar or balsam; the medium red clover in old meadows is frequently replaced by June grass; tame grasses in old pastures are giving away to wild grasses and weeds occasionally.

Early experiments made at Rothamsted by Lawes and Gilbert of England, have proven conclusively when wheat was grown consecutively for 62 years, the crop at the end of that time only yielded one-fourth as much per acre as where it was one of the members of a four year rotation on similar fields for the same time. In Minnesota, it was found where wheat was seeded for 12 consecutive years on the same field, it yielded seven bushels less and corn when planted on another field for 12 consecutive years yielded twenty bushels less to the acre than when crop rotation was practiced for the same time. Eighty per cent of total vegetable matter was lost in soil by twelve years consecutive cropping and only ten per cent was lost where a proper rotation was practiced during that time.

It is true, however, there are records where the same crops have been raised on the same fields for 14 or 15 years in succession and yet the last crop yielded almost as much as some of the earlier crops raised on that field. Abundant supply of moisture in worn out soils will bring about good results.

I desire to say to you members of the Wisconsin Agricultural Experiment Association and as growers of pure bred seeds, that you are particularly fortunate in being located in Wisconsin. Her geographical position, her soil and the temper of her people is by nature especially adapted to the growth of a large variety of crops. Not only will Wisconsin soils grow small grains, corn, grasses, clovers, root and fruit crops in large quantities, but your soils are of the kind that will produce improved quality of grain as well. It is during the long days of spring and summer with their abundant sunlight that the starch and sugar in the kernel, in the apple and in the root, are formed. For this reason the seeds are hardy, healthy and vigorous. The fact that the seeds grown in northern latitudes, will grow well farther south, but that southern seeds will not do as well in the north, should make Wisconsin farmers famous for the production of farm seeds, root, fruit crops and live stock.

Natural soils which have never been used for raising farm crops, usually contain humus,—a rich dark decayed organic matter and to a certain degree, it contains all the necessary elements to produce a paying crop. Of these nitrogen, phosphoric acid, potash and lime, are among the first to be depleted in the soil by crops. No matter how abundant the other elements in the soil are, if there is a deficiency of any one of those mentioned, that soil is considered poor. It is therefore the business of every farmer to know his fields and his soil as he would know a book, so that he may rotate his crops properly and maintain fertility and at the same time make the greatest profit from his crops.

It has been estimated that the tillable surface of an acre of soil generally contains about 6000 pounds of potash, 5000 pounds of phosphoric acid and about 3000 pounds of nitrogen. When a farmer sells crops which have been grown on the field, he is practically selling a portion of the necessary elements for plant life, as are found in the soil. In a ton of

wheat, a farmer sells 38 pounds of nitrogen, 19 pounds of phosphoric acid, and 13 pounds of potash. The fertility taken from the soil if replaced under normal prices would amount to $7.91. By selling a ton of clover hay, he sells 40 pounds of nitrogen, 38 pounds of potash, 11 pounds phosphoric acid and 40 pounds of lime and this represents a loss to his field of $5.10. Selling a ton of butter, his soil loses about 12 pounds of nitrogen, 4½ pounds of phosphoric acid, and 3½ pounds of potash. From this, it will be seen that by selling farm crops, the farmer will rob his soil of more fertility than by selling dairy products. Dairying should therefore occupy an important place in the system of rotation.

There are several things that may dictate the rotation of a crop on a given field. It must be considered, whether it shall be a money crop, a cleaning crop, a leguminous crop, a hay or grass crop. In what condition one crop will leave the soil for the succeeding crop and how one crop may be seeded with another crop. How to rotate so as to distribute labor throughout the growing season. How to maintain the supply of humus, and how to make good use of subsoil. For example, corn is a deep soil and coarse feeder, while small grains are shallower and close feeders. Roots and leafy crops are largely nitrogen feeders. Leguminous crops have ability to take free nitrogen from the air by their roots and enrich the soil. Some crops will do better on well drained soils and others will do better in low and moist soils. Peas, corn and potatoes possess greater ability to decompose or subjugate coarse and soddy soils than do wheat, barley or sugar beets.

Some good crop rotations for Wisconsin are here suggested:

1st year—Peas, corn, potatoes, peas, buckwheat.

2nd year—Wheat, sugar-beets, rye plowed under, oats, vetch (p) corn.

3rd year—Corn, barley, corn, clover, beans.

4th year—Clover or oats, clover, barley, pasture, rye.

The best farmer is he who understands best how to organize the facts of his farming and business into harmonious system or plan. The question whether one should raise one or two crops, rather than others, depends on many circumstances. Sometimes it becomes a problem as to the quickest way of obtaining some ready money. For this reason the tenant farmer is so destructive in his treatment of the farm while

the owner looks forward to prepare his land in best possible condition for future years. The farmer that he may succeed best must understand the physical condition of his soil, its fertility, its drainage and above all the kind of crop he aims to raise.

The advantages gained by rotation are numerous: chief among these may be mentioned, rotation is an effective war on weeds and weeds generally deprive the soil of much of its fertility. It kills many injurious insects and prepares the field for succeeding crops. It promotes tendencies for the preparation of available plant food for other plants and economizes labor. As members of rotation, corn, grain and root crops, cattle and clover cannot be surpassed as conservers and producers. Nature provided plants to feed animals, animals to produce fertility, the fertility to feed other plants. A rotation of this kind will preserve the elements of productive power, while climatic conditions are constantly at work changing their character and their ability to produce available plant food.

PROFITABLE SEED GRAIN ADVERTISING.

J. V. BEATY, AGRICULTURAL EDITOR, MADISON, WIS.

Advertising seed grain is profitable when done rightly. On the other hand if a person makes a few mistakes, he may spend more money for advertising than he takes in for seeds. A certain member of the Experiment Association advertised Wisconsin No. 7 corn in 1911 and actually paid $1.20 in advertising for each dollar's worth of seed that he sold. Not a very profitable venture, this, but the reasons for this extra expense are easily accounted for. The member advertised too much and advertised in the wrong place. He advertised in a farm paper paying $14, and made 20 sales as a result. This made each sale cost him an average of 70 cents. The advertising that increased the expense was done in local papers. $4.50 was spent and only one sale made.

Set over against this was the splendid results obtained by Charles H. Howitt. He advertised corn in the same farm paper that the man who suffered a loss used, but spent only $1.25

in each of two years. The first year he made 50 sales and the second year 75. The first year it cost him only 2½ cents to make each sale and only 1.6 cents the second year. It cost him an average of 1.5 cents to sell each dollar's worth of seed that was shipped from his farm.

It is not so much my object to tell you the best ways of advertising as it is to inspire you to keep some record of the results you obtained through your advertising. A man does not always realize that it is time to improve until he knows that he is actually losing money. It pays to study the results of your own advertising and it is really not very hard to do.

If you advertise in one farm paper all you need to do to keep track of the results is to make a record of the number of sales and the number of dollars worth disposed of during the season leaving out, of course, any sales that you make by personal solicitation. It is reasonable to suppose that practically all of the sales that are made by mail are the result of advertising in the one paper.

Let us suppose that you make six sales and you pay out $12 for advertising. This means that each sale cost you $2. If you have kept a record of the amount sold to each person you may find that your selling has not been too high after all. Suppose for instance, that you sold $100 worth of seed. It would then have cost you 12 cents to sell each dollar's worth. This is not as high as $1.20 but still it is much above 1.5 cents. We must take for granted then that something is wrong in this particular case. I would suggest that the difficulty lay in the choice of a farm paper or in the way the advertisement itself was written. As a rule, a small advertisement in a farm paper will bring many more sales than large ads.

If you are advertising in more than one paper, the system of accounting is a little more complicated. In this case you must key the advertisement, in each paper in such a way that you can tell from every letter, which paper brought the inquiry. This keying may be done in several different ways. Usually the key is inserted in the address of the advertiser. For instance, in one paper you might write your address "John W. Brown, Box 25, Edgerton, Wis.," and in the other paper your address, "John W. Brown, Box 26, Edgerton, Wis." This would not confuse the Postmaster but would show you plainly which advertisement brought each inquiry. Another way to

key is to give a different "R. F. D." number in each advertisement. Some people put "Dept. F" as a key in one advertisement and "Dept. D" as a key in another. Another way to key is to write your name differently in one address than in another. For instance, if your name is "John W. Brown" you might write it "John A. Brown" in the second paper.

When the season is over you can take your pile of envelopes, which contained the letters of inquiry and separate them into two assortments. You will then learn which paper brought you the best results.

You must remember, however, that it is not always the paper that brings the most inquiries that gives the best results. The inquiries from some people may not result in a sale and of course the sale is the important proposition in advertising.

The possible mediums in which to advertise are naturally divided into several classes as follows: General farm papers, including such papers as the Wisconsin Farmer, Wisconsin Agriculturist, Orange Judd Farmer, etc. With the beginning of this year we have a corn paper. Its name is "Corn" and it is published at Waterloo, Iowa. No doubt this will prove an excellent advertising medium for a person having corn for sale. Another class of papers includes the Thresherman's Review of St. Joseph, Michigan, and the American Thresherman of Madison, Wis. These papers reach men who are interested in the grain crop and advertisements in them usually result in a good profit. If you have wheat, barley or oats for sale it might be well to advertise in some of the mill papers. The following is a list of the papers that are taken by millers throughout the United States. The Operative Miller of Chicago, Modern Miller of St. Louis, Millers' Review of Philadelphia, American Miller of Chicago.

Sometimes it is wise to advertise in a paper published in a foreign language. This is especially true if you are anxious to reach a class of farmers who take such a paper. As a rule local papers that cover only a small territory are not at all profitable advertising mediums. Usually all of the prospective customers in your own community will know of your seed without your advertising in the local paper. Then again the circulation is so small that you do not reach very many.

The experience of one Wisconsin farmer who advertised corn will suffice to show that local papers are very question-

able from the standpoint of profit. This advertiser used three local papers during two months and made only one sale during the whole time. Others have had similar experiences.

Wisconsin is specially fortunate in having a publication so closely connected with the College of Agriculture as the Wisconsin Country Magazine. It is taken by a large number of farmers who are interested in buying the best kinds of seed and because they see the advertisement in the paper published at the College, they rely upon its authority and usually purchase from advertisers who patronize this publication. Mr. H. E. Krueger made 18 sales as a result of a two inch ad in the Wisconsin Country Magazine last year.

The choosing of the medium is not the only important part of placing advertising. The selection of the months in which to advertise is perhaps just as important. January is a little too early although sometimes a few sales of seed grains are made during this month. February and March are really the best months. Sometimes it pays to advertise in April but usually the poorest results are obtained from an ad carried this late. Most of the farmers in Wisconsin have purchased what seed they will need before then.

It is really unnecessary to use a very large space in advertising seed grains. An inch advertisement will usually bring about as good results as a four inch ad. Probably the reason for this is that farmers are so much interested in purchasing seed grains during February and March that they study carefully every advertisement in the paper that advertises seeds whether it be large or small.

THE IMPORTANCE OF FARM ORGANIZATIONS.

M. WES. TUBBS.

Mr. President, Members of the Wisconsin Agricultural Experiment Association and Friends: I am grateful for the opportunity of meeting with your Association today, and certainly appreciate the honor of being placed on your program to open the discussion of so important a topic.

While my work and training will naturally lead me to emphasize the educational, the sociological, the commercial, the

civic and the economic phases of organization among farmers, almost to the exclusion of the productive, yet, I nevertheless, recognize the importance of scientific agricultural training, improvement of quality and increase of quantity growing out of careful selection and breeding, and also the great good accomplished by our Colleges of Agriculture, Experiment Stations and Associations. I am convinced, however, that you are much better schooled in production than in distribution, than in sociology or civics or economics. I am sure that some of these things have been sadly neglected, otherwise we should not have the frequent and ridiculous spectacle of a large crop yielding a smaller cash return than a normal or small crop. I believe the time has come when we should direct our attention, in part at least, "to making two smiles grow where only one grew before." In other words, to getting double pay for the two blades of grass or the two ears of corn that our education and experimentation is enabling us to produce. And with the better remuneration, more time can be taken for the social, the civic and the educational development of the farmer and his family. From this standpoint I hope you will pardon and also enjoy the turn we shall give to this discussion.

The topic assigned for this period: "The Importance of Farm Organizations" has claimed the careful thought and the exhaustive investigation and study of some of the greatest economists of the present generation. More especially is this true of European countries, which are far ahead of us in organization among farmers.

The Country Life Commission.

Quite recently, however, in this country growing out of a suggestion by that renowned Irish Organizer and Co-operator, Sir Horace Plunkett, to Mr. Roosevelt while President, the latter appointed on Aug. 10, 1908 the Country Life Commission consisting of

Prof. L. H. Bailey, of the New York Agricultural College,
Hon. Henry Wallace, Editor of Wallace's Farmer,
Prof. Kenyon L. Butterfield, of the Mass. Agric. College,
Mr. Walter H. Page, Editor of World's Work,
Hon. Gifford Pinchot—then Chief Forester,
Mr. C. S. Barrett, Pres. Farmers' Union, and

Mr. W. A. Beard, of Sacramento, Cal.

This Committee, in whole or in part, held hearings in thirty different places in twenty-five different states. They mailed over half a million circular letters with a blank containing the following twelve questions:

"1. Are the farm homes in your neighborhood as good as they should be under existing conditions?

2. Are the schools in your neighborhood training boys and girls satisfactorily for life on the farm?

3. Do the farmers in your neighborhood get the returns they reasonably should from the sale of their products?

4. Do the farmers in your neighborhood receive from the railroads, highroads, trolley lines, etc., the service they reasonably should have?

5. Do the farmers in your neighborhood receive from the United States postal service, rural telephones, etc., the service they reasonably should expect?

6. Are the farmers and their wives in your neighborhood satisfactorily organized to promote their mutual buying and selling interest?

7. Are the renters of farms in your neighborhood making a satisfactory living?

8. Is the supply of farm labor in your neighborhood satisfactory?

9. Are the conditions surrounding hired labor on the farms in your neighborhood satisfactory to the hired man?

10. Have the farmers in your neighborhood satisfactory facilities for doing their business in banking, credit, insurance, etc.?

11. Are the sanitary conditions of farms in your neighborhood satisfactory?

12. Do the farmers and their wives and families in your neighborhood get together for mutual improvement, entertainment, and social intercourse as much as they should?

What, in your judgment, is the most important single thing to be done for the general betterment of country life?"

Over one hundred thousand of the blanks were returned, the answers carefully tabulated, classified and compared with the facts learned at their various personal hearings. Based upon all of the information thus acquired the Country Life Commission prepared a complete report of over fifty pages, which was transmitted to President Roosevelt on January 23, 1909.

Accompanied by a Special Message from the President, the Report was transmitted to Congress on February 9th, 1909,

where it was, according to official records, "Read, ordered to lie on the table and be printed." It was printed as Senate Document No. 705 and *it is still lying on the table,* though probably no public document of recent years contained so much of real value to the farming community, nor for which there has been such an incessant demand,—always met, however, with the courteous circular of information, "Supply Exhausted."

After several months' effort I finally secured a copy from the opposite side of the continent, Spokane, Washington. The Board of Trade of that city considered the Report so valuable to the farmers of that state and being unable to procure any copies from Washington, D. C., they secured permission to reprint the Report, which they did at their own expense.

A Question:

Why is so valuable and so important a public document virtually suppressed by our government while uncounted and unread millions of semi-political speeches are published and mailed free into almost every home in the land?

The President, in his special message already referred to, summarized the results and work of the Commission in the following language:

"From all that has been done and learned three great, general and immediate needs of Country Life stand out:—

First, effective co-operation among farmers, to put them on a level with the organized interests with which they do business.

Second, a new kind of schools in the country, which shall teach the children as much outdoors as indoors and perhaps more, so that they will prepare for country life, and not as at present, mainly for life in town.

Third, better means of communication, including good roads and a parcel post, which the country people are everywhere, and rightly, unanimous in demanding."

It will be noticed that, "*the first, great general and immediate need*" recorded is "*effective co-operation among farmers to put them on a level with the organized interests with which they do business.*"

Effective co-operation without organization is impossible, hence organization is really of first importance.

Organization and Co-operation are so closely related to and dependent upon education that, in practice, a campaign of

education must precede successful results in either organization or co-operation.

We must educate to organize. Then the organization becomes a potent factor in extending and broadening the educational work until finally effective co-operative action is a natural sequence.

Economically considered the three words may be defined as follows:

EDUCATION: That continuous process of enlightment that enables mankind to *know, do* and *enjoy* things not before comprehended.

ORGANIZATION: The assembling of individuals into a working force where the whole may operate as one in the accomplishment of a given purpose.

CO-OPERATION: The working together, as a unit, of many individuals under a well defined plan for a common purpose.

Organization and co-operation for educational purposes are necessary, for instance, in the collection and dissemination of information—the food for thought and further education—the basis of social, civic, economic and commercial co-operative action. One community can thus be informed of what other communities have done or are doing and profit by their experience and success.

Many things can be done quicker, easier, better and more economically collectively, through organized effort, than they can be done singly. In fact, it is a safe proposition to state that all social, educational, commercial, civic and economic progress is directly traceable to organization based upon education, in the sense of "knowing," "doing" or "enjoying" "things not before comprehended" and to co-operation, in the sense of "working together for the common good."

From the above academic review of the topic under discussion, "The Importance of Farm Organizations" we may safely submit the following specific reasons why farm organizations are important:

Because, Collective action—co-operation—is necessary to place farmers on a level with the organized interests with which they do business.

Because, Co-operation or collective action without organization is impossible.

Because, Organization is promotive of education.

Because, Civic, economic and commercial reforms and progress are dependent upon education, organization and co-operation.

Because, Organization promotes social progress, gives all members of the farmer's family direct contact with their neighbors and broadens their general view of life and industry.

Because, Industry and commerce are organized and individual farmers can not supply modern demands nor purchase their own supplies in sufficiently large quantities to realize possible economics.

Because, Organized industry "Big Business" can and does employ the best talent procurable to secure legislation in its favor. Individually and unorganized farmers can not afford to do this, nor even to effectively oppose discriminatory legislation. Organized and co-operating farmers can control legislation.

Because, Tilling the soil, raising fruit and live stock or producing dairy and poultry products is only one-half of farming —the other half is marketing them—merchandising—this is business and busines men always organize.

Because, Farm products must be assembled, sorted, graded and put up in marketable shape and local facilities, warehouses or elevators, must be provided—the expense, maintenance and operation of these make organization and co-operation necessary.

Because, Those who have been doing the farmers' business have, too frequently, been "doing" the farmers also—not of choice, perhaps, but because of the uncertainty of price at terminal markets when they, in turn, shipped on the products bought. This necessitates too great a margin between farm price and market price.

Because, Organized and co-operating, with proper warehouse and storage facilities and with a system of credit, the farmers who produce the food and clothing for the world can control their marketing, make the year's supply go on the market gradually over a year's time—preventing gluts and corners, graft and speculation, congestion of traffic and senseless variation in farm-price.

Because, The stress of economic conditions in our large cities and many of the smaller ones makes it a struggle for existence. The "High Cost of Living" and the "Cost of High Living," the extortions of Trusts and Monopolies, the alarming uncertainty of employment, and the vast army of unemployed already begins to curtail consumption, weaken prices and foreshadow a serious financial disturbance, and unless the farmers, through organization, are able to maintain stability of profitable prices for their products, *force* business by making needed improvements, employing idle labor, buying supplies and machinery and thus emptying the warehouses of manufacturers thereby

starting anew the wheels of industry, conditions of 1873 and 1893 may be repeated in 1913.

Because, The condition foreseen by Abraham Lincoln shortly before his assassination when, in the agony of his soul, with the eye of prophecy, he exclaimed:—"As a result of the war, corporations have been enthroned and an era of corruption in high places will follow, and the money power of the country will endeavor to prolong its reign by working upon the prejudices of the people until all wealth is accumulated in few hands; and the republic is destroyed. I feel at this moment more anxiety for the safety of my country than ever before; even in the midst of the war." That time is now upon us. The statistical Abstract of the United States, twenty-ninth number, 1906, prepared under the direction of the Secretary of Commerce and Labor reveals the following startling facts:—

1st. That 51 multimillionaires own one thirty-fifth of the entire wealth of the nation, their names and wealth being given.

2d. That there were at that time approximately four thousand million and multimillionaires who owned approximately 87½% of the entire wealth of the nation.

3d. That the average property holdings of the remaining ninety odd million people was less than five hundred dollars each. (See page 900, Vol. 48 No. 24 Congressional Record, Jan. 11, 1912).

