Wisconsin Farmers' Institutes : a hand-book of agriculture. A report of the twenty-ninth annual closing Farmers' Institute, held at Kenosha, Wisconsin, March 11, 12, 13, 1915. Bulletin No. 29 1915

Wisconsin Farmers' Institutes
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WISCONSIN FARMERS INSTITUTES

BULLETIN NO 29

THE HEART OF THE PRUDENT GETTETH KNOWLEDGE

"At the head of all the sciences and arts, at the head of civilization and progress, stands—not militarism, the science that kills, not commerce, the art that accumulates wealth—but agriculture, the mother of all industry, and the maintainer of human life."—JAMES G. GARFIELD.

C. P. NORGORD.

Wisconsin's First Commissioner of Agriculture; Superintendent of Farmers' Institutes, 1914-1915.

WISCONSIN
FARMERS' INSTITUTES

A HAND-BOOK OF AGRICULTURE

BULLETIN No. 29

1915

A Report of the Twenty-Ninth Annual Closing Farmers' Institute, Held at Kenosha, Wisconsin March 11, 12, 13, 1915.

"Farming is a business; agriculture is a science. The tiller of the soil who blends these two is the man to whom the future offers success."

CYRUS H. McCORMICK.

EDITED BY

E. L. LUTHER

SUPERINTENDENT

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J. W. MARTIN. GEORGE McKERROW A. J. PHILLIPS

Granted Special Recognition by the University of Wisconsin for their Services in Upbuilding Agriculture.

LETTER OF TRANSMITTAL

HON. A. P. NELSON,

President of the Board of Regents, University of Wisconsin:

Sir:—I have the honor of herewith presenting to you Bulletin No. 29 of Wisconsin Farmers Institutes.

Most respectfully yours,

E. L. LUTHER,

Superintendent.

Madison, Wis., December, 1915.

Marathon County Exhibit at Wisconsin State Fair, 1915; awarded first prize.

THE UNIVERSITY OF WISCONSIN

Board of Regents

Charles R. Van Hise, President of the University, ex-officio.
Charles P. Cary, State Supt. of Public Instruction, ex-officio.

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State at Large, Mrs. Florence G. Buckstaff.
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Organization.

The University embraces—
- The College of Letters and Science.
- The College of Engineering.
- The Law School.
- The College of Agriculture.
- The Medical School.
- The Graduate School.
- The Extension Division.
- The Summer Session.
- The College of Letters and Science embraces—
  - General Courses in Liberal Arts.
  - Special Courses which include:
    - Chemistry.
    - Commerce.
    - Journalism.
    - Library Training Courses.
    - Music.
    - Pharmacy.
    - Training of Teachers.
- The College of Engineering embraces—
  - The Civil Engineering Course.
  - The Mechanical Engineering Course.
  - The Electrical Engineering Course.
  - The Chemical Engineering Course.
  - The Mining Engineering Course.
- The College of Agriculture embraces—
  - The Experiment Station.
  - The Long Agricultural Course.
  - The Middle Agricultural Course.
  - The Short Agricultural Course.
  - The Dairy Course.
  - The Farmers' Institutes.
  - Home Economics.
  - The Forest Rangers' Course.
- The Law School embraces—
  - A Three Years' Course.
- The Medical School embraces—
  - The First Two Years of a Medical Course.
- The Extension Division embraces—
  - The Department of Instruction by Lectures.
  - The Department of Correspondence-Study.
  - The Department of General Information and Welfare.
  - The Department of Debating and Public Discussion.
- The Summer Session embraces—
  - Courses in the various Colleges and Schools of the University.

Branches of Study

The University presents a wide range of study embracing more than three hundred subjects. Something of the extent and variety of these may be indicated by the following synopsis: Twelve languages are taught, viz.: Greek, Latin, Sanscrit, Hebrew, German, Norse, French, Italian, Portuguese, Spanish, Anglo-Saxon and English. In Mathematics there are forty special courses. Under

the Sciences there are a large number of courses in each of the following: Astronomy, Physics, Chemistry, Geology, Mineralogy, Zoology, Botany, Anatomy, Bacteriology, Pharmacy. In History there are fifty courses; in Political Economy, seventy-seven; in Political Science, forty-four; in Mental Sciences there are sixty-one embracing Philosophy, Psychology Ethics, Aesthetics, Logic and Education. There are twenty-seven courses in Music, and forty-three courses in Physical Education.