Because, Corporate capital now controls industry, hence labor. A score of "financiers," a few "clicks" over the wires and money is locked up, the wheels of industry are stopped and millions of workers are thrown out of employment—no wages, no food, no clothing, no shelter—the farmer's markets ruined, prices and values demoralized, mortgages foreclosed, robberies, murders and suicides—*a panic.* Such control has proven dangerous.

Because, Farmers are, as they have been so often told, the back-bone of the nation. Agriculture measures the prosperity and strength of any country. So important a factor, then, and so intimately associated with commerce, manufacture, finance, industry; in fact, with the very life, health and happiness of all other classes should be in a position to control industry and legislation, so as to protect and keep from starvation, suffering or want the millions of men, women and children of industry in the cities who are wholly dependent upon their wages from labor to provide themselves with food, clothing and shelter.

Because, Organized and co-operating, farmers can control industry, secure profitable prices for their own productions and insure equitable prices to consumers. They can control legislation and through it the people's money. They may be compelled to establish co-operative industry, manufacturies and means of wholesale and retail distribution, so as to insure for

labor employment and escape from the extortions of graft and speculation, but, organized.—farmers can do all these things and more, and no one can be really safe until the farmers are organized and do control the industry and wealth they create.

THE IMPROVEMENT OF FARM HOME CONVENIENCES.

PROF. C. A. OCOCK,
MEMBER OF THE WIS. EXPERIMENT ASSOCIATION.

It is with pleasure that I take this opportunity to address the association, even but for a short time. I want to take for my central thought "The Improvement of Farm Home Conveniences" and to what it leads. The subject is a large one, too large even to handle in so short a time, and I shall therefore touch upon the most important features.

Why do so many living on farms wish to give up the best occupation on earth and move to the city? Why do farmers' wives become dissatisfied with the every day drudgery found in the farm home? Why do the young folks become restless and seek other occupations? The reason for all this, is, there is too little attention paid to the farm home requirement.

The farmer has for operating the farm all of the necessary farm machinery, but the housewife, as a rule, is denied those things which go to make the house easily cared for. Even the well in many cases is out near the barn, making it necessary to carry all the water used in the house. To illustrate, a certain New England farm-house up in the Berkshire Hills is three hundred feet from the well, while the barn door is but ten feet. Someone asked the farmer why he had not reversed the distance and his reply was: "Well there's five horses and ten or more cows to be watered in the barn, and only three humans to water at the house." That men are selfish and lazy has been shown many times through just such actions as this. A man will spend several hundred dollars on sulky plows, manure spreaders, grain and corn harvesters to aid in his labors and forget the house, not thinking a water system of some kind worth while.

I sometimes think that while the farmer is severely criticised for lack of attention to his home obligations, that maybe the wife is just a little at fault. Certainly this is true in

many instances. The wife objects to having a washing machine because grandmother and mother washed by hand, and besides machines wear out the clothes. Women won't listen to reason, but wish to work things out by main strength and awkwardness. Do you suppose some of them would use a gasoline or kersosene stove for cooking and baking in the hottest summer weather? Never, they prefer to swelter over a big range where the temperatures are at torrid heights for fear the smaller stoves might blow up. So it goes; sometimes it is one and sometimes another, and then you wonder why the young people don't stay at home.

Our city cousin lives in a home which is equipped with some of the necessities of life; modern heating systems, bathrooms and laundries with sewage and water connections. Should not these things appeal to the heart of the young and make them restless with country life? But with the farm home equipped in the same way there will be little, if any, reason for being dissatisfied.

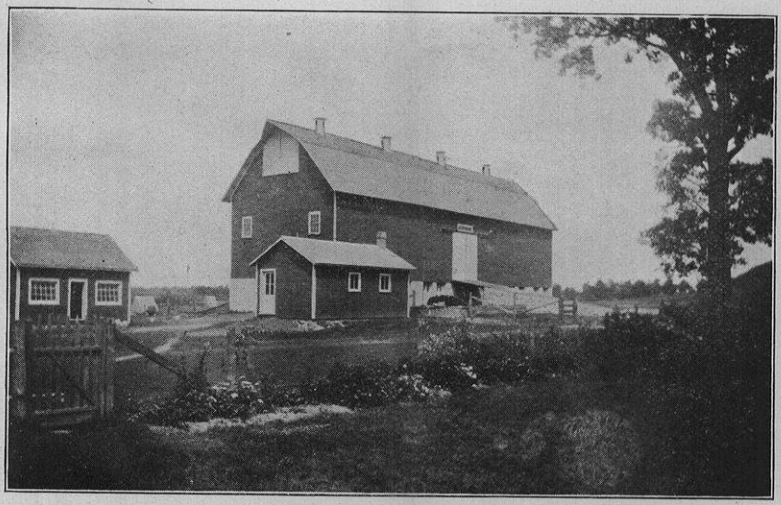
The installation of such conveniences will cost no more than some of the farm machinery and surely it is as necessary. The health of the family is just as important as is the operation of the farm.

Where there is a water supply in a house, it is usually necessary to have some method of heating other than stoves. A good hot air furnace installed will cost two hundred dollars, steam heating system three hundred dollars, and hot water four hundred dollars for the average eight room house. The bathroom appointments may not be so expensive. The three fixtures—tub, lavatory and closet should not cost over one hundred and fifty dollars completely installed.

The water system may be one of three; gravity, air pressure, or air direct into the water pipe. The gravity system is the simplest but is more apt to freeze in cold weather. This system is much cheaper than either of the others, costing from twenty-five dollars and upward depending upon the size. The other systems are more expensive, costing from one hundred dollars up to several hundred: they have this advantage though, of giving more pressure to the water. One of the last two systems for an eight room house should not greatly exceed one hundred and fifty dollars all complete. These fig-

BEAUTIFUL FARM RESIDENCE, TAYLOR FARM, ROCK COUNTY.

This beautiful farm is owned and operated by Henry Taylor who by his thrift has made it one of the leading farms of the county. Pure bred seed grains and live stock are the specialties upon the place.



BARN AND OTHER OUTSIDE BUILDINGS ON THE TAYLOR FARM.

ures, of course, do not include the power for pumping the water.

It is safe to say that furnace, bathroom and water system could be installed for not more than five hundred dollars. A house with such appointments will require some method of sewage disposal, and may be either a cesspool or septic tank: the latter being more desirable. The cost is about the same under ordinary conditions, and may be installed by the farmer and some additional help at a cost not to exceed twenty-five or thirty dollars. If the whole was let by contract, it is quite probable that everything could be installed for five hundred dollars. The problem of lighting I have left out, not because it should not be considered but because it is not quite so important from my standpoint as those which have been considered.

If it seems desirable to install a lighting system, a good gasoline plant will cost approximately two hundred and fifty dollars: this includes a gas range in the kitchen thus doing away with the big cook stove for summer work.

The acetylene plant complete will cost not more than two hundred dollars.

A great many of these plants are in operation in farm homes all over this state and are giving excellent satisfaction, and there is no reason why there should not be many more.

The small electric light plant is fast coming into a higher state of perfection and many are being installed, but naturally cost a little more and are a little more difficult for the average person to care for than gasoline and acetylene.

It has been said that modern farm home conveniences were a luxury, but at the present time they are a necessity. They reduce the amount of fuel used as well as the labor connected with handling it. The comforts of the bathroom and general conveniences increase the pleasures of the home many fold, and the housewife finds that her work can be done with much less effort.

Serious consideration should be given this matter. It is one that should not be treated too lightly. The importance of having a comfortable and economical country home is just as great as it is to have the necessary farm machinery for performing the field and barn work.

Far too many families are being cheated out of these pleasures looking only to the making of money and paying for the farm, but a home with modern facilities will help pay for itself and the farm just as fast as will the modern farm machinery; and modern farm machinery has made it possible to farm on a paying basis.

Time will not permit me to discuss the many other problems which I should like, but if you will think on these things you can accomplish much. You can increase the earning capacity of the home workers, add cheerfulness and pleasure to your surroundings and at the same time you will provide those things which are so attractive to the wife and young folks, and which are alluring to them in the city.

Provide for the home, and the future by installing a few of the necessary conveniences and there will be no occasion to ask, why do the young folks leave the farm.

CO-OPERATION OF THE COUNTY ORDERS OF THE EXPERIMENT ASSOCIATION FOR THE BETTERMENT OF RURAL CONDITIONS.

BY W. E. LARSON STATE INSPECTOR OF RURAL SCHOOLS.

Inasmuch as there are many members of this association who are not members of county orders, I think it well to devote a portion of my time at least to the discussion of what may be done by the members, as individuals, for the betterment of rural conditions. In this work of improving country conditions, we may work individually and collectively.

In the discussion of this subject I shall consider it under four different topics, namely the four institutions, the home, the school, the church, and the state.

Let us first consider the home. Wherever there is a beautiful and happy home, there is an influence radiating from it which is felt by all who come in contact with it. We have heard something to-day of how the home may be arranged more conveniently. Let us consider how the home may be made more beautiful.

I know very well that the people on the farm are busy. Yet there are many things that can and ought to be done to make

it a place of beauty. A few trees and shrubs planted around the house will do much to make the place an attractive one. A few flower beds and a lawn add much to the beauty of the surroundings. There are villages in Wisconsin noted for their beauty. When we begin to look around for the cause, we usually find that a few of the citizens started by fixing up their yards and planting trees, vines, and shrubs. Others followed and in the course of a few years the whole village seemed to have gotten a higher ideal. A great deal of the teaching that we do in the world is by example. A home here and there in the country fixed up according to the best ideas will do much to raise the ideal for the whole neighborhood. The silent influence of a beautiful home is one of the strongest factors in rural betterment.

The second institution to which we will give our attention is the school. The country school should be an institution that is in keeping with country life and should do much to instill in the young minds ideals toward better conditions, I shall confine myself to a few practical things that the members of this association can do to improve our country schools.

In the first place, every member of this association ought to attend the annual school meeting which is held the first Monday in July. Get the best persons available on the school boards. There are on the boards in our state many individuals who do not take great interest in the schools. These ought to be retired, and good, live persons put in their places. This can only be done when the live people of the community will go to their school meeting and make things move. Besides electing the best officers available, the members ought also to try to get sufficient appropriations for the proper maintenance of the school. If the schoolhouse is in poor condition, improvements ought to be made on the building. If the equipment is insufficient, more ought to be provided.

The members of the association can do much to improve the country school by coöperating with the teachers and county superintendents. We have introduced agriculture as one of the subjects to be taught in the common school course. As we know, many teachers have very little practical knowledge of this subject. The members of the association could at times go to the school and give the children practical talks on such subjects as the selection of corn, the cultivation of the soil, etc.

One member of this association whom I know personally has done much by going before the teachers at their meetings and giving them exercises in the judging of corn, and in seed selection. If the members of the association will do all they possibly can in the teaching of agriculture, we shall have a great deal of life infused into the country schools of the state.

The county superintendent is the educational leader in the country schools. The members of the association can do much to make his work effective. In some counties the county order as an organization has helped the county superintendent in the management of corn contests. It is here where the county order as an organization can do the most effective work.

In many school districts of the state, meetings of various kinds are held during the year. These organizations are known as literary societies, farmers' clubs, parents' meetings, and the like. Whatever they may be called, the members of the association can do much by taking an active interest in their work. Some of the discussions ought to be of an agricultural nature. Topics of civic interest should also be taken up, as should questions pertaining to the welfare of the homes. We cannot overestimate the influence these meetings have upon spreading intelligence and in making the life in the country more pleasant and agreeable. Let the members of the association, therefore, do all that they possibly can to help along this movement and make the country school more of a social and civic center.

We have in the state of Wisconsin what are known as school board conventions. These have done much towards enlightening the people concerning the best ways of managing the schools of the state. Whether the members of the association are school officers or not, they can do much good by attending these conventions. Briefly speaking, the members of the association should in every possible way identify themselves with the school work of the community in which they live, whether that work involves merely the running of an ordinary country school or whether it includes schools of a higher grade.

Regarding the church as an institution for the betterment of rural conditions, I will merely say there is a great opportunity for the young men of the state to do effective service

in connection with this institution. The church is what the people make it. If the church is made up of live members, it will do much towards making country life what it should be. I would therefore urge the members of the organization in every possible way to make this institution an agency for the upbuilding of the highest ideals possible.

The last institution I make mention of is the state. We are all citizens and therefore should take a live interest in the affairs of government. This means that the members of the association should participate in all town and county affairs and be present at all meetings where the public welfare is discussed in any way. We must not expect our government to be ideal if we neglect the little things. It is not enough to go to elections when some high officer is to be elected, such as the president or governor. It is just as important that we attend the town meeting in spring and put in as our town officers the most capable, energetic, and enthusiastic individuals of the community. If every community of the state had an ideal local management, the chances are that the state itself would be pretty well governed, but if we neglect our local affairs, it is out of the question to expect the ideal management of the larger affairs of state. The members of the association should therefore do all they possibly can to make the local government as efficient as possible. as well as to take an interest in the larger affairs of the state as a whole.

In conclusion I wish to emphasize the fact that it is largely the little things that need to be looked after. If we work individually and collectively to do all we can to make these little things perfect, we shall do a great deal towards making the whole state better. An ideal state is one in which all the different classes work harmoniously. Many people in the state belong to the rural class. The happiness of everybody, therefore, is largely affected by the welfare and happiness of those who live in the country communities. The improvement of the country communities depends largely upon the efforts made by the people who live in these communities. The members of this association are all active workers in the rural communities. You have an opportunity as few have to better the condition of the state. Let your example be such that it will be an inspiration to all who know you.

WHEAT BREEDING.—THE VALUE OF THE INDIVIDUAL.

F. H. DEMAREE, AGRONOMIST J. I. CASE PLOW WORKS, RACINE.

When considering the subject of plant breeding, all farm crops may be divided into two classes in reference to the manner they are pollinated. Some crops are inbred and some crossbred. The inbred ones furnish us examples of the closest kind of breeding. The pollen or male element of the flower falls directly upon the stigma or female portion of the same flower. In other words, it fertilizes itself. Crossbred crops are entirely different, in that they are so formed that the pollen from one plant is naturally transferred to the stigma of another plant. This transference may be done by the wind or various insects.

Of inbred crops wheat, oats and barley are our most commonly known field crops, while corn and rye are the best known examples of the crossbred grains.

With these fundamentals in mind let us return to the subject of this discussion—wheat. Before going further, it should be said that of all crops with which the speaker has had to do, wheat responds most readily to good seed selection, breeding, good soil preparation and fertilization. Wisconsin was once a great wheat state, but that glory has long since departed. But there is little reason why she should not return again to the ranks of our best wheat producing states.

In breeding wheat the main objects which must be kept in mind are (1) yield, (2) quality, (3) stiffness of straw, (4) disease resistance and (5) hardiness. The question now naturally arises as to how these objects may be attained when the breeder is dealing with so small a seed as wheat and so many individuals.

The individual plant, produced from one seed is the basis of procedure. Since it is inbred, you can be sure that each head and each grain produced by that plant carries down with it all the heredity found back in the original kernel. So, if plants can be found which have any much desired characters, their propagation should insure the perpetuation of those characters.

The question is, do individual plants of wheat of a given variety vary, one from another? Will one plant produce a high yielding strain and another a low yielding strain? Will one plant produce a winter resisting strain and another a poor resisting strain? All of these questions for all imaginable characters must be settled before we can plan out a system of breeding that will get results.

At this point it is essential to note that it has been absolutely proved that individual plants of an inbred race do breed true to the characters expressed in them. Prof. Hjalmar Nilsson of the Svälof station in Sweden should be given credit for this proof. About twenty years ago he took up this work, but conducted his breeding operations along old German lines of mass selection. That is, by selecting a number of good plants, mixing the seed and planting them. He soon saw that his product was very ununiform. So one year he selected several hundred individual heads of wheat and oats and planted the grain from each head in a little row by itself. The next season he was greatly surprised to find practically every row exactly like the original head selected.

In most of our so-called pure varieties of wheat there are almost countless numbers of various types. Some are distinct, while others vary but little. These types can be selected, tested side by side and then propagated in commercial quantities. A strain so treated is called "pedigreed."

We are unable to account satisfactorily for the appearance of these elemental types. Nilsson considered them elemental in the real sense of the word—that they are always to be found in any variety having a mixed origin. The old method of fixing a new variety was to select a number of the best individuals which seemed to be alike and mix the seed. They may have been alike, but probably were not. In some cases the first plant may have been an accidental cross and, of course, produced many individuals in the course of time much unlike itself.

At all events the knowledge that individual plants of a given kind and variety of grain do vary considerably has given rise to our present system of breeding. Large numbers of plans are carefully studied from all standpoints, then comparatively few chosen for test purposes. The seed of each plant is saved by itself and planted in a single row. The

test of the plant comes in its yielding power, hardiness, disease resistance, etc., of which it is capable. This system of planting and testing is known as the Centgener System and is the one practiced at practically all of our Experiment Stations.

You are, of course, interested in knowing what you can do on your own farms. Can you do more than simply grow the grain put out to you and keep it pure? It may be of interest and perhaps surprising to know that most of our many varieties of grain have been produced by farmers. They have made crosses of corn and by persistent effort set one of the resulting types with great accuracy. They have noted strange heads of wheat, oats and barley in their fields and gathered enough for a start, thus bringing out a new variety.

Every grower of grain can watch his fields, looking for the exceptional individual plant—one which is taller, stronger, free from rust or smut, or especially productive. Such plants when propagated almost invariably breed true if they come from a naturally inbred race. Nature has produced for us in her abundance all the types that we need to suit our varying conditions of soil and climate. It is our part to find them.

THE GROWING OF PEAS IN NORTHERN WISCONSIN.

PROF. E. J. DELWICHE, ASHLAND.

Wisconsin has long been known as a leading state in the production of peas, both for canning purposes and for dry peas. The combination of soil and climate in many sections of the state is such as to favor the growing of this valuable crop. Owing to faulty systems of agriculture it is doubtless true that the pea growing industry is not nearly as flourishing in the older sections where peas have been growing for many years, as was true in past years. The pea crop has been such a profitable one that growers have not deemed it necessary to pay proper attention to the matter of crop rotation. This has led to disastrous results in many instances. Weeds particularly the Canada thistle, have become more and more numerous until many sections which formerly were quite free from this troublesome weed are now badly infested. In many

sections insects, such as the pea weevil and the pea louse, have also multiplied to a great extent from the same cause. There is no question but what the different fungus diseases which of late years have been so destructive in many localities, have also been promoted by the unscientific methods of agriculture in vogue in many of the districts where peas are the main crop. That growers will have to adopt radical changes in their systems of crop rotation seems evident. These troubles are not present in Northern Wisconsin, since the crop has not been extensively grown until lately. It is hoped that in the newer areas where peas are being introduced, farmers will profit from the experience of the older regions and start out by growing their peas in rotation with other crops rather than to follow continuous croping of peas as has been practiced in many of the older localities where peas are grown commercially.

The development of commercial pea growing in Northern Wisconsin has taken place in very recent years. It is true that peas have been grown in every county as feed for stock for a number of years, but not until very recently has the crop been grown to any extent in the newer counties of the northern half of the state. Already pea canning factories have been established in several of the northern counties. Pea canning factories are located at Barron, Rice Lake and Chetek, and other places in Barron county. There are also factories in Polk, Langlade, Marinette and other counties. It may be said, however, that the industry has not been developed to any great extent as yet, if we consider the northern half of the state as a whole. There is a good deal of land which is adapted to growing this crop which has not yet been opened up and which is destined some day to grow peas very profitably. Returns from the pea canneries in favorable seasons have been very good. In 1909 peas ranged from twenty to one hundred dollars per acre above the cost of seed in some of the localities visited by the writer. The Lake Superior region today offers probably the most favorable condition for the growing of field and canning peas, amongst the undeveloped sections of the state. Climatic and soil conditions in this region are particularly well adapted to the pea crop. There is a great belt of heavy red clay soil extending for a distance of from eight to twenty miles south of Lake Superior, which

when proper attention to drainage is given, grows the best kind of peas. It should be noted that the region in question has many things in common with the famous Door county peninsula, where peas have been grown very extensively for the last twenty years or more. The cool climate and red clay soil seem to favor the growing of this crop. Realizing the possibilities along this line the Experiment Station has been giving a good deal of attention to the development of the pea industry. Variety tests were carried on at Ashland and Superior and lately in Rusk and Clark counties, with a view to finding varieties which are best suited to the region. The results at Ashland have been very satisfactory. Experiments have shown that the high class soup peas, such as the Green and the Scotch varieties, can be grown very profitably and very good yields per acre have been obtained. It is worthy of notice that during the past season yields averaging from thirty-five bushels per acre were obtained. This in spite of the fact that the weather conditions were not as favorable to the pea crop as they might have been. In fact the very high price now asked for the varieties mentioned bears testimony to the fact that there has been a shortage in the other regions where peas are grown. One of the drawbacks of the pea industry is lack of purity of stock. Extensive breeding experiments are now in progress at the Ashland substation with a view to finding superior pure bred strains of the different standard varieties of peas now grown. The results have been very gratifying. Some strains of the Green and Scotch varieties gave yields much higher than the original stock. A strain of the Green variety last year yielded over fifty bushels per acre and an improved Scotch strain gave a yield of forty-five bushels. These yields were obtained under field conditions, without any fertilization or extraordinary attempt to obtain large yields. These strains are now being increased as fast as possible and it is hoped that within a very few years, dissemination may be started. Over four hundred selections from several standard varieties were grown at the Ashland Station during the last year. The preformance records of these different strains are kept, together with their relative immunity from the attacks of insect pests and fungus diseases. There is little doubt but what it will be possible to provide much higher yielding strains of the differ-

ent varieties in comparison with the original stock. In addition to the straight selective work, crossing has also been resorted to and interesting results have been obtained. It is too early to predict as to the possible economic value of this line of work. It seems very probable, however, from the results thus far obtained, that new varieties possessing desirable characteristics will be produced.

In conclusion we wish to emphasize the fact that there is a good opportunity for the growing of the higher priced varieties of peas in the North—the canning and field varieties doing equally well. There is no doubt but what the pea crop is destined to find a prominent place in the development of the agriculture of Northern Wisconsin.

THE FARMER AS A MAN OF BUSINESS AFFAIRS.

W. L. AMES, TREAS. FARMERS NATIONAL CONGRESS.

When Prof. Moore asked me to discuss this subject briefly with you at this your 1912 session, he inserted certain qualifications that caused me to hesitate to accept the duty. Principal among these qualifications, he urged that I emphasize the propriety of essentially abandoning old slip-shod ways and attaching to newer forms, and to more fully ascertain by bookkeeping methods, those lines that were paying, and to abandon those methods and ways that did not *seem* to be paying.

At once there came to my mind certain young farmers of to-day taking their pyrotechnic flights, (if flying at all) from the *top* round of the ladder which it had taken their fathers a lifetime to build, and ingloriously landing, if landing at all, in Goshwalikan Avenue. Not content with following the possibly slow trend of the fathers slow but reasonably sure labors, they seemingly can't move a wheel until they have installed every new, and possibly untried device for labor and time saving, and about the time they think they are ready for a certain line of work, change their minds and conclude that that is not, after all, the line of farming that they are adapted to, and then proceed to entirely overhaul their plans to conform to some other line of farming.

Feeling that it would be inconsistent for me to follow just his outlining, I decided not to accept the duty until I should have a personal interview with Mr. Moore, which I had, and resulting with the proposition from him to take the subject and treat from my own standpoint.

QUALIFICATIONS.

There is indeed a no small amount to be considered in this subject. A man, to succeed in any business, must be more or less, a man of business affairs. Among other important characteristics, he must, as the term goes, "Be a Good Mixer." There is nothing that better prepares a man of to-day for successful business than to mingle freely with his fellow men, take free action with them, study their ways, appropriate their good and pleasing ways, abstain from their obnoxious ways and habits, think out and cultivate good, wholesome and progressive ideas, struggle and aim to be just a little in advance of the average mind if possible, and in all things that he undertakes, or that is for the common good, be sure that he keeps his end of the evener up.

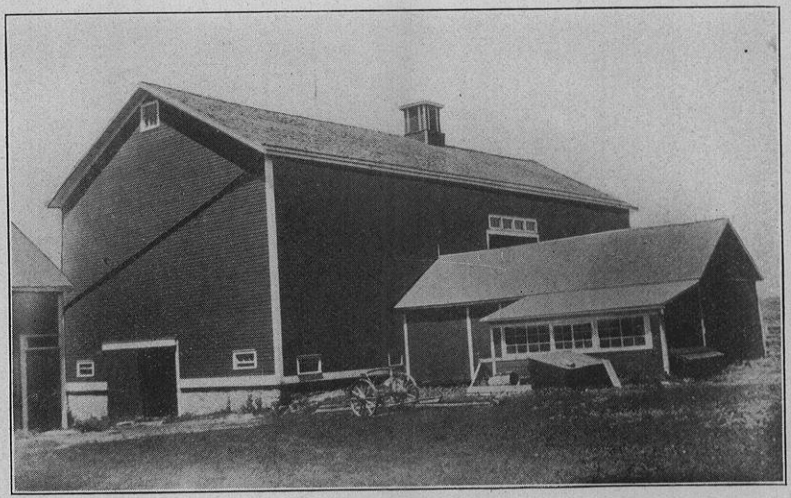
THE HALF-BUSHEL FARMER.

We ever have with us in abundance the half-bushel farmer, who with his two or three cows, a couple of pigs and a few chickens, is so absorbed in his own business that he has not time to think of anything else, or give an hour's attention to anything outside of his own little home realm of business. This class, large as it is, and good-and inoffensive as are the individuals composing it, need never be expected to move matters of general interest and affairs very much. To move matters in which a public as well as the individual is interested, calls for a mind of broader vision and capable of grasping a situation and acting upon it just at a time when it is ripe for action. Opportunities come to all for favorable action. Utilized, they broaden the individual and rulably benefit the public. Unused and lost, the mind soon ceases to be able to perceive them when they do come, and ultimately concludes that opportunities do not come to him.

"FAIR VIEW" FARM RESIDENCE.

Home of W. L. Ames.

The Fair View farm is pleasantly located within a mile of Oregon, Wis. This beautiful farm is managed and operated by our worthy friend W. L. Ames who has made it one of the most pleasant and productive farms in the state. Mr. Ames has always taken a deep interest in agricultural affairs and is now treasurer of the Farmers National Congress. He has always manifested a deep interest in the work of the Experiment Association and through his kind counsel and activity at meetings has assisted materially in the welfare of the organization. Mr. Ames is an honorary member of the Experiment Association and has always labored earnestly for its general welfare.



SOME OF THE FAIR VIEW FARM BUILDINGS.

JUST A WISCONSIN FARMER.

To be "Just a Wisconsin Farmer" is ceasing to be an idle phrase. It is growing to mean much. It means World Championships in grain and seed grain growing and qualities. And still more when, in a world contest, Wisconsin not only gets within the coveted circle of some ten prizes, but challenges World admiration by complacently walking away with 1st, 2nd and 3d prizes in a world grain contest. Again I repeat, *It means something.* And it means, among other things, that there are among us those fulfilling the wording of my text, or "Farmers as Men of Business Affairs."

WISCONSIN'S POSITION.

Wisconsin's position is certainly becoming unique. Accredited among her sister states with conservatism, or rather conservative radicalism, yet she is an acknowledged leader in progressiveness, and as I mingle with public assemblages away from home, no state is so frequently and creditably referred to as Wisconsin. And in these references, the University and the College of Agriculture are not the least, nor the least favorable, of the references. Public Institution that it is and one in which we all feel a great pride, we personally hope that "The Junior Prom," in which wealth alone can be considered and the poorer student not even allowed to get a glimpse of the interior; the Stadium, and the Athletic Field, may not become too conspicuous factors in the otherwise great institution.

OLD AND NEWER WAYS.

But to return more directly to my subject and to follow briefly the cue intimated by Mr. Moore. "Abandoning Old Slipshod Ways." Yes, slipshod ways in particular, as slipshod ways are seldom leaders to success. But I am hardly prepared to champion the abandoning of all old ways until we are practically certain that we have surer and better new ways to success. The good old ways are the ways that have built the hundreds of substantial and creditable farm homes with which this country abounds.

Good or bad ways proven by bookkeeping. Bookkeeping will seldom prove beyond doubt, ways, good or bad. One of the greatest disappointments that I have found in farming, and I am not alone in this discovery, is, that we pursue a certain course in farming for several years and succeed and then we say, "There, there's one thing that we know how to do," and the very next time we try it we fail, and then we don't know as much as we thought we did. In fact there are few things that we do know. But there is no backing up: We must proceed on a line of general principles and with faith that if we do our best, reasonable reward will be ours, and the world will be fed, for such is our high mission.

THE FARM BRED AND THE COLLEGE BRED FARMER.

In the term "Farmer" as used in this subject, reference is made specifically to the actual and practical operator of a farm. Presumably a farm bred farmer. I would not know how to handle, nor what to say of a city or college bred farmer. I assume that the great majority of you young men, and perhaps all, are farm bred farmers. If so you know as well as I the real and practical value of the assuming farmer who is but a college bred farmer. Knowing but very little of the real business of farming. For farming is a real business and if ever a business teemed with surprises and disappointments, farming does. Which leads us to the subject of

DELUSIONS.

Young men, I'm going to say just a word to you personally whether strictly relevant to my subject or not, and it's along this line of delusions. It's a slightly sensitive subject and perhaps not one of you will agree with me, but that never causes me to hesitate to say what I think. It's about weddings. Perhaps you have all experienced your first wedding. If so you doubtless remember how beautiful that girl looked that, to you, eventful day. And unless you had made her close kitchen and work-a-day acquaintance you doubtless thought to yourself, "Is it possible that I am to spend the remainder of my days with so beautiful a creature as that?" But if you had to work for a living, it was not very long before you had to

behold your bride in a plainer attire, when she would not look so exquisitely beautiful and lovely, but you were then wed and destined to live together a lifetime. The delusion was as great to her. She beheld you in your conventional black: Doubtless with white tie, shiny shoes and a derby hat and gloved hands, and a face shaved so smooth that a fly would slip up on it and perhaps a grand moustache, and perhaps on that particular day you had, for exhibition purposes, stuffed your purse with one-dollar bills to make it look liberal and resourceful. But Oh my! Again I say, if you had to work for a living, and get to work soon after she took you "For better or for worse", and she had to behold you in your work clothes and coarse shoes and with a growth of beard stubble on your once feminine cheeks, and she had discovered that wad of money on your wedding day was only one-dollar bills, don't you almost wonder that she did not at once pick up and leave you? My proposed remedy would be. Simply tone down that wedding day delusion. Appear to be more nearly what you really are on that day of days, your wedding day, and the day of all days that has such a marked influence on your after years, and my prayer is that the influence may be only for good.

I am reliably informed that a similar delusion exists in cities relative to farming. That many a city man, workman perhaps, labors and lives under the impression that a farmer simply walks and struts around most of the time with his hands in his pockets and that there is at all times an abundance of coins there with which to make a very perceptible jingle. That at times of high prices his bins are heaped high with the wherewithall to sell. That with butter at prospectively 60 cents a pound, his sleek cows at the end of a 20° below January are just more than filling pails and cans with 5% milk. That because they are paying 18 to 25 cents for meat over the block, that the farmer must be getting one half to three-fourths of that price for his live animals. That because there is a 10 cent-a-pound tax on colored oleomargerine that it must make that commodity that much higher to them, and they pray fervently that that tax be removed, so that manufacturers of oleomargerine can color it to imitate real butter and then charge them 40 to 60 cents a pound for it, the same as butter price. Whereas there is but ¼ cent a pound tax on uncolored oleomargerine, which sells at 15 to 18 cents per pound and the col-

oring pill thrown in so that the consumer can color it himself. Oh, we sincerely hope that when the consumer succeeds in getting that 10 cent tax removed and he is paying regular butter price for oleomargerine, and the manufacturer of oleomargerine is thereby simply doubling his profits, we sincerely hope the consumer will be satisfied. It takes a farmer of only "Half Business Affairs" to comprehend this. And again I have been told directly by the city laborer that he had been led to believe that at all times there sat on the farm kitchen sideboard an inexhaustible egg basket, ever ready for the farmer to just slip his arm through the handle as he started for market, and with which, at perhaps 30 to 40 cents a dozen, to pay for his ample supply of groceries for the week to come, but whether at 30 or 10 cents a dozen, the inexhaustible egg basket is always there and full.

CONCLUSION, THEN, AS TO "DELUSIONS."

After a lifetime of observation, I believe I am prepared to unreservedly testify as a "Farmer of Business Affairs" that matrimony is a blessed relation, and the relation intended by our Creator, but that it would bring fewer disappointments if shorn of some of the tinsel, draperies, gaudy attires and elaborate wedding dinners of the wedding day. And as to delusions relative to farming: I need not comment of them to the young man before me who has been brought up on the farm, but to the possible young man before me who is but a college bred farmer, let me warn him not to be too seriously influenced by the prevailing city idea of what the real farmer and his life is.

SURPRISES AND DISAPPOINTMENTS.

If ever there was a business that teems with surprises and disappointments it is Farming. The man never was more mistaken in his life when he thinks or concludes that farming can be reduced to a bookkeeping science and industry. That by last years results he can safely figure out the results of the coming year. He had best not spend too much of his anticipated earnings on this basis before he has them in hand.

As I have before remarked: We follow a certain line of labor for a few years and succeed, and then conclude that we

have finally clinched a point on that crop, and the next year we fail, thus revealing to us that there is scarcely such a thing as "Clinch" in farm methods.

Again we become discouraged and absolutely abandon the old farm orchard, as unworthy of our further care and attention. We give it up. It becomes sod-bound, untrimmed and, neglected and almost forgotten, when under these handicapped conditions, it shows up the next year with the most bountiful crop of the most perfect fruit in the existence of the orchard. So while it is not well nor worthy of us to base our future labors and plans on "Slip-shod" methods don't let us absolutely lie down because we have not every equipment that we would like. The farmer worthy of the title "A man of business affairs will find many an avenue to success other than through the one avenue of technical high class equipment. The methods I once applied to the raising of a certain bumper crop, while conforming well to nature conditions, seemed so obnoxious to my more sensitive neighbors, and considered by them so slip-shod that they confessed to me later that they had been praying all summer that I would not get my seed back, but they were still magnanimous enough to acknowledge the accidental success of the incident and the methods then and there employed have since become the regularly applied methods in the neighborhood in the production of that crop. The owner of a piece of very ordinary farm land right near our home in crossing his field one day picked up a very small glistening pebble. He half jokingly announced that he had found a diamond. It became a neighborhood joke. But a final scientific examination proved it to be a genuine diamond.

Farther than to steer us in an averagly satisfactory course, technical bookkeeping in farming will not prove a panacea for numerous ills. The man in debt knows reasonably well at the end of the year whether he has kept his interest paid and possibly some principal. The man out of debt knows equally well about how much he has laid out in permanent improvements, and about how much his bank accounts of the past year exceeds accounts of the previous year. To what extent the new Income Tax law will necessitate the keeping of more technical farm book accounts remains yet to be seen. It may not be amiss to begin a mild practice of the habit. I would not be

understood as disfavoring farm bookkeeping. I have practiced it since the beginning of my business years, and would not think of abandoning it, if for no other reason than, having been taught from infancy that we must live within our income, my simple system of farm bookkeeping at least steers me in this direction.

CHARACTERISTICS OF THE FARMER AS A MAN OF BUSINESS AFFAIRS.

Among the characteristics of my ideal "Farmer as a Man of Business Affairs", I would mention nothing but what I believe to be perfectly attainable by the ordinary farmer if he will but put forth the best efforts within his ordinary powers. He cannot sleep away his hours. He must be wide awake in daylight hours; He must think as he works; He must put good thoughts into action; He must be progressive; He must be capable of expansion; He must think some of the time of someone besides himself. He must pull occasionally on the other fellows tug; He must recognize the fact that there is a public side to agriculture that will not take care of itself, and that it devolves on him in a measure to assist at least in that supervision and that, too, without consideration of the salary that may or may not be in it. Don't think too much about the salary; the other fellow will look after that. Remember that it is only what you do for others that will live after you when you are gone. Not the big salary that you won. Look rather with pity on the man who stands in his own dooryard and gazes as you open the snowbound road by his place. He is really so small that he will sometime drop out of sight and no one will know that he is gone.

The ideal "Farmer of Business Affairs," has learned well by years of forethought, to be reasonably prepared for the inevitable disappointments coincident to farming, and to reasonably prepare himself for them. In other words, forethought is almost equal to forewarned. Again this ideal "Farmer of Business Affairs" will find ample to busy his mind and energies with other than smoking. This same Business Farmer may have to become accustomed to injustices but will never become reconciled to them and will be ever on the alert to deal them a knock-out blow or to assist in it, should the least opportunity present, and we believe that for real injus-

tices, opportunities for correction will present, if we are only perceptive enough to recognize them.

Aren't we ashamed of ourselves to permit the perpetuation of even a hint that political office buying is permitted in our midst? Are we dead sure that the much lauded Primary has eliminated the chronic office seeker in our midst? Are we reasonably certain that the heart will of a people is being considered in the construction of rural $3000.00-a-mile highways, when it is stated in legislative committees, and not refuted that not 5% of the clamor for better rural roads comes from the rural communities. Then where does it come from? Answer. From Automobilists.

The Business Farmer of today must be constructive. He must know his real needs and then go after them. No other class will bring them to him. Other classes are only too busy looking after their own needs. Neither must he depend on someone else of his own class to do the work. Oh! there are so many who are just hoping that someone will do something to relieve the situation or bring about the better conditions with no apparent thought that they have any duty in the matter. In fact they have become so dependent on someone else doing the philanthropic work for them that they have lost all self-dependence, and have become simply and absolutely passengers for some one else to pull.

If we would have a Parcel Post in this country adequate to its needs, and equal to other countries to which we would blush to consider ourselves second: A Parcel Post, (not that discriminates against the citizen of this country, and in favor of the Italian and Hungarian and other alien in our midst, and again shame on us), that would assist to transport the innumerable small packages of merchandise continually enroute in our midst, with the facilities practically all installed and not half utilized, it remains for us to go after it with all the energy of which we are possessed. The opposing powers now in force are looking well to their defenses but they apparently realize that their citadel is about to fall and are seeking the easiest way to let it down as easily as possible, even to trying to sell out to the government, as though to eliminate the extortion, the government had to buy them out.

In not only this but in many things must the Business Farmer be constructive. To know a good thing when he sees

it and to pursue it; and if it be quite a young farmer and possibly single, if it perchance be a good worthy young girl that he pursues, yield to no obstacles until she is yours.

The "Farmer of Business Affairs" of to-day must not only be constructive, but he must also be inventive of new ways, which while benefiting himself, will also benefit others.

In this line practical coöperation must play an important part. One of the apparently most successful illustrations of practical and profitable coöperation that I have ever observed is the "Independent Harvester Company" of Plano, Ill. It had its inception simply in the grasping of an opportunity by "Farmers of Business Affairs." Its site is financially historic. A portion only of its present housing, having in the past housed the entire former "Deering," and later "Plano" harvester plants, that at an opportune time sold out and merged into the "International Harvester Trust" at many millions of dollars. If these plants had succeeded, why not a third plant under good management, of which there is every evidence in the "Independent" plant. Also securing to the patrons and stockholders first-class machinery at reduced cost, and also affording safe investment for surplus farmer capital.

Coöperative elevators and possible stores and markets serve the same purpose. We can scarcely leave this subject without at least touching upon

THE HIGH COST OF LIVING.

As the farmer, of all men, lives near the productive end of what we term the elements of living, the observing and business farmer cannot but have a fair idea of why some articles are high. To begin with, as a people, the speed with which we are living in some lines, has accelerated to such an extent that we have entirely lost our reckoning and foundation. Little but the best of steaks is called for at the meat market. The horse drawn pleasure vehicle is being superseded in many instances by the automobile, not only costly in original price but costly to operate and maintain, and at best can be used only a portion of the year. We must have elaborate buildings and offices for our public servants to labor seven hours a day in, while the farmer feeds his pigs and stock, and milks

and cleans stables for fourteen hours a day under such circumstances and conditions, be they good or bad, as he can afford or improvise. But last and most emphatic of all the consuming public stands aghast at the pinnacle price at which butter stands today. But do they think that the principle of the old adage "Can't keep your cake and eat it too," has ceased to be effective and become obliterated? Did they think last June and July and August, when surplus butter should have been going into cold storage for winter use, but when they were nibbling up the entire cream out-put of innumerable country creameries in ice cream, a habit that has increased by leaps and bounds in the past year or two, did they think they would yet have that same cream in the shape of butter to draw on indefinitely in the following winter months? If so they are finding to their sorrow that they cannot live on ice cream all summer without feeling the pinching effects of it in the dairy product at some other time of the year. The dairy interests of this country are extensive but not inexhaustible. They will not stand up under all kinds of abuse, and subject to every call, especially in a 20 degree-below-zero-January. This is evident at least to the "Business Farmer."