Physical Culture:—The Armory and Gymnasium is one of the largest buildings for its purposes connected with any institution of learning in the country. It is provided with rooms for lectures on Physiology and Hygiene, and for class and individual exercise in all the forms of gymnastic practice. There are also the most abundant and approved facilities for shower, sponge and swimming baths.

Adequate accommodations are provided for the women's gymnastics in Lathrop Hall, which is fully equipped. This furnishes ample facilities for systematic courses for young women, and is under the immediate direction of a trained instructor. This provides a gymnasium for the exclusive use of women.

In Mechanics and Engineering:—Elementary Mechanics, Mechanics of Material, Dynamics, Mechanics of Machinery, Theory of Construction, Thermodynamics, Elementary Surveying, Railroad and Topographic Surveying, Geodesy, Sanitary, Hydraulic, Railroad, Electrical, Steam Engineering, Hydraulic Motors, Hoisting Machinery, Theory and Construction of Locomotives, Railway Locomotives, Railway Location, Railway Equipment, Construction and Maintenance of Way, Railroad Field Work.

In Electricity:—Electrical Testing, Electrical Plants, Electrical Construction, Electrochemistry, and various forms of drawing are given; also shop work in wood, iron, brass, both hand work and machine work, machine designing, construction and testing machines.

In Agriculture:—Various courses are given in Agriculture, Animal Husbandry, Farm Management, Dairying, Agricultural Chemistry, Soils, Veterinary Science, Agricultural Physics, Agronomy, Horticulture and Economic Entomology, Bacteriology, etc.

In Law:—Courses in Equity, Jurisprudence, Real Property, Constitutional Law, Wills, Contracts, Torts, Practice and Pleading, Law of Evidence, Corporations, Domestic Relations, Admiralty, Insurance, Estoppel, Partnership, Taxation, Criminal Laws, Common Carriers, Medical Jurisprudence, Probate Law, Code Practice, Agency, etc.

In Pharmacy:—Courses in Practical Pharmacy, Pharmaceutical Chemistry, Materia Medica, Pharmaceutical Botany and Practical Laboratory Work.

General Facilities:—The faculty embraces six hundred and eighty-five instructors of whom 160 average half time. The laboratories are new, extensive and well equipped; embracing the Chemical, Physical, Metallurgical, Mineralogical, Geological, Zoological, Botanical, Bacteriological, Civil, Electrical and Mechanical Engineering, Agricultural and Pharmaceutical Laboratories. Seminaries are held for advanced study in History, Language, Literature, Mathematics, and other branches.

The libraries accessible to students embrace that of the University, 218,595 volumes; of the State Historical Society, 386,588 volumes; of the State Law Department, 55,000 volumes; of the city, 34,779 volumes; of the Legislative Reference Library, 35,000 volumes and pamphlets; besides special professional and technical libraries, making in all more than 807,900 volumes, including pamphlets, thus affording very exceptional opportunities for reading and special research.

Any person who desires information in regard to any of the colleges or schools, should apply to

W. D. HIESTAND,
Registrar.

COURSES IN THE COLLEGE OF AGRICULTURE OF THE UNIVERSITY OF WISCONSIN MADISON

Long Course. Covering four full college years, offers scientific training in agriculture, as well as training in the underlying sciences. Students may specialize in any line after the second year. In 1915, 595 First Sem. registered.

Middle Course. Consists of two full college years, modified to include as much practical work as possible in connection with the regular scientific training. In 1915, First Sem. 116 registered.

Home Economics. A four-year course, leading to the degree of Bachelor of Science, for those who wish to prepare themselves as teachers in Home Economics, as home makers or for other related vocations. In 1915, First Sem. 261 registered.

Summer Session. Last week in June to second week in August. This session includes 39 courses in agriculture. In 1915, 371 students attended.

Short Course. A term of 14 weeks in each of two years. Registration Friday, November 26. The course includes lectures, demonstrations, and practice work. In 1914–15, 465 attended.