Right in this connection we would add that we believe the possible goal of lower-cost living will not have been reached or nearly reached until the appetite of the consumer shall have become sufficiently toned down and modified so that an ordinary fresh-meat roast or its equivalent can be worried down without the accelerating aid of a Yorkshire pudding, the essential element of which, in winter, is 40 cent eggs. And again, not until the producer and consumer cut cross corners and came closer together in the transmission of the necessities of life between the two. Here again is one of the opportunities of "The Farmer as a Man of Business Affairs" to make his best attempt to bridge a heretofore difficult-of-passage chasm, and in the bridging of which he will have rendered valuable service to humanity.

A year ago, as the 1st of March approached, I suddenly found myself in need of a married man for farm work. I thought and concluded hastily. I advertised my detailed needs in a Madison daily paper. In less than forty-eight hours I had sixteen responses to my ad, the majority of

whom could present good references. I accepted the first one who personally presented himself and I have not been disappointed and we are arranging to continue together. Deductions. Prepare more good small farm tenement homes, employ more married help, and we will have, in the main, better farm help. 2nd, The majority of the sixteen who responded to my ad, had been reared on the farm, were experienced in farm work, had gone to the city to better themselves, had had an all-sufficiency of the attempt at betterment, and were now ready and eager to return to the soil and the farm. Inquire for help where it exists in excess. I have occupied more than my share of time. I must draw

CONCLUSIONS.

There will and must be unrest until fairness and justice prevail.

We will never consent to selling in an open, and buying in a protected market. Such is the sentiment of "The Business-Affairs" farmer.

One thing is certain. We must go forward, and if we are possessed of sufficient resource we shall attain to our desired haven, and fill the mission of "A Farmer of Business Affairs." If we are without that necessary equipment we shall go down before the inevitable storm.

A building thoroughly wired and equipped for a flood of light, but yet in total darkness. An abundance of light-giving current just outside, and all that is lacking is CONNECTION. Will YOU make it one of your life efforts to form that important function of "CONNECTION?"

THE VALUE OF RYE AS A FARM CROP.

B. D. LEITH, MADISON.

Up to the middle of the 19th Century, good estimates indicate that rye formed the chief sustenance of at least one-third of the population of Europe. Even today we find Russia, Germany, Austria-Hungary and France raising large quantities of it, and a very large part of the crop produced is consumed by people within their borders. The United

States stands fifth in rye production, but Germany raises more than ten times as much rye as we do.

The states in the United States which raised the most rye according to the 1911 reports are: Wisconsin first with over 6,000,000 bushels and Michigan second with 5,840,000 bushels. Minnesota falls shortly behind as third state. In 1909 and 1910 Michigan raised considerably more rye than Wisconsin, but in 1911 Michigan fell somewhat behind her yield of former years and Wisconsin stepped far ahead of her former production.

Eight different varieties have been tested at this station, six of winter and two of spring. The winter rye has proven to be much better adapted to the soils of Wisconsin where rye forms an important crop and also a better yielder with better quality of grain. The winter rye yields from five to fifteen bushels per acre more than the spring rye.

Four pedigreed strains have been established, all winter varieties:

Ped. No. 1. Petkus,
Ped. No. 2. Schlausted,
Ped. No. 3. Ivanoff,
Ped. No. 4. Minn. No. I.

The greatest value of rye as a Wisconsin crop is its adaptability to a system of farm management of the poorer soils, rather than a flour plant. Its extreme hardiness is its strong characteristic. It will give a fair crop on soils where other cereals would be failures. It does not follow that rye will do best on poor soils. It will give far greater returns on fertile soils than on poor soils, but because of the fact that rye will survive on soils where other crops will fail, it has become the crop associated with the lighter, poorer soils.

It is naturally a plant suited to cold climates. It will mature in Alaska. But hot weather does not seem to injure it to any extent.

The straw is more slender and grows taller than wheat. The heads are longer and almost square. Owing to the weight of the grain in the head, it nods very decidedly, and often the entire plant will lean. But owing to the extreme rigidity of the straw, there is not the tendency to crinkle down and lodge that there is in wheat. The flowers are more open than in other grains and there is considerable cross fer-

tilization. Owing to this fact, there is much mixture found in rye varieties and there are fewer marked characteristics of berry and plant than there is in wheat. The glumes are narrower than those of wheat and consequently the grain protrudes somewhat and it shells readily. The chaff does not come off from the spike when threshed. The beards are somewhat shorter, not so spreading and much more flexible than in wheat.

Rye sends out four vigorous temporary roots early, when sprouting while wheat sends out only three. The young shoots are reddish when they first appear above ground. It starts to shoot much earlier in the spring than winter wheat does and ripens about a week earlier. The fall growth of leaves is heavy and very decumbent, more so than wheat. In spring after shooting has taken place the leaf growth is less than on other grains. It is troubled very little by insects and diseases. Owing to its early development, it is too near maturity for the diseases and insects to do much harm when they appear. It is often infested with ergot, but usually not enough to be a serious detriment to its culture.

Knowing the characteristics of the plant and its habits of growth, its value as a farm crop becomes more readily apparent. It is sown in the fall early enough so that it gets a good growth by the time winter sets in, but not growth enough so that winter freezing will kill it. In this way it gets the advantage of the fall rains and the early rains of spring. There is a considerable amount of plant food leached out by these late fall and early spring rains—principally the nitrates. On poor soils where plant food is scarce this saving is a very desirable quality in a plant.

In fact rye is one of the great conservers of our natural resources in this respect. The four vigorous roots which it sends out while germinating gives it a decided advantage over other grains in getting a start under adverse conditions.

Another very important use of rye on soils so poor that clover will not grow, is to supply nitrogen in the form of green manure. This practice is often followed on sandy loams and even sometimes on clay. The rye is sown in the fall and plowed under in the spring about ten days before time to plant corn. The reason for this is to get all the growth possible before it is turned under. After plowing, roll. The

rolling packs the soil down firmly to the bottom of the furrow and allows capilliarity to act. If the ground is not rolled, the growth of rye turned under will form a layer that will hold the soil from above away from the soil below, hence the layer which was turned will dry out so much that anything planted in it will not grow. The moisture would rise to the bottom of the furrow and would be unable to go further because of the layer of rye growth next above it. A heavy roller will force the particles of the turned soil so closely to the bottom of the furrow that the growth of rye between them will not seriously interfere with the rise of water. After rolling, harrow. Harrowing forms a mulch on the surface which prevents evaporation. The roots of the rye which has been plowed under tend to bind the soil particles together if it is sand, and to loosen up the soil if it is clay. Now we have an ideal bed for corn. The green rye has much nitrogenous material which it has taken up from the leachings of the late fall and early spring rains, and this is readily available. The ground is firmed and the dust mulch prevents evaporation.

Fall rye will prevent blowing on sandy soils. The great damage done by blowing is in the early spring after the ground is dry, and before the spring grains have taken root. Often a heavy wind will raise a sandstorm filling the air with sand comparable to a blizzard in winter. The grain will be laid bare and dry, or as is often the case, carried away from the place where it had been sown. Rye which has had a good fall growth will prevent the blowing of the soil upon which it is growing. If the fields are laid out from north to south—across the direction of the prevailing winds, and the rye is sown in several strips instead of one field, damage from blowing will be materially lessened.

Rye is valuable as a pasture crop. Pasturing of rye is often practiced on both sandy and clay soils. It is particularly valuable on sandy soils because pasture is often short in late fall, when rye pasture becomes available. Occasionally rye may be used as a spring pasture. If pastured judiciously the plants killed or permanently injured are inconsequential. Whereas on light soils pasturing is a positive advantage for it compacts the soil and makes conditions more favorable for clover to get a start. Pasturing in spring when seeded to

clover should be done with caution, as the tramping of stock in spring might kill the clover after it had germinated. Sometime the season is so favorable in the fall that the rye would attain a growth which would result in winter killing. In such cases pasturing, to check this growth, is a necessity.

In many respects, rye is our best nurse crop. The culms have comparatively few leaves in late spring, hence the young clover gets more sunlight and air than it does with other cereals when used as nurse crops. Rye is the earliest grain crop to be cut and is therefore out of the way early, to the advantage of the clover. It might be well to state here that clover does best without a nurse crop and some soils are so poor that clover will not catch if rye is used as a nurse crop.

Where soiling is practiced rye is an important factor. It is usually the first of the series of soiling crops, and because of its heavy growth, furnishes a large amount of green feed. The time when it is most valuable as a soiling crop is between the time of heading and the beginning of the formation of grain. This period is rather short, being only ten or twelve days. Before heading the dry matter per acre is too small to make it profitable and after the seed begins to form, the straw gets hard, woody and unpalatable.

Owing to its heavy growth in late fall, rye makes a splendid cover crop for orchards.

The straw is a valuable product of the rye crop. It is used for bedding of stock, packing of furniture and nursery goods, in making straw goods and has been used to quite an extent in the manufacture of a coarse brown paper.

Rye flour is not used as extensively now as it was formerly for bread. It contains gluten and will rise with yeast, but the quality of the gluten is not equal to that of wheat flour. The color of the flour is darker than that of wheat and has a rather strong flavor peculiar to the rye.

A very small quantity of rye is used in the manufacture of distilled liquors. The by-products from milling and distilling are used for stock feed, and in some cases the grain itself is used in this way.

In conclusion I repeat that rye is by far the best cereal crop for the large area of sandy soil in this state. I dare say that in some extremely sandy sections, rye is almost the salvation of the farmer. It will give him some returns where

practically every other crop will fail. It conserves the nitrogen which would otherwise be lost through leaching during the late fall and early spring rains. While rye will not add fertility to the soil, yet by careful management, waste of fertility can be reduced to a minimum by the use of this crop.

FALL VS. SPRING PLOWING IN WISCONSIN.

L. F. GRABER, MADISON.

Fall plowing has decided advantages under certain conditions in Wisconsin. Of course it is not a practice of universal application. On our lighter, sandy types of soils where wind erosion and soil washing are matters the farmer has to contend with, a legume or cover crop not turned under until spring will accomplish more for the subsequent crop than will fall plowing. However, on our heavier types of soils such as the clays and clay loams, where the contour of the land will not permit excessive soil washing, fall plowing has distinct advantages.

MOISTURE CONTENT OF THE SOIL INCREASED.

Fall plowing tends to conserve moisture. The loosened and broken surface of plowed land acts as a mulch which holds the moisture accumulated by heavy fall and early spring rains in the soil and prevents the great losses through capillarity and rapid surface evaporation in compacted, unplowed soils. In one of the numerous experiments at the Wisconsin Station, which has proven this assertion, the fall plowed land contained over 110 tons (over an inch) more water per acre in May, than did the adjacent plot not plowed. Other stations have shown similar results.

The compact stubble field or sods does not permit easy entrance of heavy fall rains and often there is much surface water run off while the loose fall plowed soil acts like a sponge in this regard.

PLANT FOOD LIBERATED AND THE TILTH OF THE SOIL IMPROVED.

The action of alternate freezing and thawing in the late fall and early spring disintegrates the lumps of soil, improves the

tilth and liberates available mineral elements of fertility, especially potassium and phosphorus. In the spring this gives the young crop a vigorous start during this critical period of its growth.

The physical condition of heavy clay soils is especially improved by the granulating effect of freezing and thawing of fall plowed land. Particular care needs to be taken in spring plowing heavy clay soils. If they contain too much moisture puddling will result which leaves the field a mass of almost unbreakable clods. If plowing is deeper than previous plowing the new soil brought to the surface will not work up well, and the tilth will be greatly injured.

These dangers can be avoided to a great extent by fall plowing. Weather conditions as a rule are more favorable and where deeper plowing is practiced the action of freezing and thawing will subdue the new surface soil and bring about a good physical condition.

OTHER REASONS.

Generally the Wisconsin farmer has more time to plow his land in the fall than he has when the rush of spring work is at hand. Oftentimes weather conditions do not permit of early spring plowing. Invariably this results in delay in getting small grains in early—a very important matter in good grain growing in this state.

In general where conditions will permit fall plowing is advisable but it does not follow that good results cannot be secured with early spring plowing.

THE MANUFACTURE OF POTATO FLOUR.

RICHARD F. ADAMS, CAMPBELLSPORT.

About six years ago I heard of flour being made from potatoes which were run through heated rollers. Thus the moisture was taken off; they were then ground to a fine flour, thereby the principal qualities of the potatoes being preserved indefinitely.

A few months ago an opportunity to investigate this very interesting subject was brought to my notice, which is profita-

ble especially to agriculturists who raise large quantities of potatoes at long distances from markets. I have done considerable probing to find out the possibilities of erecting a factory in my home town.

Potato flour is milled in Germany and its importation to this country is said to have steadily increased since its manufacture. This shows its production is rapidly being taken advantage of, and is becoming more generally known every year by its excellent qualities and its many uses. For home bread making, sausage filling, cotton sizing and its uses in bakeries, confectionaries, etc., etc.

For bread making it is mixed with wheat flour just before baking, and from 3% to 5% is used.

Potato flour is nothing new in the old country and those who are skeptical as to such a product being milled, should go to some large grocery stores to find out, or to some wholesale dealer, as Fred Arenberg, of Wollaston, Massachusetts, or come to me and I will get a sample for you. Then you can make a practical test of its merits. As I know by actual experience that potato flour is as nutritious as wheat flour and more so than rye, making a moister and better loaf, thus keeping fresh much longer.

Having a sample shipped to me we tested its merits at home. As near as I can find there are 23.6 lbs. potato flour in a hundred pounds of potatoes.

I found in the city of Fond du Lac one large grocer who dealt in the commodity, this grocer referred me to two wholesale dealers, viz., A. R. Pahl & Co., Milwaukee, and Swagier Wanier Co., Chicago, who deal in potato flour, showing there must be some demand for the product.

A friend told me that when he was clerking in Milwaukee ten years ago he sold potato flour every day, and that he liked it better than buckwheat.

As I have stated before, it is imported as yet, but when its merits become more generally known the growth of this new industry will increase rapidly.

I was told that it was a profitable business and so became anxious to call the farmers' attention to it. With the aid of a chemist book I found a profit of 10 cents per cwt. upon potatoes at $1 per cwt., or 60 cents per bushel.

I trust that each one interested in this subject will make a thorough investigation of it and if satisfied all that remains is organization to bring success to the project.

The advantages of potato flour are:

1. Preservation of the principal qualities of potatoes indefinitely.
2. Transportation charges small.
3. Wisconsin being adapted for potato culture and near markets.
4. It withstands heat and cold.
5. Potatoes will have a wider range of uses.
6. It is claimed to make a saving of $1 a barrel on wheat flour.

GROWING AND CURING GOLDEN GLOW CORN.

A. L. WAGNER, HAVEN.

For the past four years we have been growing Golden Glow corn both for seed and fodder, starting with seed that was procured from the Experiment Association. This variety has done exceptionally well for our community which has a rather short growing season on account of its close proximity to the lake. It matured every year by Sept. 20th, being planted somewheres around May 20th. The average yield has been 63 bushels of shelled corn per acre.

The preparation of the land for the crop consists of the following method. A two-year old clover and timothy sod is covered with a good dressing of manure, and is plowed in late fall, which is preferred because it gives the sod time to decay and to settle better; also causing a large number of insects and weeds to be killed by the frost. In spring as soon as the land is dry enough to be worked the field is gone over with a harrow or disc to loosen up the soil and check evaporation, also causing the soil to warm up and starting weeds to sprout, which are killed when the field is prepared for planting.

We go over our field about four times with disc and harrow and then roll it, a good seed bed is then usually the result. All our corn is drilled making the rows three feet apart, and two kernels every twenty inches in the row. The depth of plant-

FARM HOME OF A. L. WAGNER, SHEBOYGAN COUNTY, WITH CORN CURING HOUSE ON RIGHT.

This beautiful residence is located on a 100 acre farm about 2 miles west of Lake Michigan.It is all under cultivation except a six acre wood lot which has wisely been retained and serves as an example of proper fore-sight.

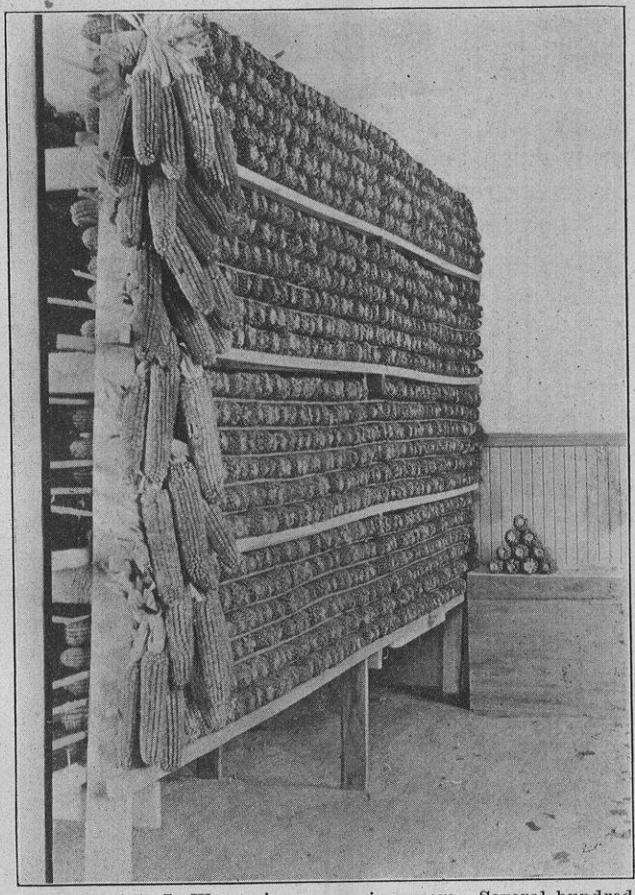
Dairy cattle and hogs are kept upon the farm but it is especially noted for its pedigree seed grains. No member of the association has been more careful in growing and disseminating the pure bred grains. Through his success in growing and curing the Golden Glow corn, he has been instrumental in changing the complexion of the corn in Sheboygan county. His pedigree barley, oats, rye and wheat are of the best and he is noted as an alfalfa grower and producer of fine clover seed. Mr. Wagner expects to erect at his nearest shipping point an elevator and store room, especially for pure bred seeds. The association predicts a successful future for Mr. Wagner in his efforts in banishing scrub grains forever from his section of the state.

RESIDENCE AND FARM BUILDINGS ON THE MAPLE LAWN FARM.

Fred G. Stark, Manager, Washington County.

The Maple Lawn farm is noted far and wide for its pure bred seed grains. Through close attention to systematic rotation of crops and combining live stock work with the production of pedigree seed grains Mr. Stark has made his farm one of the most productive in the state. His pure bred seed grains are noted for their high vitality and perfect germination and through his efforts in the dissemination of the same the pure bred seeds have taken possession of the fields in his locality.

ing depends on the soil, on clay loam it is planted at a depth of two inches while on a sandy soil three inches are allowed. After planting the field is dragged, and is then left until the rows can be seen, when cultivating is started; rather deep at first, then shallower at each cultivation to prevent root prun-



Showing section of A. L. Wagner's corn curing room. Several hundred bushels of Golden Glow corn cured annually.

ing, because the roots spread out as the corn grows larger, the last few cultivations being mainly to keep up a dirt mulch. After four or five cultivations the field is usually laid by, the corn being too large to do good work with a team.

When the corn is well matured, the ears are snapped from the stalks and taken on the barn floor, where they are husked

and sorted, all large and well shaped ears are reserved for seed, the others being used as feeding corn.

In drying our seed we practice kiln drying in a building fitted with racks and a stove. The corn is piled on the racks, placing two ¼ inch square slats between every row. These slats are absolutely necessary to prevent the ears from coming in contact with each other, which would cause them to mold, especially if the ears are rather wet when being put into the curing room. When the days are bright and warm the windows are kept open, and a fire is started when the weather is damp and cold. Good ventilation is very essential in a drying room to insure a good circulation of air at all times. After the corn is well dried the fire is not kept up any more, as the frost will not injure the seed after the moisture is out.

All our corn is sold in the ear, which forms to my opinion the only way to buy seed corn, as the buyer can see what he is getting, and also enables him to make a germination test of each ear.

We have now been curing and selling seed corn for three years and have not experienced any trouble whatever to dispose of our surplus at a good price. Last fall a large number of farmers in our community ordered their seed in advance of the season, even before it was being put into the drying room. This fact shows that this corn is looked upon as a splendid variety for this locality, and I am sure that the time is not far distant when everyone in this vicinity will be growing Golden Glow corn.

ALFALFA SESSION.

GIVEN UNDER AUSPICES OF THE ALFALFA ORDER OF THE EXPERIMENT ASSOCIATION

PRESIDENT'S ADDRESS.

JAMES B. CHEESMAN, RACINE.

Before the initial work of organization was begun it was well to ask do we want more bodies, and more machinery? Professor Moore and myself concluded that a club of alfalfa growers within the Experiment Association was the best thing because it made effective work possible immediately. Before this meeting could be convened we needed to know the area already planted to alfalfa, and the general state practice with reference to the plant. I shall be satisfied if we can show that alfalfa is grown in 80 per cent of the counties, and that will cover the state, though we many not grow more than 100,000 acres. For propaganda we shall have to enlist the editors of the country papers, and ask them to publish from time to time such matter as we can secure on alfalfa growing, harvests, and its place in rotations.

I shall not use the time by offering you any matter of my own on alfalfa culture. We have a full and varied program which will be presented by men long trained as successful farmers, and experienced in the treatment of the various phases of the subject. We thought by way of introduction it might be well to have the business side presented by such a man as Mr. A. P. Grout of Illinois, the farmer-banker who comes to us rich in experience, full of enthusiasm, hope and expectation.

Competent observers tell us that during the last twenty years the production of alfalfa has doubled every five years, and that it is just twelve times as big as it was in 1890. Alfalfa is worth more than double what it was when first recognized as a forage plant. The great rapidity with which it is being substituted for oats, or grain of any kind is significant of

value. It is safe to say that before long the oat ration for horses will be greatly modified, and the wider uses of the plant will surprise many of the best informed, and most enthusiastic growers, and users. While we shall not grow any smaller areas of corn we may all be very sure that alfalfa will increase its area at a much greater rate than the corn plant. Alfalfa will get its rightful place as a farm crop, but what we should concern ourselves most about to-day, is its place in rotations of crops.

If we are to grow enough wheat we must rely on rational rotations of crops rather than enlarged areas of raw land. The bugle call for sound agriculture has been heard throughout the world. It is as loud and almost as insistent in the new Northwest as it is in old settled states like Illinois and Wisconsin.

One happy thought should console and encourage us in our work. It is this, new lands are increasing in value most rapidly. The mortgage holders, the bankers, and the railroads are settling and developing these lands at a rate of speed almost incredible to those who have not seen it. To maintain these values investors must insist on systematic farming, and the planting of alfalfa not later than five years after breaking. The plantings should be at least five per cent of the areas planted to cereals. Even at this rate it would require twenty years to get the plant all over a farm supposing all the land was available for it. The example will be enough and when once pioneer farmers have seen a patch and used the plant their loyalty is assured.

With the steady increase in the cost of producing all animal products one may pause a moment and ask have any of them appreciated so rapidly as eggs, milk, butter and cheese? The high price of milk in cities has greatly stimulated milk condensing. The consumption of butter, cheese, and milk in the first class cities is not increasing relatively to the increase in population. A recent market report shows a scale of prices not equaled within twenty-five years. In Northwestern Minnesota, and in Manitoba I recently heard of poultry yards that would eclipse anything in the East twenty years ago. Less than a month before Christmas Winnipeg imported quite a few shipments of milk and cream from St. Paul. Last September I told you that New York reached north for a third

of her milk 400 miles every day. Now Winnipeg comes South a distance fifteen per cent greater. Milk is retailed in Manitoba, North Dakota and Saskatchewan at double the price paid in Madison.

Enough facts have been presented to set you thinking. Alfalfa will produce a greater value per acre than any other farm crop. It has the merit of rebuilding soils, and maintaining the fertility of the state when it is accorded its proper place in rotation, and in the appreciation of the farming population.

SECRETARY'S REPORT.

L. F. GRABER, MADISON.

Fellow Members of the Alfalfa Order and Wisconsin Agricultural Experiment Association and Friends: I am glad to have the opportunity of making the first Secretary's report of the Alfalfa Order of the Wisconsin Experiment Association. I firmly believe we have begun a work which will bring about great results in the way of promoting the agricultural interests of the State of Wisconsin. I believe today there is no one other movement which will do as much for the general agricultural welfare of the entire state as will the effectual extension of the small acreage of alfalfa now being grown in the state of Wisconsin. There is no one other hay crop that equals alalfa in its feeding value; there is no one other hay crop that adds as much fertility to the soil and there is no one other hay crop that will equal alfalfa in yields per acre. And yet, to-day it is only raised on one farm out of every forty. To-day, there are only 18,000 acres of alfalfa grown in Wisconsin against 3,000,000 acres of other hay crops.

AN ALFALFA ASSOCIATION.

It is due to this comparativey small acreage of such a truly marvelous crop that the Alfalfa Order of the Wisconsin Experiment Association was established. It was felt by energetic and progressive agriculturists that Wisconsin farmers did not fully appreciate the true value of alfalfa as a forage

crop. That it can be successfully grown has been demonstrated time and again by numerous tests carried on by the Agronomy Department of the Agricultural College and by tests of farmers themselves. With this in view alfalfa has been and is to-day a neglected crop in this state. To encourage a more extensive and widespread growth of this valuable plant no better method could have been used than that of coöperation. Due to the efforts of Professor R. A. Moore, of the College of Agriculture; and Mr. Jas. B. Cheesman, Racine, Wisconsin; a meeting was held at the State Fair, September 14, 1911, at which the Alfalfa Order was organized, as an auxiliary to the Wisconsin Agricultural Experiment Association, a body of sixteen hundred farmers, which has done so much in the way of establishing Wisconsin's world-wide reputation as a great pure bred seed producing state. Officers were duly elected as follows: Pres. Jas. B. Cheesman, Racine; Vice Pres., Ex-Gov. W. D. Hoard, Ft. Atkinson. Secretary-Treasurer, L. F. Graber, Madison; and a constitution and by-laws were adopted.

ALFALFA, A NEGLECTED CROP.

As its initial work the Order began an investigation to secure some data relative to the acreage of alfalfa now grown in the state, why it was not more generally grown, its adaption to soil condition, etc. The idea was chiefly to obtain the farmers attitude towards the crop. Over 1000 of the following inquiries were sent out to members of the Experiment Association and other progressive farmers.

Kindly fill out the following outline and mail in enclosed envelope immediately:

Name .....
P. O. Address.....County.....
Are you a grower of alfalfa?.....
What is the acreage of alfalfa on your farm?.....
Size of your farm?.....
Do you grow any alfalfa seed?.....
Best yield of alfalfa seed secured per acre?.....
Best yield of alfalfa hay per acre?.....
Estimate the number of acres of alfalfa grown in your county.....
Does alfalfa do well in your locality?.....
Why is it not more generally grown?.....
What is your opinion of alfalfa as a profitable forage crop?.....
As a feed for live stock?.....

At the present writing 513 replies have been received, the results of which are summarized as follows:

Number of replies to date	513
Number of growers of alfalfa	394—80%
Number of growers of alfalfa seed	5
Average yield of alfalfa hay	4.4 T
Number reporting alfalfa did well in their locality	360
Number reporting alfalfa did not do well in their locality	98

Reports on why alfalfa is not more generally grown in Wisconsin:

Per cent stating due to—	
(1) Lack of knowledge relative to crop and proper methods of culture not being used	22%
(2) Value not appreciated	22%
(3) Conservatism, new crop, timothy good enough, etc.	16%
(4) High cost of seed, difficulty in securing good seed	13%
(5) Lack of confidence, and fear it cannot be grown	9%
(6) Hard to get stand	9%
(7) Soil not adapted	9%
Number reporting alfalfa an extremely valuable feed and profitable forage crop	366—(100%)
Number not reporting on this question	147

From the reports of these farmers, eighty per cent of whom are growers of alfalfa, a broad idea can be obtained of the status of alfalfa growing in Wisconsin. The chief reasons given why farmers hesitate to grow alfalfa are far from being sufficiently important to hinder and progressive farmer from attempting to grow this crop.

Eighty-two per cent of the replies show that alfalfa is not receiving more attention for the following insufficient reasons. Farmers do not know how to raise it and are not using correct methods of culture; the value of the plant is not being appreciated; farmers are conservative and do not want to attempt growing any "new-fangled" crops; alfalfa seed is somewhat high priced (this year only a little above timothy and clover!) and it is somewhat difficult to secure good seed; farmers lack confidence and fear it cannot be grown; they are afraid to "tackle" it.

WE CAN GROW ALFALFA IF WE WANT TO.

Only eighteen per cent stated that it was hard to secure a stand and that the soils in their localities were not adapted. Perhaps they were not. Perhaps their soils were acid or poorly drained. But these are difficulties that can easily be

overcome. Lime will neutralize the acidity and tiles will run off the excess soil moisture. Gentlemen, if we want to grow we can and we can grow it if we want to. The Alfalfa Order plans on the wide dissemination of information relative to the proper Wisconsin methods of growing alfalfa, both by bulletins and lectures. Alfalfa exhibits will be put up at county fairs and at the State Fair to arouse and stimulate rural interest in this crop. Every member of the Order should not only be a grower but a demonstrator of alfalfa growing in his locality so that in our united efforts we will destroy this unproductive sentiment that alfalfa cannot be grown in Wisconsin and bring our farmers to a realization of the immense value and importance of this crop to Wisconsin agriculture.

OUR LARGEST ALFALFA GROWERS.

The five largest growers of alfalfa in Wisconsin, according to the information received through 1000 inquiries sent out, are as follows:

	Acres
1. Jno. Waelti, Monroe, Wis. (Green county)	140
2. C. M. Davis, Corliss, Wis. (Racine county)	79
3. Jno. V. Seymour, Lake Geneva, Wis. (Walworth county)	70
4. W. R. Curtis, Trevor, Wis. (Kenosha county)	60
5. Gordon Valentine, Genesee Depot, Wis. (Waukesha county)	60

Mr. John Waelti, Monroe, Wis., is no doubt the most extensive grower of alfalfa in Wisconsin to-day. On his 220 acre farm in Green county he is now raising 140 acres of alfalfa. It will be of interest to read what Mr. Waelti says about alfalfa.

"Seven years ago the farmers did not know how to sow it to get a stand, now many farmers will sow no other seed but alfalfa."

What is your opinion of alfalfa as a profitable forage crop and as a feed for live stock?

"It is the most profitable field crop I know of. I feed it to cattle, horses and swine with the very best results."

The opinion of the largest and most successful growers of alfalfa in this state should bear considerable weight and is of great importance to us at this meeting.

IMPORTANT STATISTICS.

I have compiled in round figures from the most recent United States' Census report the following statistics:

	Alfalfa.	Clover alone.	Timothy and clover.	Timothy alone.
Acreage	18,000	119,500	1,600,000	767,000
Amount (tons)	50,000	194,000	2,500,000	1,110,500
Value (total)	$562,000	$1,572,000	$22,500,000	$10,825,000
Value per acre	$31 00	$13 20	$14 00	$14 00
Yield per acre (tons)	2.8	1.7	1.6	1.4
Value per ton	$11 20	$8 00	$9 00	$9 70

It is of interest to note that we are growing over 700,000 acres of pure timothy (a crop which has ruined the fertility of more than one farm) and only 18,000 acres of alfalfa (a crop that will in future be used to build up some of these same farms that timothy has ruined).

In value per acre alfalfa has twice the market value of any of the other hay crops. In yield per acre it stands at the top as well as in market value per ton. A word of explanation may here be necessary. The value of timothy per ton is quoted higher than that of clover. This does not mean that clover has less feeding value but is due to the fact that timothy is a readily marketable hay and is much in demand on city markets where high prices are paid. Clover is not a market hay, but it does not make a good horse feed and its demand in the cities is very limited; it is fed chiefly to cattle on the farm where it has been raised. Consequently, its market price is lower than timothy although its feeding value for beef and dairy cattle is much higher.

LEADING COUNTIES IN ALFALFA PRODUCTION.

Statistics show that the following seven counties are the largest producers of alfalfa:

	Acres
Green county	2280
Jefferson county	2251
Waukesha county	1840
Fond du Lac county	1620
Walworth county	1538
Racine county	1467
Kenosha county	1380

THE ALFALFA ORDER TO PURCHASE HIGH GRADE ALFALFA SEED.

Partially due to the fact that many Wisconsin farmers were having difficulty in securing clean, high germinating alfalfa seed and that many failures in securing successful stands were due to poor seed the Alfalfa Order has decided on the purchase of a large amount of high grade alfalfa seed for distribution among its members at cost price. At the present writing orders for no less than 32,000 pounds have been received and in buying such a large amount it will be secured at a very much reduced price. It is the purpose of the Order to place at the disposal of its members the very best seed at the most reasonable rates. Good seed is the foundation of success in the growing of any crop.

MEMBERSHIP.

In conclusion let me say that the Alfalfa Order invites the coöperation and membership of every interested farmer in the state of Wisconsin. I firmly believe with earnest efforts and assistance of the members of the Experiment Association and other progressive farmers throughout the state that we can do as much in the way of making Wisconsin a great alfalfa state of the Union as the Experiment Association has done in the way of making Wisconsin the great pure bred seed state of America.

CONSTITUTION AND BY-LAWS.

OF THE

ALFALFA ORDER

OF THE

WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION.

ARTICLE I. *Name.*—The organization shall be known as the Alfalfa Order of the Wisconsin Agricultural Experiment Association.

ARTICLE II. *Object.*—The object of this organization shall be to promote the alfalfa interests of the state in general.

1st. By coöperating with the Department of Agronomy and the Wisconsin Agricultural Experiment Association in growing, experimenting and in the wide dissemination of alfalfa.

2d. By having alfalfa exhibits at agricultural fairs.

3rd. By having annual meetings in order to report and discuss topics beneficial to the members of the Order.

4th. By distributing literature and information bearing upon the production of alfalfa for seed and forage.

ARTICLE III. *Membership.*—1. Any person may become a member of this Order who has taken a course in the College of Agriculture at Madison or at any place in the state under the jurisdiction of the College.

2. Any farmer who is interested in the growing of alfalfa and willing to coöperate under the direction of the Order may become a member of this Order.

3. Honorary membership may be conferred upon anyone interested in progressive agriculture by a majority vote at any annual or special meeting.

ARTICLE IV. *Dues.*—A fee of 25c shall be collected from each member annually.

ARTICLE V. *Officers.*—The officers of this Order shall consist of a President, Vice President and Secretary-Treasurer, whose terms of office shall be for one year or until their successors are elected.

ARTICLE VI. *Duties of Officers.*—1. It shall be the duty of the President to preside at all meetings of the Order and to enforce the observance of such rules and regulations as will be for the best interest of the organization; to appoint all regular committees as he may deem expedient for the welfare of the Order.

2. In the absence of the President, the Vice President shall preside and perform the duties of the President.

3. The Secretary-Treasurer shall keep the records of all meetings and proceedings of the Order, also the names of all members and their addresses. He shall also keep the funds of the Order, collect all fees, pay all debts, and shall submit a written statement of all moneys received and paid out by him and shall balance his books not later than one month before the annual meeting.

ARTICLE VII. *Disbursements.*—The funds of the Order shall be used to defray its expenses or by vote of the Order for such purposes as will advance the interests of the Order and shall be paid out upon an order signed by the President and countersigned by the Secretary.

ARTICLE VIII. *Amendments.*—This Constitution may be amended at any meeting by a two-thirds vote of the members of the Order present.

By-Laws.

Article I.—The officers of this Order shall be elected by ballot at the annual meeting.

Article II.—This Order shall be governed by Robert's Rules of Order.

Article III.—All members joining at the organization of this Order, shall be known as Charter Members.

Article IV.—The time and place of holding the annual meeting shall be determined by the officers.

Adopted Sept. 14, 1911.

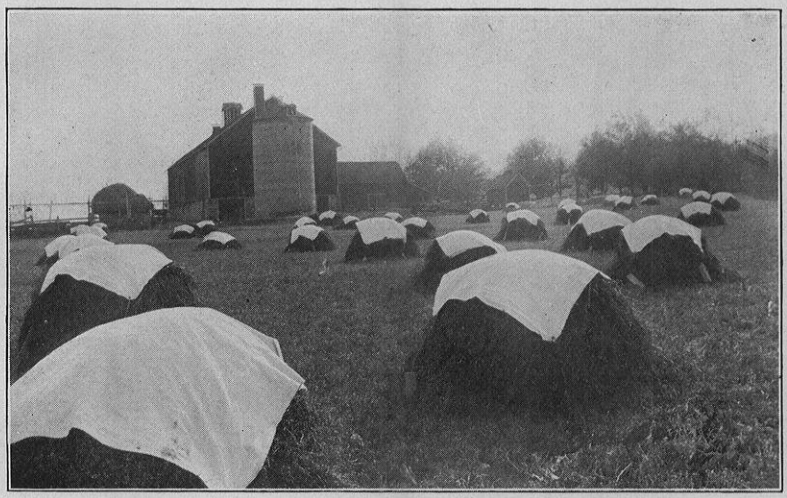
SECURING A STAND OF ALFALFA.

C. L. HILL, ROSENDALE.

I have sowed alfalfa following many other crops, at several different times of the year, on both level and rolling land, with and without nurse crops, and with varying amounts of seed per acre. I have secured so much better stands from one method than from any other, that I am going to speak almost exclusively of this method of seeding.

The first piece of alfalfa I tried was sowed with spring wheat, on land not particularly fitted, and while I secured a fairly good stand as to the number of plants they never showed vigor enough to make the crop amount to anything. The next I sowed was sowed in the spring without a nurse crop, and a good stand was secured, but the weeds were as thick as the alfalfa, and a good deal more vigorous. We clipped it three or four times the first year and the second and third years secured three fairly good crops of hay from it. Though it was innoculated it never obtained the dark green healthy look that good alfalfa always has.

I frequently visit friends in New Jersey, where successful growers of alfalfa all sow it in midsummer, or early fall. As weeds and especially June grass prove such a menace to the crop with me I determined to try seeding a piece in an altogether different manner from any that I have known being tried in Wisconsin. In the summer of 1906, immediately after cutting a piece of second crop clover, I plowed the land, worked it thoroughly, and dragged it several times between August and the time the ground froze.



ALFALFA ON THE THOMA FARM, WAUPACA COUNTY.

This beautiful farm is pleasantly located near the little town of Sugar Bush and through the energy and enterprise of its owner E. Thoma, has been put on a good paying basis. Mr. Thoma is one of our most faithful members of the Experiment Association and has been instrumental in spreading far and near in his section the best methods of growing and curing alfalfa. Dairying and pure bred seed grains receive due attention. Note the curing of alfalfa under cap and concrete silo.

SHOWING THE POSSIBILITY OF ALFALFA.

Alfalfa on the Spring Brook Farm. Owned by F. H. Meekin & Son, Fond du Lac county, seeded to alfalfa the spring of 1902.

The above cutting represents the twenty-sixth consecutive crop taken from the field in nine years. Estimating cuttings at one ton each per acre and alfalfa at $20 per ton, this field would have brought to its owner over five hundred dollars per acre in the nine years.

During the winter I gave the field a heavy coat of manure, direct from the cow stable, applied with a manure spreader. In the spring I plowed the land again and worked this repeatedly from that time until August 1st, when there was a seed bed as fine as possible and about three or four inches deep. I sowed the alfalfa with a wheelbarrow seeder as I always do, going over the field twice, in opposite directions, applying 10 pounds of seed per acre each time, or 20 pounds in all, and thus made sure that all the ground received seed. It rained a day or two after seeding, and the field was soon the most beautiful green I ever saw, and has continued to look well until covered with snow the fall of 1911.

I cut 4 crops from this field in 1910 and 3 crops per year in 1908, 1909 and 1911. The land when started was badly infested with sow thistle, and had also some quack grass and Canada thistle, but this treatment killed all of these. No weeds have appeared in this field up to this time except June grass, and this is now taking possession of the field, and I do not expect to leave it more than another year.

I tried a spring tooth harrow in it last year once over, and after watching this tool used in alfalfa fields at the Illinois Experiment Station I expect to give this field a thorough dragging the spring of 1912 and watch its effects. This field was a so much greater success than any of my previous attempts at getting a stand of alfalfa that in 1908 I fitted and sowed another field in the same way, and still a third in 1909. Both of these seasons were so dry that I did not quite so completely destroy the weed seed in the soil, and I found weeds came up in the alfalfa. Nevertheless, both fields were equally as good stands as the first field, and we have now for 3 or 4 years had all the alfalfa that our herd of 70 to 90 cattle could eat. In 1906 I also sowed a field with spring wheat and secured a fairly good stand, but it was infested with June grass from the very first, and while it produced good crops of hay for the next two years, they were not nearly as good as from the other fields mentioned.