Young Peoples' Course. This is a one week course of lectures and demonstrations in agriculture for boys and girls who have taken part in the Young People's Grain Growing Contests. It generally begins early in February.

Farmers' Week. This is a course of popular lectures, demonstrations and exercises in practical agricultural science, beginning early in February. It is open to farmers over 25 years old. In 1913, 954 attended.

Winter Dairy Course. A twelve weeks' session, beginning early in November, including lectures, laboratory and practice work in the manufacture of dairy products. It is designed especially for buttermakers and cheesemakers. In 1914–15, 169 attended.

Summer Dairy Course. This is a ten-weeks' training in dairy factory operation for beginners. Students are admitted any time during the spring or summer after March 1.

Special Dairy Course. This is for creamery and cheese factory operators and managers and covers ten days, including addresses and laboratory demonstrations. It is given at the time of the Farmers' Course.

Women's Course. This is a one-week course of lectures and demonstrations on various phases of home economics, cooking, nursing, etc., and is given during the first week of the ten days' Farmers' Course.

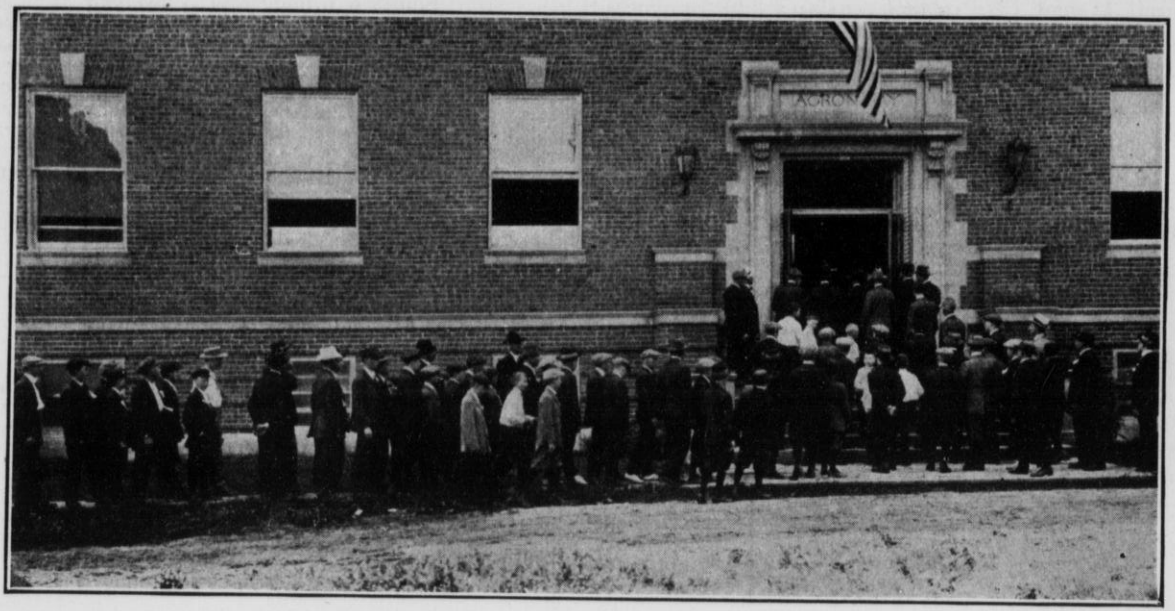
Women's One Week School. This is a laboratory course in cooking, given during the second week of the Farmers' Course.

Forest Ranger's Course. This course covers a period of two full years preparing students for such positions as forest ranger, guard, tree planting expert, or nursery foreman. For further information concerning any of these courses address the College of Agriculture, Madison, Wis.

Farmers' Institutes

E. L. Luther, Superintendent — Nellie E. Griffiths, Clerk

THE FARMERS INSTITUTES DEPARTMENT conducts meetings in various sections of the state where practical lectures and conferences on subjects pertaining to farm life and farm operations are presented. Women's Institutes are also conducted for the women. The Farmers' Institute Bulletin is issued annually in an edition of 40,000 copies, and distributed at Institutes and by mail; also 12,000 copies of the Farmers' Institute Women's Bulletin. Any community can secure an Institute upon proper application to the Superintendent. For further information address Supt. E. L. Luther, Madison, Wis.