I thought I would try and see if it were not possible to secure a stand without sacrificing the year devoted to a summer fallow, so in the fall of 1909 I manured this field, plowed it in the fall and planted it to corn. We not only kept the field as clean of weeds as I ever saw a field kept with a cultivator,

but in addition we went through the field with hoes, cutting out every single weed we could find. As soon as the corn was off and in the silo we disked the field thoroughly and dragged it down fine. This was repeated in the spring and alfalfa was sowed alone, and I confess I was surprised when pigeon grass and barnyard grass appeared thicker than the alfalfa, and we cut two crops of hay from this land this year which was about half alfalfa and half these weed grasses. After the second cutting the alfalfa came on beautifully, and I have a fine stand on that field for this year.

When I said that I did not want to waste the year devoted to a summer fallow I did not say just what I meant, for a year devoted to a summer fallow is never wasted, and means increased crops for years to come, and in the case of alfalfa I am sure it will more than pay anyone who has failed to get a stand of alfalfa in other ways to try this method.

On all very rich farms in Wisconsin June grass is bound to be the worst enemy of alfalfa, and it survives in my corn fields in the hills in spite of the very best cultivation, and also survives in the grain fields, and in no other way but a summer fallow can I rid a field of it entirely, even for one or two years. I hope to find when I put the first mentioned field in alfalfa again that as no June grass has gone to seed there for many years that it will not come in so fast next time. However, if I can get a good stand of alfalfa for 5 years by this method I am well satisfied with the results.

CUTTING AND CURING ALFALFA.

FRED STUBLEY, BLACK EARTH.

The time has come for Wisconsin farmers to pay a little more attention to providing feed for winter, that is, to the palatability and digestibility of those feeds; we might say, as to the quality, have the conditions as near like summer as possible. We see how well our stock does under these conditions and we know we do not have to grain them. Now, if we will only apply a little thought in preparing our feeds for winter feeding, so as to bring nearly the same conditions, we shall hope for the best results, particularly among our stock and

dairy animals, and that we can do by supplying the proper method in cutting and curing our clover and alfalfa.

WHEN TO CUT CLOVER AND ALFALFA.

As a rule, we generally allow our clover to grow a little too old. We cannot allow clover to stand and hold the natural juices if it becomes overripe. For instance, a good deal of the alfalfa hay shipped in this winter is very dry and brittle, showing that it was cut too late. There are different ways of curing alfalfa, and we should adopt that method by which we can best conserve the protein element and that is the leaf part. The alfalfa leaf will test about twenty-two to twenty-six per cent protein, while the stalk is only about six, so we must employ the method of curing under which we will not lose the leaves. My plan has been to cut it a little on the green side, if anything, just coming into blossom. A better way, however, to judge as to the proper time of cutting is to watch the root growth. When your alfalfa is ready to cut your next growth has made a start, the growing crop should be removed, because if it is not and you wait too long, the second crop will get started and you will cut off the top of the second cutting in harvesting the first and injure the growth of it very much, so as soon as the growing crop has reached a stage of maturity and the next one starts growing, that is the proper time to cut, regardless of the blossom. Last year for instance, our alfalfa did not blossom at all, and naturally we went entirely by the root growth.

CURING ALFALFA.

In curing it the one thing to look out for is to keep the green leaves green. We know that the leaf of the growing plant is the outlet for the moisture in the stalk. If we keep the leaves green it doesn't take a great while to rid those stalks of the moisture contained in them; if, on the other hand, we let the leaves dry up quickly, we shut off the escape of moisture from those stalks, so you can see it is important to adopt the method of curing which keeps the leaves green.

My habit has been to cut it in the morning providing there is no moisture or dew on it, then rake it up the next morning

and put it up before dinner. You can cure it with or without caps. I was in a barn a few weeks ago where they cured just in the windrow, fifty acres of it. It had been raked from both ways into heavy windrows, and it made a very good quality of hay, but any method will do by which we can cure it and retain the greenness in the leaf. You can put it up in a cock about twelve hours, and the sweating begins; inside thirty-six or forty hours it is sweated out.

It can be put in the barn remarkably green; in fact, we do not want it sun-dried, we just want that moisture out of it, and when you have once got that out of it you can put it into the barn and it will keep all right. We have very little difficulty with it burning in the barn. We turn it out about one hour before hauling in, leaving it exposed to the air and sun, just dry it out, and haul it right into the barn green. Last year we cured quite a lot in the windrow. Of course the weather conditions have got to regulate that.

If we follow those methods and have plenty of green ensilage and study the quality of our feeds and the best ways of curing our hay, we will have no necessity to buy the high-priced feeds that we as dairymen otherwise have to buy.

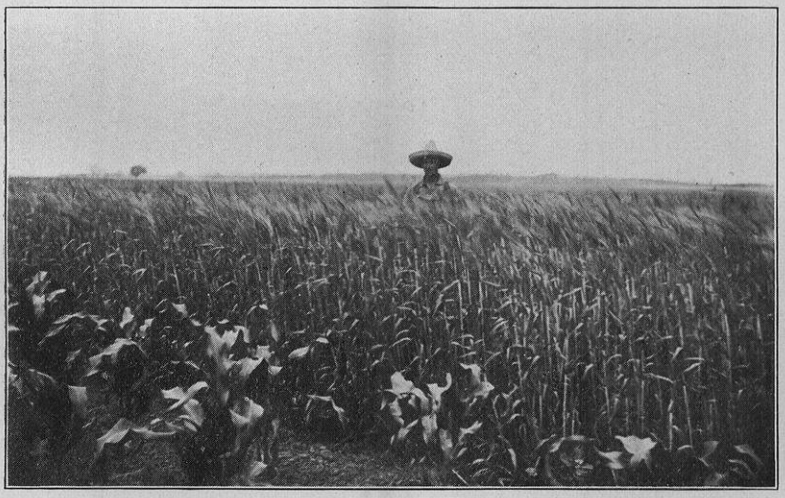
THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION.

R. A. MOORE, SECRETARY.

The organization of the Wisconsin Experiment Association was effected February 22, 1901. Its inception was determined from the need of an organized coöperative body to grow and disseminate in large quantities high yielding pure bred seed grains, the foundation stock of which had been bred by the Agronomy Department of the College of Agriculture. For several years previous to the organization of the Experiment Association, some experimental extension work had been carried on through the medium of the Short Course Alumni, but, a larger and more thoroughly organized force were needed that would be commensurate with the great work to be undertaken.

RESIDENCE AND OTHER FARM BUILDINGS ON THE AUSTIN FARM, ROCK COUNTY.

This beautiful farm is owned and operated by W. O. Austin, Pres. of the Rock County Order of the Experiment Association. Mr. Austin is especially interested in the production and dissemination of pure bred seed grains.



A FIELD OF PEDIGREE BARLEY WITH GOLDEN GLOW CORN IN THE FOREGROUND, ON THE FARM OF CHAS. AUSTIN, ROCK CO.

Mr. Austin is an active member of the Experiment Association and is one of the leading pure bred seed grain growers of Rock county. Note the uniformity of height and stiffness of straw of the pedigree barley.

The Experiment Association was organized with 187 charter members, and the following officers: A. J. Meyer, President, J. P. Bonzelet, Vice President, R. A. Moore, Secretary and H. J. Renk, Treasurer. The character of the work to be performed was of such a nature that it was necessary to restrict the membership to persons who had received training in the College of Agriculture.

DETERIORATION OF GRAINS.

For several years it had become noticeable that the grains and forage plants of the state and elsewhere were deteriorating. From experimentation on the Station farm it was clearly proven that it was a comparatively easy proposition to advance the yielding property of our common grains from two to ten bushels per acre. For many generations the animal breeders of the world had been active and brought about a great change in farm animals by the breeding of pedigree stock, but, no one seemed disposed to consider the larger proposition, the breeding and general dissemination of the farm crops that are the very foundation upon which our live stock industry rests.

FARM CROPS IN DEPLORABLE CONDITION.

From investigations it was found that no less than 20% of the oat crop of the state was affected with smut; several distinct varieties of barley unequal in period of ripening and of variable germination were found to be characteristic of the fields of the state. One hundred or more scrub varieties of corn were grown by our farmers. They were powerless to procure good seed of any standard variety, hence had to purchase in accordance to the scoop shovel method, often getting several strains of seed corn wholly worthless for the season's crop. Also many improvements advocated by the College were unheeded as the bulletins did not appeal to the farmer in the most forcible manner and it seemed important to have practical farm demonstrations made where farmers could see and determine the value of tests made along various lines.

To correct the above defects and many more and place within reach of every farmer of the state definite breeds of

high yielding seed grains, are the chief aims and purposes of the Experiment Association.

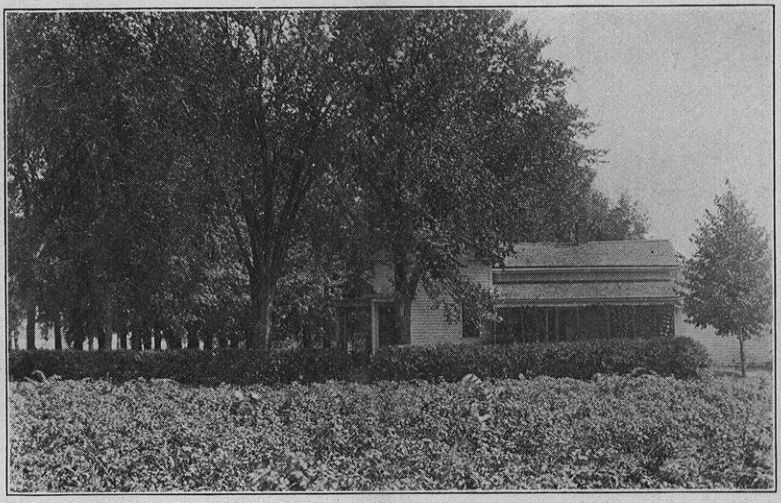
STATE APPROPRIATION.

For two years the cost of experimenting and getting out the first annual report was borne by the members of the Association, but the Legislature of 1903 passed an act by which the state appropriated $1000 per year and paid for publishing the annual report. In 1905 the appropriation was raised to $2000 and in 1911 to $3000. The state funds are used for purchasing pedigree seed grains and for material and help for actually carrying on the work. The appropriation is retained in the state treasury and is drawn out by order as necessaries are needed.

As soon as pure bred corn was grown at the Station farm in large quantities sufficient seed was put into the hands of each member of the Association to plant two acres and he was requested to establish a pure bred corn center where neighboring farmers and others could see and secure the high yielding seed in future. The member agrees also to test the pure bred corn in comparison with the best strains of corn he knows of in the neighborhood and report the facts to the Secretary of the Association. In this manner from ten to fifteen hundred corn centers were established and the pure bred varieties of corn were grown and cured for seed in great quantities. Neighbors seeing the fields from time to time and learning of the high yields soon discarded their common strains and secured the pure bred varieties. By this method of dissemination whole communities started the growing of pure bred corn and the beneficial influence of the seed corn center was felt far and near.

A test with the Silver King (Wisconsin No. 7) corn running through five years in which 1500 members took part resulted in the No. 7 corn giving an average yield of 61 bushels of shelled corn to the acre, 12 bushels more than the best corn compared with it.

Reports from 1020 members of the Experiment Association who are carrying on tests with Oderbrucker barley in different parts of the state show an average yield for five years of 36½ bushels per acre, 5½ bushels above that of the best varieties compared with it.



FARM HOME RESIDENCE OF NOYES RAESSLER.

This beautiful farm is operated by our worthy member Mr. Raessler and he has seen fit to make it absolutely a pure bred seed grain farm. Pedigree barley, pedigree oats and No. 7 seed corn are specialties on the farm and are being widely disseminated in Rock county. Mr. Raessler is secretary of the Rock County Order of the Experiment Association and expects to make it the leading county organization in the state.

THE COMING GENERATION OF PURE BRED SEED GROWERS.

Family of S. P. Markle, La Crosse county. Mr. Markle has taken more prizes on pure bred corn than any other member of the Experiment Association and he expects to have the good work continue.

Wisconsin has produced an average of 740,000 acres of barley annually for the past five years, or a total of 3,723,000 acres. Had this entire acreage been sown to Oderbrucker barley at the increased yield there would have been produced 18,000,000 bushels of barley more than if the common barley had been used. At an average price of 68c per bushel this would amount to twelve million dollars added to the wealth of the farmers of the state during the past five years.

The Wisconsin Pedigree barleys which have been carried through a course of twelve years' breeding were disseminated and tested in the state in 1910. In 800 comparative tests the pedigree barleys gave a yield of 3.6 bushels per acre above that of the selected Oderbrucker. Sufficient of the pedigree barley will be grown this year to more than cover the entire barley acreage of the United States and the following year we predict enough grown to cover the barley acreage of the world. Within three years we expect that not less than ninety per cent of Wisconsin grown barley will be of that one distinct variety. Such is the possibility through the coöperative work of the Experiment Association.

ORGANIZATION OF THE COUNTY ORDERS OF THE EXPERIMENT ASSOCIATION.

On account of the large membership of the Association, over 1500, scattered so widely throughout the state it was deemed advisable to organize local associations in those counties that had fifty or more regular members. Twenty-six counties are now organized. These organizations are known as County Orders of the Experiment Association and are officered similar to that of the State Association. The Secretary of the County Order is appointed by the State Association as farm inspector for his respective county and he receives his pay from the State Association for his services. His duty is to visit all members of his Order and all farms upon which pure bred seed grains are grown. He is expected to give advice to the local members in regard to facilities for growing and handling seed grains and report to the State Association.

By exercising close supervision poor grains are kept out of the market. The Wisconsin pedigree and select seed grains are now known everywhere. Foreign countries as well as all

grain raising states in America are buying the Wisconsin pure bred seeds.

The seed houses of Wisconsin and elsewhere are now able to purchase and sell to their customers distinct breeds of grains of known merit instead of the mixed varieties of unknown quantities heretofore sold. The farmer in turn gets seeds of much higher yielding power and free from weed seed at approximately the same price he formerly paid for mixed and scrub stock.

The various County Orders of the Association hold at least one regular annual meeting and such special meetings from time to time as the work in hand demands. The Orders assist in making their respective county fairs of a more educational character and they also take an active part in state and national competitive displays of grains and forage plants.

The secretary of each County Order keeps in close touch with his members and directs them as far as possible in the line of effort that will be for their general interest. Leaflets listing pure bred grains and stock are published from time to time which aids materially in finding a market for different products found on the farm.

In like manner the secretary of the State Association gets out lists of those members who are growing pedigree and select varieties of seeds.

The National Crop Improvement Association will print our lists of members having select seeds for sale in large quantities, bearing both the expense of printing and sending to all parts of the United States.

We now have a membership in the association of approximately sixteen hundred, nearly all of whom are active seed grain growers, and have equipped themselves with all the conveniences for handling the select and pedigree seed grains in large quantities. By following the method of having these seed grain centers established in practically every township of the state it has brought the select grains in close proximity to the farmer where he can have an opportunity to study the grains while they are growing and see them threshed before deciding to grow them on his own farm. Many farmers will study a cornfield or a grainfield beside the road when it would be a hardship for them to study corn from the printed page.

By the methods above mentioned the Wisconsin pure bred seed grains have become known far and near over the entire world and the revenue now coming to our state from the sale of these select grains goes a great way in gladdening the hearts of the seed growers and helps solve the great question of how to keep the boy upon the farm.

COUNTY ORDERS OF THE WISCONSIN EXPERIMENT ASSOCIATION AND OFFICERS WHO GUIDE THEM.

Dane County Order
- President—Chas. A. Lyman, Sun Prairie
- Vice President—C. E. Ruste, Blue Mounds
- Secretary-Treasurer—Otto Toepfer, Madison

Dodge County Order
- President—Theo. Lehman, Watertown
- Vice President—John R. Jones, Beaver Dam
- Secretary-Treasurer—H. E. Kreuger, Beaver Dam

Eau Claire County Order
- President—B. M. Arries, Augusta
- Vice President—C. A. Koll, Augusta
- Secretary-Treasurer—A. C. Russell, Augusta

Fond du Lac County Order
- President—Math. Michels, Peebles
- Vice President—R. F. Adams, Campbellsport
- Secretary-Treasurer—A. F. Block, Lomira

Grant County Order
- President—Walter Steinhoff, Platteville
- Vice President—Chas. Wilkins, Platteville, R. No. 8
- Secretary-Treasurer—Orin Bennett, Platteville

Green County Order
- President—Marion L. Karney, Brodhead
- Vice President—Lewis Krammerer, Brodhead
- Secretary-Treasurer—C. Tochterman, Monroe, R. F. D.

Green Lake County Order
- President—Ed. M. Fitzmaurice, Berlin
- Vice President—Bert Brewer, Berlin
- Secretary-Treasurer—Ben Parsons, Berlin

Jefferson County Order
President—R. N. Ward, Ft. Atkinson
Vice President—H. L. Emmert, Johnson Creek
Secretary-Treasurer—Ivan McIntyre, Ft. Atkinson
La Crosse County Order
President—S. P. Markle, La Crosse
Vice President—Wm. Moos, Onalaska
Secretary-Treasurer—Frank E. Balmer, Onalaska
La Fayette County Order
President—F. J. McConnell, Darlington
Vice President—Theo Carpenter, Darlington
Secretary-Treasurer—Orville Benedict, Darlington
Langlade County Order
President—Calvin Balliett, Antigo
Vice President—Edward Nordman, Polar
Secretary-Treasurer—D. S. Stewart, Antigo
Manitowoc County Order
President—Herman Roethel, Kiel, R. No. 2
Vice President—Roland Kolb, Manitowoc
Secretary-Treasurer—C. W. Meisnest, Manitowoc
Marathon County Order
President—G. A. Parch, Wausau
Vice President—Herman Amhaus, Edgar
Secretary-Treasurer—J. F. Kadonsky, Wausau
Milwaukee County Order
President—Wm. H. Basse, West Allis, R. No. 5
Vice President—Fred Kurtz, Hales Corners
Secretary-Treasurer—F. J. Sievers, Wauwatosa
Monroe County Orders
President—C. F. Hansen, Sparta
Vice President—L. A. Miller, Sparta
Secretary-Treasurer—C. E. Hitchcock, Sparta
Racine County Order
President—Jas. B. Cheesman, Racine
Vice President—Arthur A. Gerhard, Rochester
Secretary-Treasurer—Edwin B. Skewes, Union Grove, R 6
Richland County Order
President—H. A. Martin, Gotham
Vice President—Hubert Schmitz, Lone Rock
Secretary-Treasurer—H. L. Post, Sextonville

Rock County Order
President—Willard Austin, Janesville
Vice President—James A. Carroll, Janesville R. No. 5
Secretary-Treasurer—Noyes Raessler, Beloit
Sauk County Order
President—G. W. Davies, North Freedom
Vice President—George Hengstler, Reedsburg
Secretary-Treasurer—W. A. Toole, Baraboo
St. Croix County Order
President—R. W. Brunner, Hudson
Vice President—Geo. H. Kruschke, New Richmond
Secretary—William Schwandt, Stanton
Treasurer—Chas. Stiles, Hudson
Shawano County Order
President—Albert H. Clayberg, Shawano
Vice President—August Hoebs, Shawano, R. No. 3
Secretary-Treasurer—Dr. B. Royer, Shawano
Sheboygan County Order
President—W. L. Illian, Adell
Vice President—J. O. Parish, Plymouth
Secretary-Treasurer—O. R. Frauenheim, Random Lake
Vernon County Order
President—Nels O. Neprud, Coon Valley
Vice President—Cornelius Sebion, Westby
Secretary-Treasurer—W. T. McClurg, Viroqua
Walworth County Order
President—G. L. Harrington, Elkhorn
Vice President—L. G. Rockwell, Elkhorn
Secretary-Treasurer—J. S. Harris, Delavan
Waukesha County Order
President—Peter Swartz, Waukesha
Vice President—Frank E. Fox, Waukesha
Secretary-Treasurer—James Baird, Waukesha
Winnebago County Order
President—Arthur Cross, Winneconne
Vice President—Edw. Race, Omro
Secretary-Treasurer—J. M. Humphrey, Winneconne
Wood County Order
President—Hobert Morris, Arpin
Vice President—Simon Warlund, Grand Rapids, R. No. 5
Secretary-Treasurer—O. J. Leu, Grand Rapids

CONSTITUTION AND BY-LAWS OF THE COUNTY ORDERS OF THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION.

ARTICLE I.—*Name.* The organization shall be known as the..... .....County Order of the Wisconsin Agricultural Experiment Association.

ARTICLE II.—*Object.* The object of this organization shall be to promote the agricultural interests of the County and State in general.

1st. By coöperating with the Wisconsin Agricultural Experiment Association in growing and disseminating pure bred seed grains.

2nd. By having Associations' exhibits at agricultural fairs.

3rd. By having annual meetings in order to report and discuss topics beneficial to the members of the Order.

ARTICLE III.—*Membership.* 1. Any person may become a member of this Order who has taken a course in the College of Agriculture at Madison or at any place in the State under the jurisdiction of the College.

2. Any farmer who is interested in pure bred grains and live stock or in progressive farming in general may become a member of this Order.

3. Honorary membership may be conferred upon anyone interested in progressive agriculture by a majority vote at any annual or special meeting.

ARTICLE IV.—*Dues.* A fee of fifty cents shall be collected from each member annually.

ARTICLE V.—*Officers.* The officers of this Order shall consist of a President, Vice President and Secretary-Treasurer, whose terms of office shall be one year, or until their successors are elected.

ARTICLE VI.—*Duties of Officers.* 1. It shall be the duty of the president to preside at all meetings of the Order and to enforce the observance of such rules and regulations as will be for the best interest of the organization; to appoint all regular committees as he may deem expedient for the welfare of the Order.

2. In the absence of the President, the Vice President shall preside and perform the duties of the President.

3. The Secretary-Treasurer shall keep the records of all meetings and proceedings of the Order, also the names of all members and their addresses. He shall also keep the funds of the Order, collect all fees, pay all debts, and shall submit a written statement of all moneys received and paid out by him and shall balance his books not later than one month before the annual meeting.

Article VII.—Disbursements. The funds of the Order shall be used to defray its expenses or by vote of the Order for such purposes as will advance the agricultural interests of the Order and shall be paid out only upon an order signed by the President and countersigned by the Secretary.

Article VIII.—Amendments. This constitution may be amended at any meeting by a two-thirds vote of the members of the Order present.

BY-LAWS.

Article I. The officers of this Order shall be elected by ballot at the annual meeting.

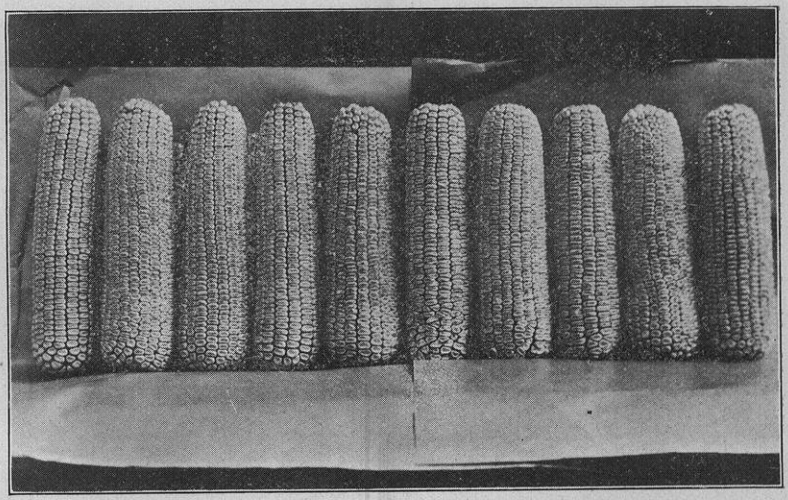
Article II. This Order shall be governed by Robert's Rules of Order.

Article III. All members joining at the organization of this Order shall be known as Charter Members.

Article IV. The time and place of holding the annual meeting shall be determined by the officers.

Adopted ....., 19.....

Typical growth of Silver King corn on the Raessler Farm. Note large ears turning downward at the ripening period.



Prize winning sample of Golden Glow corn, Wisconsin No. 12, grown by Noyes Raessler. Note symmetry of ears and uniformity of sample.

REPORT OF THE FARM INSPECTOR OF SAUK COUNTY.

SUPT. GEO. W. DAVIES, NORTH FREEDOM.

The past year in Sauk county has been one of abundant harvests, especially those of hay, corn, potatoes and apples. Just now there is being gathered and stored for future use an abundant harvest of ice. The relation of crop to climate is as evident in one case as in the other.

The county order which I have the honor to represent is still in its infancy and is not quite old enough to be termed a "yearling." Forty-six members constitute our organization. An exhibit of farm produce was made at the State Fair last September and our first annual county exhibit open to members was held recently. As an advertising body the Sauk County Order of the Wisconsin Experiment Association has not otherwise come before the public. The chief activities of its members have been confined to securing pure bred seed grains and to raising a greater variety of the same. Sale and exchange of seed among the members is of frequent occurrence and results largely because of their association and acquaintance as members.

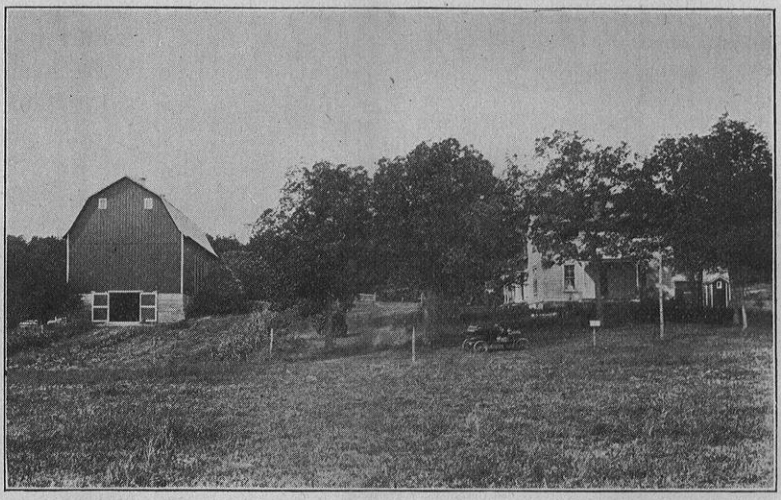
As farm inspector it has been my privilege to see the farm equipment, crops and operations of our members and other progressive farmers in all parts of our county. What is being done on a few farms in the production of better grains and live stock as well as in the use of improved methods of farming, will suffice to indicate what the members of the County Orders are doing generally.

WEEDS.

In imitation of the practice of all up-to-date farmers, I shall attack the weed question first.

In some parts of the country, especially on the lighter soil, small patches of snapdragon are flourishing undisturbed and each year witnesses a larger area that is being robbed of its moisture and plant food. Quack grass is very common on many farms and only a few farmers are making a systematic and persistent effort to rid field and roadside of this pest.

The introduction of new varieties of grains from uncertain sources together with the annual purchase of alfalfa and clover seed has led to stocking our farms with many varieties of noxious and other troublesome weeds. One small field of new alfalfa seeding was populous with thrifty growths of sow thistle. The introduction of pure bred and desirable grains and forage crops should not denote a spread of noxious and undesirable weeds. Every member of the State Experiment Association as well as the County Order members should insist upon the absence of weed seed as well as upon the purity of all seed grains sold by any member of the Order.



BARN AND FARM RESIDENCE ON THE BUNKER HILL FARM.

Live stock and pure bred seed grains farm specialties. F. S. Bunker, Sauk county.

CORN AND ALFALFA.

On the Ochsner farm, town of Troy, nearly ninety-five acres of Golden Glow corn gave an average yield of 45 bushels per acre. One field of 25 acres under more favorable conditions than the rest averaged about 75 bushels per acre. On this farm is in operation a 30 H. P. two cylinder, Hart-Parr traction engine used for pulling six 14 inch plows. Kerosene is used for fuel.

On the Sherwood farm, town of Spring Green, an interesting experiment with late sowed alfalfa has given most gratify-

ing results. In the spring of 1910 a small field was given a heavy application of air-slacked lime on one part and manure alone on the other, then plowed deep and planted to corn. In April, 1911, the ground was plowed very deep but in narrow back furrows so as to provide better drainage. During the summer the ground was disked and harrowed at intervals to retain moisture and kill weeds. The first week in August alfalfa seed was planted at the rate of 25 pounds per acre and it was a marvel how it grew. A thick uniform stand of vigorous plants from ten to twelve inches high was secured. Wisconsin No. 7 corn produced a yield of 75 bushels per acre and with its leafy fodder is furnishing silage for one of the best herds of grade Holsteins in the county. Two registered Percheron brood mares are an added source of income on this farm.

On the Bunker Hill farm, town of Delton, every effort is being put forth to make this farm second to none in production. Here is to be found one of the famous herds of Polled Durhams in Wisconsin. Bunker's improved yellow dent corn with ordinary field cultivation yields from 60 to 80 bushels per acre. One entire field (shown in accompanying picture) averaged 80 bushels per acre.

GOVERNMENT WORK.

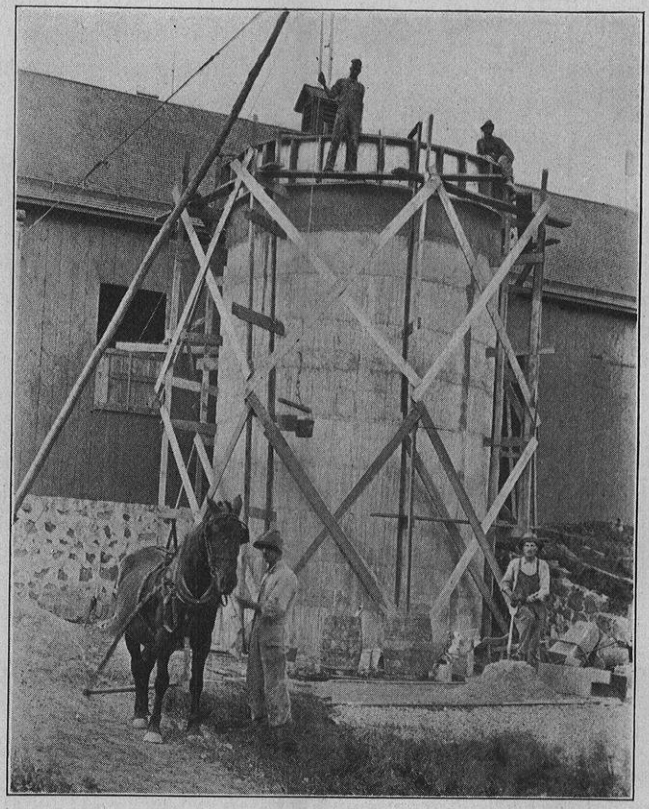
On the Wm. Wichern and Wm. Toole farms, town of Baraboo, coöperative work is being carried on with the U. S. Department of Agriculture to determine the actual cost of each farm crop produced. Daily reports are furnished, on blanks supplied by the government, which show just what these farmers are doing from the time they arise in the morning until the chores are finished at night.

DAIRYING.

Judging by the large number of silos erected the past season and the increasing number of farmers who have fields of alfalfa in good condition and other farmers who are rapidly becoming inoculated with the idea of the value of alfalfa and silage for winter feeding, the dairy cow is not being neglected. Pure bred herds of Holstein, Jersey and Guernsey

cattle may be found and a larger number of pure bred sires are each year being used to grade up good dairy herds.

Stave, cement block and reinforced concrete silos are the kinds chiefly built. Many concrete silos have been erected



CONCRETE SILO BUILDING ON THE WICHERN FARM.

The Wichern Brothers have one of the most practical farms in Sauk county located pleasantly a few miles from Baraboo, and by close attention paid to keeping up its fertility have made it one of the most productive. Live stock and pure bred seed grains are specialties upon the farm. Both William and C. H. Wichern are members of the Experiment Association and take an active part also in the Sauk County Order. They have found by experience that dairying and growing pure bred seeds should go hand in hand to insure success.

by the help of forms furnished by the College of Agriculture. The work was done without securing outside help.

CONCLUSION.

Everywhere the help and influence of the College of Agriculture and the Wisconsin Experiment Association are being

PEDIGREE SEED GRAIN DISPLAY, MADE BY LA CROSSE COUNTY ORDER OF THE EXPERIMENT ASSOCIATION.

La Crosse county is noted for its pure bred seed grain growers and the County Order has played an important part in banishing scrub grains from the entire county. The County Agricultural School at Onalaska is headquarters for the association and the annual grain display is made at the school. The La Crosse county pedigree seeds are now known over our entire state and country.

felt. These institutions are, through their graduates and members, reaching out until they affect the life and interests of practically every farmer in Sauk county and the state at large.

REPORTS OF SECRETARIES OF THE DIFFERENT COUNTY ORDERS OF THE EXPERIMENT ASSOCIATION.

Fond du Lac County Order

A. F. BLOCK, LOMIRA.

In making this report of the Fond du Lac County Order I feel that the efforts put forth the past season have not altogether been fruitless. With the continuation of the work that was enthusiastically started a few years ago, I am pleased at this time to report to you that everything pertaining to the breeding and dissemination of pure bred seed grains is being carried on with greater anxiety than ever before.

In spite of the fact a long drouth prevailed during the growing season, we managed to get a pretty good crop, perhaps not so much in quantity as we would have had, had we received a greater supply of moisture. This experience is sufficient to give us a fair warning that if we wish to compete with a long drouth we must prepare and cultivate our soil with greater intelligence.

By reducing our fee at our annual meeting of April 1st, 1911 from one dollar to fifty cents we had quite an increase in membership over that of the previous year, thus making our Order much stronger and more effective.

The first achievement accomplished was the getting out a list of seed growers and live stock breeders. These were sent out to the members and distributed at the booth at the State Fair, also used as an advertising circular by members in their correspondence. The next achievement was the putting up of a County Display at the State Fair, capturing first place in a strong competition, thus making it the banner county of the State.

Manitowoc County Order

O. R. WIEGAND, CLEVELAND.

Our Order suffered a great setback during the year 1911 owing to the extreme drought and hot weather which existed almost throughout the county.

At our last meeting plans and preparations had been made to exhibit extensively at our County Fair and to put up an exhibit at the State Fair. A special committee had been elected to have in charge the exhibits at the County Fair, but our County Fair was dispensed with in 1911 for the first time in a long number of years and for this reason, and the crops being of such inferior quality the officers of the Order decided that it was impossible to exhibit at the State Fair.

The seed growers list gotten out by our Order have been a great aid in the sale of pure bred seeds. Our third annual meeting was held March 17—18, 1911 at Manitowoc. A fine program had been arranged and a large crowd attended. It was considered a general success. We now have a membership of forty.

Dane County Order

RAY W. CHATTERTON, BASCO.

A meeting of the Dane county members of the Wisconsin Agricultural Experiment Association was held in the Agronomy Building in Madison on January 14, 1911 for the purpose of organizing a Dane County Order of the Association. The constitution adopted was similar to that of the other County Orders. Prof. R. A. Moore was made an honorary member of our Order.

An attempt was made to put up an exhibit at the State Fair, which brought a fair return in premiums. The showing might have been better but for the inexperience of the one in charge, and the fact that no one knew their material was to be shown until called for about ten days before the Fair. A growers list was also gotten out.

The Order has a membership of twenty at present. It is to be hoped that more of the members will join so the county will be better represented.

Jefferson County Order

IVAN MC INTYRE, FORT ATKINSON.

The Jefferson County Order was organized at the last annual meeting of the Experiment Association. Later the membership was increased by holding a meeting at Jefferson during a Farmer's School held by the Extension Department of the University. Our membership now consists of twenty-four young farmers. No organized effort was made to advertise or exhibit at the County or State Fair, the lack of funds being the principal drawback.

St. Croix County Order

WM. SCHWANDT, STANTON.

The year 1911 can be considered a good year for the County Order as weather conditions were ideal. While we have not done anything out of the ordinary, yet we have done the best we could under the circumstances.

Our first good work of the year resulted in capturing the large and beautiful silver cup from Washington county, Minnesota. Much of our time was spent in getting up an exhibit for the State Fair, and while we did not land at the top, we are satisfied that much was accomplished as it was our first attempt, whereas most of the other counties had years of experience along that line. Glenwood City held their annual Inter-County Fair Sept. 27 to 29. There we won nearly all the pure bred premiums and were paid for putting up a display of pure bred sheaf grains and grasses.

On the 21st day of November, 1911, the president and secretary of our Order presented a request to the county board to have an appropriation of $100 set aside for the use of the St. Croix County Order and we were much pleased to have the $100 allowed us without opposition. This money is to be used for getting up the County Exhibit for the State Fair in 1912 and the placing of pure bred seeds in every town in the county, where we are as yet not represented and for any other work where money can be used to the advancement of our county.

With the help of Prof. K. L. Hatch, who is secretary of the State Agricultural Extension work, we were successful in

landing a corn and dairy school at New Richmond followed by New Richmond Annual Corn Show. The Industrial Club of this city helped us with the work, furnishing the hall, tables, and general necessaries free which assured the success of the school. The Order in turn helped the Corn Show and put up one of the best displays of sheaf grain and grasses ever exhibited in this county. Sixty-three students were enrolled nearly all of whom were in attendance throughout the five days of the Course. I am pleased to say the Corn and Dairy School conducted by Prof. C. P. Norgord and A. C. Baer was a great success. This county is 250 miles from Madison and the farmers are unable to get the benefit of the University to as great a degree as those counties nearer by. While it has done much good in teaching the farmers how to raise better corn, grain and dairy cattle, it has also helped to drive out the prejudice against the University which exists more or less all over the state which is brought about through ignorance or selfishness. We hope we can arrange to have another such school in the county the coming winter. All members attending this Course were allowed to join the State Experiment Association and the County Order. We now have 55 members enrolled and more coming.

Our annual meeting was held Dec. 16th and besides the regular business of the meeting L. A. Baker, Cashier of the Manufacturers Bank of the city of New Richmond was elected an honorary member of our order. Mr. Baker is deeply interested in agricultural advancement and gave us every assistance possible at the Corn and Dairy School. The members of our Order had the pleasure of having with us Professors R. A. Moore and C. P. Norgord. Their talks were inspiring and the information given will be a great help to further effort on the part of our association.

BUSINESS MEETING.

Business meeting of the Wisconsin Agricultural Experiment Association, Friday, January 26, 1912, 2 P. M., Auditorium.

Called to order by the President, C. P. Norgord. The minutes of the last meeting were read and adopted, after which the following officers were elected:

PURE BRED GRAIN DISPLAY MADE BY THE ST. CROIX COUNTY ORDER OF THE EXPERIMENT ASSOCIATION AT THEIR ANNUAL MEETING HELD IN CO-OPERATION WITH THE BANKERS MEETING AT NEW RICHMOND, DEC. 16, 1911.

The St. Croix County Order has been a great factor in the growing and dissemination of pure bred seed grains. By holding frequent meetings for the general public information pertaining to better methods of farming and the advisability of banishing scrub grains and scrub cattle has had a marked influence on the agriculture of the entire county.

President ..... C. P. Norgord, Madison.
Vice President .....William Leonard, Jefferson.
Secretary .....R. A. Moore, Madison.
Treasurer .....H. N. Longley, Dousman.

On motion of the Secretary, Professor J. F. Wojta of the Upper Michigan School of Agriculture was made an honorary member of the Experiment Association.

The President appointed the following committee on resolutions:

James B. Cheesman
H. P. West
Chas. T. Lyman.

The selection of a representative to attend to matters relating to the National Corn Association was taken up and on vote, R. A. Moore was unanimously elected.

The following resolutions were reported by the committee and on motion were unanimously adopted.

RESOLUTIONS.

Resolution 1. Completion of the Agronomy Building.

Whereas, "The accommodation of the Agronomy Building, for the enormous amount of work carried on by the various sections of the Department, is quite insufficient to meet its present needs, prompt action should be taken to obtain an early extension of the building on the plans originally drawn.

Be it resolved, That the president and secretary, Professors C. P. Norgord, and R. A. Moore, be instructed to take action to obtain the needed changes immediately.

That a copy of this resolution be sent to each of the members of our Legislature.

Resolution 2. Government Aid for Extension Work.

Whereas, The welfare of this country is primarily dependent upon its agricultural progress, and

Whereas, The Lever Bill now pending in Congress has been provided to further promote the effective agricultural extension work now carried on in the various states, and

Whereas, The aforesaid bill provides for the federal duplication of state appropriations, for such purposes, under conditions as are stated in the bill,

Be it resolved, That the United States' Senators and Congressmen be urged to support such immediate legislation as will secure to us the advantages of this service,

That a copy of this resolution be forwarded to each of our Senators and Representatives in Congress.

Resolution 3. Parcels Post.

Whereas, The efficiency and low cost of transportation in all countries which have experienced the beneficient work of the Parcels Post, is duly recognized;

Therefore be it resolved, That the Wisconsin Agricultural Experiment Association, numbering 1600 paid-up members, representing all parts of the state, gathered at Madison in annual session, desires to go on record as *not favoring the reduction of letter postage to one cent per ounce* at the present time, and in no case, until Congress has enacted a *General Parcel Post Law.*

Resolved, That we respectfully ask and urge upon the present Congress that it no longer delay giving to the people an adequate, up-to-date *General Parcel Post,* one at least as good as that enjoyed by the people of England, Germany, Russia, or China.