Boys in attendance at the Young Peoples' Course at the College of Agriculture.
One way to help keep the boys on the farm.

WISCONSIN FARMERS' INSTITUTES FOR 1915-1916.

ARRANGED BY COUNTIES.

Adams	Brooks*, Friendship*, Plainville.
Barron	Chetek†, Dobie†.
Bayfield	Cornucopia, Mason.
Brown	West Morrison.
Buffalo	Modena, Mondovi, Tell.
Burnett	Danbury, Grantsburg.
Calumet	Brillion*.
Chippewa	Albertville, Cornell*.
Clark	Granton*, Humbird*, Thorp†.
Columbia	Kilbourn†, Pardeeville.
Crawford	Eastman†, Mt. Sterling*.
Dane	DeForest*, Rockdale.
Dodge	LeRoy, Neosho, Randolph*.
Door	Fish Creek†, Jacksonport†.
Douglas	Poplar*.
Dunn	Sand Creek*.
Florence	Florence.
Fond du Lac	Ladoga, Mt. Calvary†, Van Dyne.
Green	New Glarus†.
Green Lake	Kingston.
Iron	Saxon.
Jackson	Disco, North Bend.
Jefferson	Johnson Creek.
Juneau	New Lisbon.
Kenosha	Kenosha.
Kewaunee	Dyckesville, Kewaunee, Rio Creek.
La Crosse	Bangor†.
Lafayette	Fayette, Gratiot, South Wayne†.
Langlade	Polar.
Manitowoc	Cato*, Mishicot*.
Marathon	Rozellville, Spencer.
Milwaukee	South Milwaukee†.
Oconto	Klondike, Mountain, Oconto Falls*.
Outagamie	Greenville.
Ozaukee	Horns Corners, Knellsville.
Pierce	Maiden Rock.
Polk	Frederic†, Osceola†.
Portage	Almond†, Junction City, Rosholt†.
Racine	North Cape, Yorkville*.
Richland	Sextonville†.
Rock	Magnolia, Newark.
Rusk	Weyerhauser.
St. Croix	Baldwin.
Sauk	Greenfield, Loganville, Plain.
Sawyer	Hayward*, Radisson, Weirgor, Winter.
Shawano	Aniwa, Cecil*, Eland†, Leopolis.
Sheboygan	Adell†, Howard's Grove, Oostburg*, Rhine Center.
Trempealeau	Blair, Independence, Strum†.
Vernon	LaFarge*.
Walworth	East Troy, Sharon†.
Washburn	Shell Lake, Spring Brook.
Waukesha	Mukwonago*.
Waupaca	Iola, Symco, Waupaca.
Waushara	Hancock*, Plainfield*, Wautoma†.
Winnebago	Neenah, Ring.
Wood	Pittsville, Vesper.

INSTITUTES WITH DATES AND CONDUCTORS.

Dates.	W. C. Bradley, Conductor.	David Imrie, Conductor.	H. D. Griswold, Conductor.	E. C. Jacobs, Conductor.	John D. Imrie, Conductor.
1915—December.					
7– 8	Cornucopia	Danbury	Poplar*	Osceola†	Spring Brook.
9–10	Saxon	Grantsburg	Mason	Frederic†	Hayward*.
14–15	Shell Lake	Dobie†	Sand Creek*	Radisson	Baldwin.
16–17	Weyerhauser	Chetek†	Cornell*	Winter	Albertville.
1916—January.					
4– 5	Weirgor	Strum†	Humbird*	Maiden Rock	Mondovi.
6– 7	Spencer	Thorp†	Granton*	Tell	Modena.
11–12	Florence	Mountain	Cecil*	Polar	Rosholt†.
13–14	Oconto Falls*	Klondike	Leopolis	Aniwa	Eland†.
18–19	Dyckesville	West Morrison	Mishicot*	Greenville	Jacksonport†.
20–21	Rio Creek	Kewaunee	Brillion*	Neenah	Fish Creek†.
25–26	Pittsville	Rozellville	Iola	Plainfield*	Wautoma†.
27–28	Vesper	Junction City	Symco	Hancock*	Almond†.
February.					
1– 2	Bangor†	Friendship*	Plainville	Independence	Disco.
3– 4	Kilbourn†	Brooks*	New Lisbon	Blair	North Bend.
15–16	Mt. Sterling*	Sextonville†	Plain	Newark	Greenfield.
17–18	LaFarge*	Eastman†	Loganville	Johnson Creek	Magnolia.
22–23	Gratiot	New Glarus†	DeForest*	Pardeeville	Ladoga.
24–25	South Wayne†	Rockdale	Fayette	Randolph*	Kingston.
February-March					
29– 1	Rhine Center	Waupaca	Mt. Calvary†	Leroy	Cato*.
2– 3	Adell†	Ring	VanDyne	Neosho	Oostburg*.
7– 8	East Troy	Yorkville*	Sharon†	Horn's Corners	Howard's Grove.
9–10	North Cape	Mukwonago*	Kenosha	South Milwaukee†	Knellsville.

*Women's Institutes conducted by Miss Nellie Maxwell, Neenah, Wis.
†Women's Institutes conducted by Miss Laura B. Breese, Waukesha, Wis.
All inquiries relative to Farmers' and Women's Institutes will be answered promptly.

E. L. LUTHER, Supt.,
Madison, Wis.

Farmers' Institute Workers at the Round-up Institute at Kenosha, March 11-13, 1915.

PROCEEDINGS

OF THE

TWENTY-NINTH ANNUAL

CLOSING FARMERS' INSTITUTE

HELD AT

KENOSHA, WISCONSIN, MARCH 11, 12, 13, 1915

THURSDAY MORNING SESSION.

The Institute opened March 11, 1915, at 9:30 A. M., Superintendent C. P. Norgord in the chair. Prayer was offered by Rev. Ingley, followed by music by the Orchestra.

ADDRESS OF WELCOME.

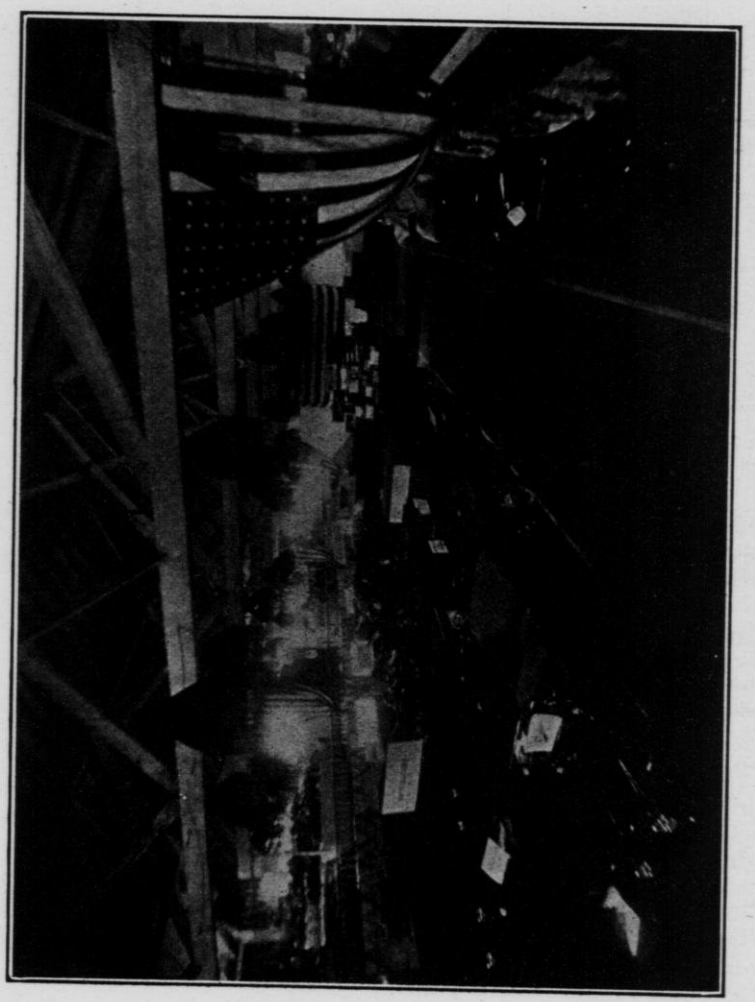
Alderman Conrad Shearer, Representing the Mayor of Kenosha.