Resolved, That the Secretary of this Association be directed to forward a copy of these resolutions to the Senate Committee on Post Offices and Post Roads, Jonathan Bourne, Chairman; also to the Clerk of the Senate and to the Clerk of the House of Representatives; also to each Senator and Representative from the State of Wisconsin.

Resolved further, That the Secretary shall promptly cause to be published in the "Wisconsin Agriculturist," the "Wisconsin Farmer," and the "Wisconsin Equity News," for the information of the members of this Association and our farmers in general, the replies received from our several representatives bearing upon the several points in these resolutions.

TREASURER'S REPORT.

H. N. Longley, treasurer of the association reported on the financial condition of the association. His report showed the receipts from all sources, except state appropriation from January 1, 1911, to January 16, 1912 to be $1,028.29
Disbursements covering the same period..... 926.72

Balance in treasury January 16, 1912..... $101.57

R. A. Moore, secretary of the association reported on the use and condition of the state fund. His report showed the total receipts from the state with the balance on hand, from Jan. 1, 1911 to Jan. 3, 1912..... $3,490.42
Disbursements covering the same period 2,546.69

Balance in State Treasury Jan. 3, 1912..... $944.73

We, the undersigned committee, appointed to examine the Treasurer's and Secretary's reports on receipts and disbursements of funds for the past year, beg leave to report that we found them correct.

Signed B. D. LEITH,
L. F. GRABER,
H. E. KREUGER.

Eleventh Annual Meeting, Jan. 26, 27, 1912.

The itemized financial reports are on file for inspection in the office of the Experiment Association.

EXHIBITION OF GRAINS AND FORAGE PLANTS FOR 1912.

One of the attractive and beneficial features of past annual meetings of the Experiment Association have been the competitive display of grains and forage plants. Approximately one thousand dollars in cash and special prizes have been set aside for premiums to be paid annually for the best exhibits of pure bred seed grains and forage plants. The quality of

grains displayed has been of a very high standard and the interest taken in this feature of the meetings is such that the association deems it advisable to continue this line of effort on a much larger scale. Cash and special prizes to the approximate value of twelve hundred dollars will be given to the growers of best seeds at the next annual meeting. A list of special prize offerings will be sent to the members of the association later in the year.

All members of the Association should exhibit seed grains at their county fair, at the State Fair at Milwaukee and also at the Experiment Association Contest. We desire to let farmers and seedsmen far and near know what the members of the association are able to produce.

We feel that through the exhibition of pedigree seed grains much good can be done in the way of encouraging the growing and dissemination of these high yielding grains free from smut and obnoxious weed seeds.

Officers of the county fairs should be seen by individual members of the association and the custom followed in the past of paying premiums on scrub grains should be discouraged. Prizes should be offered by the county fair associations on such varieties of grains and forage plants only as are deserving of encouragement.

The Experiment Association should demonstrate to the seedsmen and farmers of Wisconsin that good seed can be grown within our borders which is acclimated to our home conditions. The seedsmen of our state and of adjoining states will be only too pleased to assist in the dissemination of home grown seeds if they can be shown that the quality is better than they can get elsewhere. Realizing the great improvement that can be accomplished in the growing of farm crops we trust that each member of the association will do all in his power to assist in the production of choice grains and forage plants for our next display.

THE GRAIN EXHIBIT OF THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION

AT THE SECOND INTERNATIONAL BARLEY SHOW, CHICAGO.

L. F. GRABER, Madison.

Again the Wisconsin Pedigree Barleys have lived up to their old time reputation and have carried off a world's championship and once again the honor has fallen to Hon. H. E. Kreuger of Beaver Dam, Wis.

The second International Barley Show was held in the Coliseum Building, Chicago, Ill., October 12 to 22. The Wisconsin barley growers were on hand with a strong exhibit in competition with barley from all parts of the U. S. and some foreign countries.

Soon after the close of the exhibition the following telegram was received by Prof. R. A. Moore from the Show authorities,

"The pedigree Oderbrucker barley grown by Krueger nineteen eleven took grand prize for six rowed barleys, giving him five prizes, aggregating five hundred and fifty dollars. Wisconsin prizes total eleven hundred and twenty five dollars, distributed among six prize winners."

A list of the prizes awarded to Wisconsin exhibitors are as follows:

H. E. Kreuger, Beaver Dam. Worlds Championship on best six rowed barley $540.00

Louis Groth, Cedarburg, American prize on second best six rowed barley $150.00

Albert Meyer, Beaver Dam, Wisconsin prize and special prize on six rowed barley $180.00

Malachi Ryan, Kaukauna, Wisconsin prize on six rowed barley $120.00

John K. Gebhard, Waukesha, Third special prize for two rowed barleys grown in the Middle Western States $75.00

Pabst Brewing Co., Milwaukee, American prize for best two rowed 1910 barleys exhibited..... $50.00

Never before were the Wisconsin barleys put through such a severe test.

Sixty pounds of the threshed grain constituted a competitive sample. This of course did away with all possibility of hand picking and other grooming which is commonly a practice, when

small peck samples are entered in a contest. A chemical analysis was made of all samples exhibited and the final awards represented the judgment of sixteen of the best grain experts in the United States.

Aside from the actual competitive exhibits the Experiment Association was alloted about 1200 square feet of floor space

CHICAGO BARLEY SHOW.

Pedigree Wisconsin Grains in Sacks for Public Inspection

for an educational agricultural display. It is of special interest to note that Wisconsin was the only state, represented by an educational agricultural exhibit. Large crowds daily thronged the Coliseum and the progressiveness of the Wisconsin farmer as illustrated by the beautiful exhibit was reflected on thousands of people from all parts of the U. S. and the world.

The immensity of the show brought together the barley producers as well as the barley consumers, not only from all parts of

THE PURE BRED GRAIN EXHIBIT AT THE 1911 CHICAGO BARLEY SHOW.

the United States but from distant foreign countries. It was therefore highly essential that Wisconsin grains show up to the best advantage.

In the way of national and international advertisement of Wisconsin pure bred grains and particularly Wisconsin pedigree barley, the best of results were secured. The Wisconsin booth was visited by thousands of interested admirers of the exhibit and impression produced not only advertised Wisconsin pure bred grains but the entire state as well. One large malster from Montana gave forth his experience with 3500 bushels of Wisconsin pedigree barley he had purchased for seed purposes two years ago.

"The greatest trouble with barley growing in Montana is the shattering of the heads at harvest time. Our experience with the Wisconsin barley has been, that there was little or no shattering the first year, although in the second generation (year) it begins to shatter considerably, and apparently this increases from year to year. In view of this fact I expect to import a fresh seed supply every two years from Wisconsin. The Wisconsin pedigree barleys are wonderful in their uniformity and yielding powers."

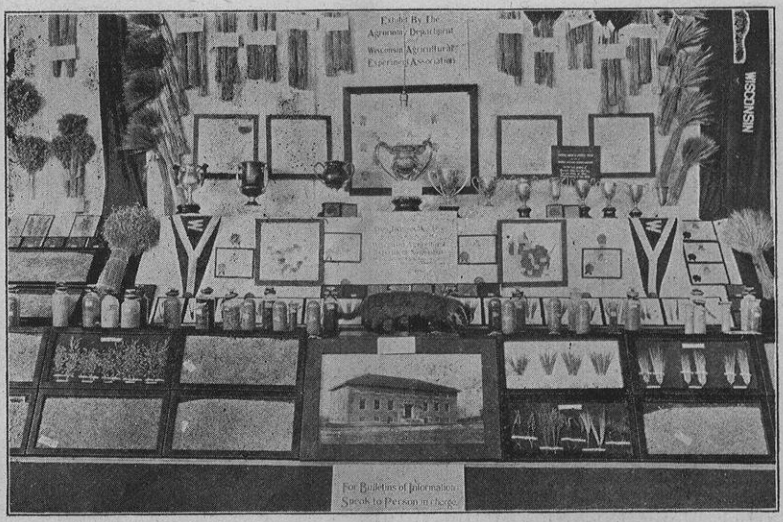
Numerous expressions of this sort are more than encouraging. They indicate the great commercial possibilities of pure bred seed growing in our state, On the whole the exhibit worked wonders in the way of wide advertisement of the true merits of Wisconsin pure bred grains and the economy with which it was arrangd (cost to the association less than $150) justifies further work along this line in the future.

THE JOINT EXHIBIT OF THE WISCONSIN AGRICULTURAL EXPERIMENT ASSOCIATION AND THE AGRONOMY DEPARTMENT

At the Wisconsin State Fair, 1911.

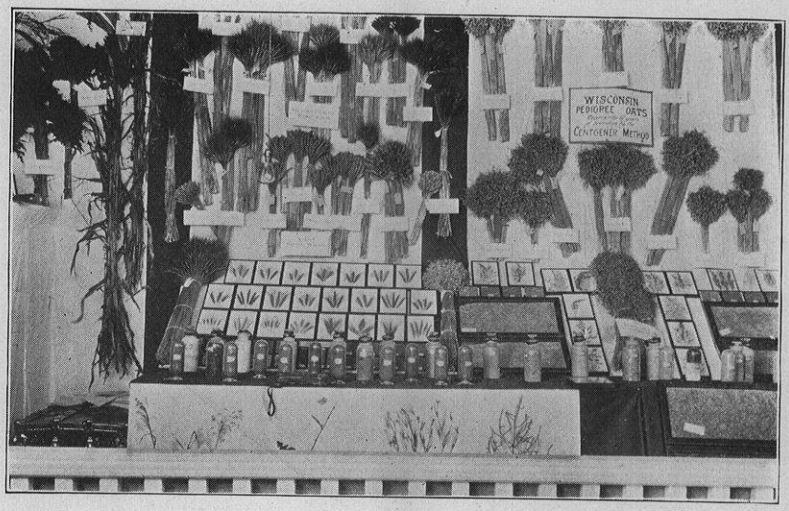
L. F. GRABER, MADISON.

Never before in the history of the Experiment Association and Agronomy Department of the College of Agriculture was there such a carefully prepared and representative exhibit of the coordinated agricultural work as that shown at the 1911 State Fair.



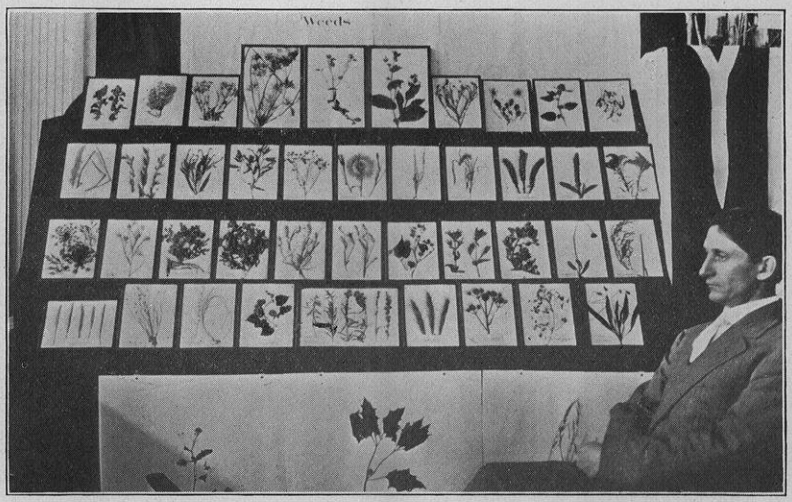
Trophies and Medals Won on Pure Bred Wisconsin Grains, a Part of the Exhibit.

It might well have been criticised as being "a little overdone" that is to say, so extensive as not to be readily comprehended by the spectators—however, from the standpoint of beauty, symmetry and attractiveness it was admired by the most critical. The Experiment Association has had several years of experience in preparing exhibits of grains and forage plants. They have learned that one of the most important essentials of agricultural displays of this nature is careful grouping and systematic arrangement of the various crops. The wall space should be divided into sections each of which will represent a certain crop. For



Wheat and Oats Section of the Exhibit.

General Veiw of 1911 State Fair Exhibit.



The Seed Inspector and the Weed Exhibit.

Corn and Forage Crop Section of the Exhibit.

example, at the 1911 State Fair, the wall space was apportioned for the sheaf and other exhibits of the following crops:—wheat, oats, barley, rye, corn, forage crops, weeds and miscellaneous crops so that the entire exhibit was made up of a combination of separate exhibits of the above crops. This made matters very convenient in accommodating vast crowds which daily thronged the exhibit Building. If a man was interested in corn, he could readily be conducted to the corn section where this matter could be intelligently discussed in the presence of excellent illustrative material..

Another important essential of the successful exhibit is the careful and plain labeling of the various materials exhibited. This was accomplished for the most part by means of 4x6 inch cards carefully printed and attached to the sheaf grains or other parts of the display.

One very attractive feature of the exhibit was a display of trophies and medals won by members of the Wisconsin Agricultural Experiment Association on pure bred grains. It was the means of arousing curiosity and informing the otherwise uninterested public as to reputation and character of the Wisconsin pure bred grains and the extent to which they are being raised from a commercial standpoint.

The exhibit was particularly of an educative character. Hundreds of pressed samples of our common and noxious weeds, correctly named were shown and many farmers were able to identify some weeds they had seen much of but never had learned the correct names. The excellent sheafs of pure bred and pedigreed barley, wheat, oats, rye, etc. called attention to the merits of these grains produced by 7 to 12 years of careful breeding and selection in comparison with the too commonly grown scrub grains without breeding or selection. Charts with interesting tables and other data were objects of study for those interested particularly along agricultural lines.

DIVISION OF FARM CROPS.

PLAN OF WORK FOR THE COMING YEAR.

R. A. MOORE.

The efforts of the Experiment Association for 1912 should be concentrated on the growing and dissemination of the pure bred varieties of corn, oats, wheat, barley and rye. Great demand from all over the country for select pedigree seed grains grown by our association convinces me that the farmers are quick to realize the importance of growing crops from the pure bred seeds instead of continuing the common scrub varieties. The great interest so far obtained for select seed grains can only be maintained by observing strict rules of honest practice.

If for any reason our seed crop should be damaged or contaminated with noxious weed seeds we should at once notify the Secretary and refrain from selling such seed. All seeds of questionable character should be ground and fed on the farm or sold as feed and not listed as seed grains.

Our work in the growing and dissemination of standard varieties of corn for Wisconsin should be continued and pushed with the utmost vigor. No longer should we allow the scoop-shovel method of supplying seed corn, but insist that all seed corn be furnished in the ear and that to be kiln-dried corn. No seedsman can advance a single good argument for not selling seed corn in the ear. Where shelled seed corn is supplied the farmer, the danger of mixing and getting an inferior grade of corn is too great to be safely advocated. The only safe, sure way of preparing seed corn for market is to fire dry it and then store safely in a dry room for shipment. All seed corn should be shipped in the ear for which the grower should receive ample returns for his extra labor. By adhering strictly to the above principle we will be able to throw new life and vigor into the corn plant and lead the world in production per acre.

Our experiments for 1912 are outlined in the Ninth annual report and members of the association will follow these outlines and instructions given therewith. All members experi-

menting will be furnished report blanks in due time for the purpose of reporting the experiments.

Members should bear in mind that whenever an experiment is undertaken the Secretary should have full knowledge of the same so as to be able to compile the data for publication.

In my travels throughout the state, I frequently visit members of the association who are growing and testing seed grains, but do not think it necessary to make a report. The value and importance of the work is lost entirely to others if we neglect so important a duty. In order to be placed on the seed grower's list one must notify the Secretary of the kind and amount of seed, the price per bushel, a pint sample of the seed, and any other data that may be well for the Secretary to know.

The grower of pure bred seed grains should be a business man in the strictest sense and should have business cards and letter heads for business correspondence. These cards and letter heads should be modest, giving the name of the farm, the owner's name, the seed grains grown, and any specialties put in practice upon the farm.

CO-OPERATIVE WORK IN THE DISSEMINATION OF PURE BRED SEED GRAINS.

SEED GRAIN SPECIAL RUN ON THE CHICAGO, MILWAUKEE AND ST. PAUL LINES.

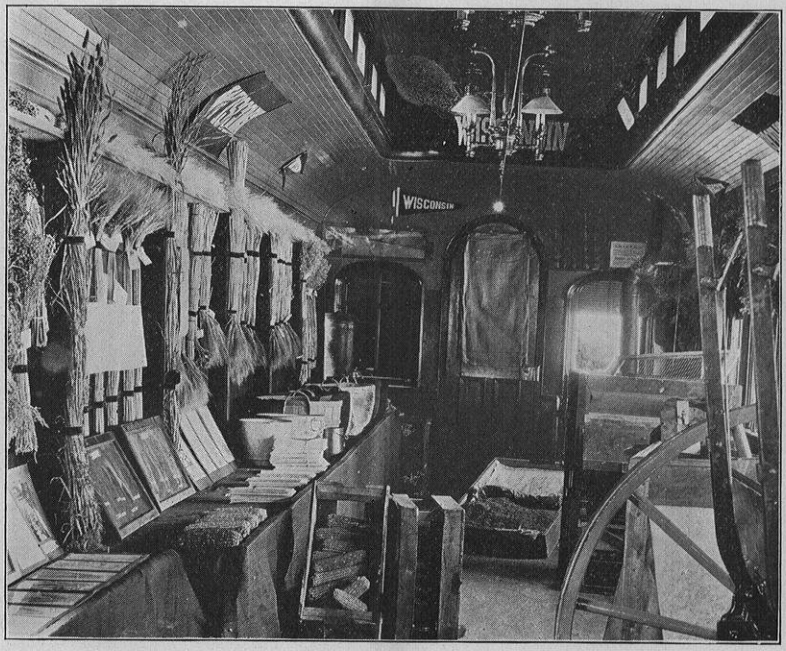
One of the latest moves in behalf of Agriculture and especially that connected in spreading knowledge regarding pure bred seed grains and best methods of growing and marketing the same is the work carried on by the Experiment Association and the College of Agriculture in coöperation with the Council of American Grain Exchanges. For several years the Milwaukee Chamber of Commerce has manifested a deep interest in the pure bred seed grain work of the College and has assisted by offering beautiful silver trophies in the annual grain contests of the Wisconsin Experiment Association. Their assistance has materially aided in the good work.

Last year the work took on a wider scope and the American Grain Exchanges assisted in the dissemination of pure bred seed grains and also in the general information relating to the latest improved methods of growing and marketing the same. Through this assistance members of the Experiment Association found ready sale for all their pedigree seed grains and thus the pure bred seeds found their way over a wide area of country.

CROP IMPROVEMENT CAR READY TO START ON ITS PURE BRED SEED GRAIN MISSION.

A pure bred seed demonstration car was run through southern and central Wisconsin. The car was fitted out with all the latest appliances for testing, grading and sowing grains and grasses. Treating the grains for prevention of smut and other diseases was emphasized; and bulletins giving information on all phases of growing grains and forage plants were given to the public. The Demonstration car was out for two weeks and made ten counties. Day and evening meetings were held at the county seats of the counties visited and the pupils of the public schools with their teachers and friends had an opportunity to visit the car each day and learn of the work of growing and disseminating pure bred seed grains. County Orders

INTERIOR VIEWS OF CAR SHOWING PEDIGREE BARLEY, WHEAT, OATS, CORN AND RYE.



of the Experiment Association were organized in those counties passed through where they did not already exist and thus a permanent organization was left to emphasize and carry on the good work for years to come. In many ways the meetings held in connection with the pure bred seed trip rank among the most successful agricultural meetings held in the state. The work will be continued the coming fall and winter and people in other counties be accorded the same opportunity of learning the good message of pure bred seeds.

We are living in an age of seed grain improvement and our utmost endeavors should be to coöperate and lend a helping hand in banishing scrub seeds forever from our country and in their place emphasize high yielding pedigree seeds that through tests have proven their worth both to quality and yield.

NUMBER OF PLACES VISITED AND ACTUAL NUMBER OF FARMERS IN ATTENDANCE AT THE MEETINGS.

Jan. 15.	Platteville	125
Jan. 16.	Darlington*	120
Jan. 17.	Brodhead*	100
Jan. 18.	Janesville*	100
Jan. 19.	Elkhorn*	200
Jan. 20.	Waukesha*	150
Jan. 22.	Fond du Lac	150
Jan. 23.	Beaver Dam	200
Jan. 24.	Watertown	200
Jan. 25.	Richland Center	250
	Total number in attendance	1,595

*Places where County Orders of the Experiment Association were formed.