It is indeed a pleasure, as well as a great privilege, to be called upon as a representative of the city of Kenosha to extend to you from the rural districts a welcome to our city for this, your Annual Round-up Institute. I am pleased in a certain sense to call myself a farmer; twenty-five years of my life were spent upon the farm, and the fifteen years that have elapsed since then have not in any way tended to divorce me from those interests.

I do not believe there is any greater calling than agriculture. In these passing years, I have noted great improvements. During my period of farming we followed the plow, walked in the furrows and bound up the grain by hand. Among my recollections is binding grain by moonlight.

You all know of the improvements that have come in farming; you know that the work of the farm has been shortened in hours and it has been made easier by the introduction of inventions of all kinds of machinery. It is possible for the farmer today in eight and ten hours to do what it used to take fifteen and sixteen hours to accomplish.

It can be said with credit to the farmer that he is a man who thinks and plans. We have evidence of that when those from the rural districts come to the city



Part of the Automobile Exhibit at the Round-Up Farmers' Institute at Kenosha. What the Local Committee can do.

and take employment in our factories. In the first place, the boys and girls from the farm are taught to work, and they are taught to plan their work. They do things according to system and my experience of seven years in employing help for the factories in different lines of work in the city has convinced me that the best material we are able to get comes from the rural districts.

You are here to spend three days in our city. Our only regret is that the time is not much longer. You will find the hand of hospitality extended to you on every side. All classes unite in welcoming this Farmers' Institute. You are welcomed by the manufacturers. If you have any leisure time and are interested in any of our industries, I know that you will be cordially welcomed at the gates. If there is any special industry that you desire to visit, let me know and I will see that you are taken care of and cared for well.

We consider agriculture one of the noblest of callings. The time has gone by when the idea prevailed that any one was capable of taking up the occupation of farming. The farmer today must be as well trained for his work as any man who takes up any other industry, and this Round-up Institute is for the purpose of giving additional points, giving you facts that may be taken back to the home and the farm and put into practical use. We have experienced people here, the choice of the State, so that you will be given the best that the State of Wisconsin affords in addresses and presentations that will be delivered to you.

Besides this, I understand that at the Coliseum there will be a display well worth seeing, and it goes without saying that none of you will fail to avail yourselves of that great opportunity.

I cannot close my remarks without referring to our Kenosha Retailers' Association. Being not personally connected with that Association, I can say that I believe the City of Kenosha as a whole and Kenosha county can take their hats off to the Kenosha Retailers' Association for the many good things it is doing. I know from investigation that the Kenosha Retailers' Association has done and is doing many things with an unselfish spirit for the good of Kenosha. We want a better and greater Kenosha, and we need your help to get it.

We are exceedingly proud to have you spend a few days in our city and we know that when you leave, the City of Kenosha will be better for your having been here. Knowing, as I do, the high standard of the representatives of the agriculture of Kenosha and other counties, I am satisfied that the keys of the city will be safe in your hands, and my message from His Honor, the Mayor, is this—that for the time you are here you are given the freedom of the city. Be not afraid of our police officers, they are all tame, good-natured fellows, who will extend to you every courtesy in their power. If any one seeks to molest you, our officers will see that the offenders are landed behind the bars.

But it is not for me to take up valuable time today. This splendid program proves that the real value of this meeting will begin after I am through. Again, on behalf of His Honor, the Mayor, and the City of Kenosha, I bid you, ladies and gentlemen, a most hearty welcome.

RESPONSE TO ADDRESS OF WELCOME.

Supt. C. P. Norgord, Madison.

We accept with pleasure the kind words of welcome which your Mayor has transmitted to us and the good things which he has laid open to us. We assure him that we appreciate that we have the keys in our hands, and, knowing the members of the Institute force as being good, honest farmers, I assure the Mayor that we shall not impose upon the fine privileges which he has given us.

It is a great pleasure indeed to have the Closing Farmers' Institute at this place. We looked forward to coming here even before the petition came in, because we knew of the enterprise of the people of this city from experience in the past, and we knew that the attendance at this place and the interest shown would be as great as at any city in the State.

I was pleased to listen to the words of the speaker when he said he began his farming in the early days when farming was not done by the self-binder and all of the modern machinery, when farming was not the business it is at the present time.

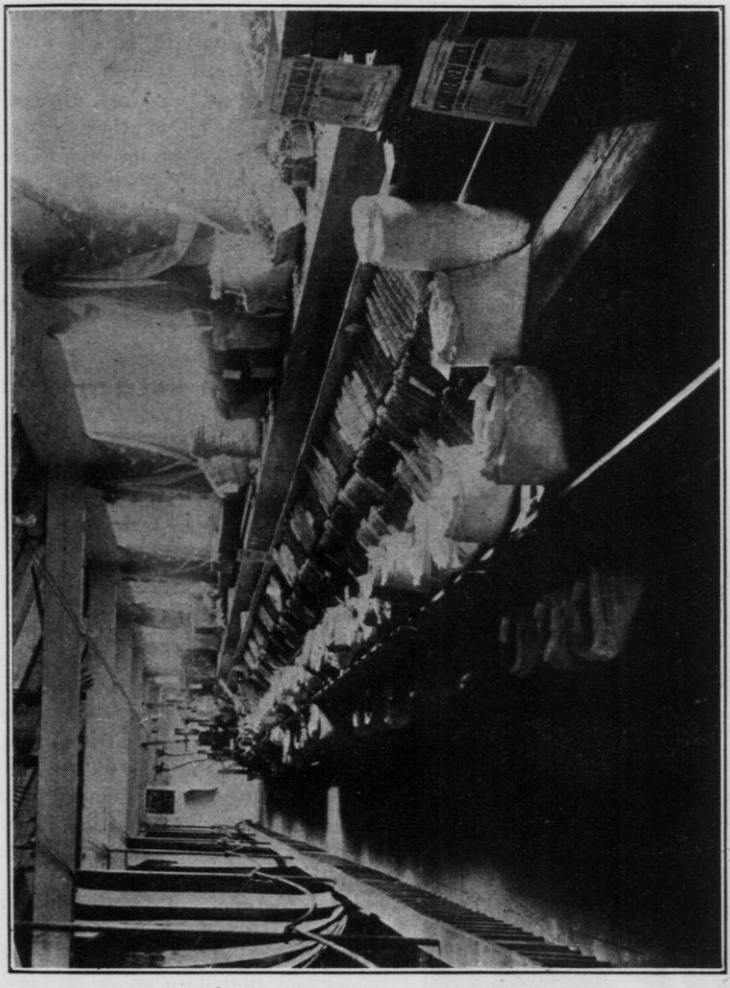
It has been the business of the Farmers' Institutes to further the interests of farming and to build up an agriculture which is a science and a farming which is a business, and by the combination of science and business we have arrived at our present condition of farming. which is a more pleasant way of farming and a more profitable way of farming.

The Farmers' Institutes began in 1885. They were conducted by men of experience on the farm, by up-to-date farmers and men who had shown that they were able to combine science and practical experience and to make it profitable. The men of the Farmers' Institute force have presented the best practices, the most profitable practices of the best farmers throughout the world

They have combined with this experience the results of experiments of Experiment Stations all over the world and, consequently, this combination of knowledge and practical experience presented by these men has been of great value to the state of Wisconsin, which has today a dairy business amounting to one hundred millions of dollars for the past year.

The state of Wisconsin has more silos than any other state in the Union by a great many times. The prosperity of the state of Wisconsin is greater than that of almost any other state in the Union.

Agriculture has advanced in Wisconsin more than in any other state in the Union, and I think we are not boasting very much when we say we are at the top in agriculture in this state, and that much of this has been due to the dissemination of knowledge by the Farmers' Institutes. We have on this force men who can present experience direct from the farm. We have with us today the former Superintendent. who was in charge of the Farmers' Institutes for twenty years and has been on the Institute force for twenty-seven years. It is through the wise guidance of this Superintendent and the excellent work of these genuine farmers on the Farmers' Institute force that the



The Grain Exhibit at the Round-Up Farmers' Institute at Kenosha.

work has been guided and presented as it has been and with the good results that have been accomplished.

We have met here today after a full year's work, during which we have presented the truths of agriculture in the hamlet, in the open country, in the town and in the city, and we meet today to close the winter's work. It has been possible for us to present agriculture at 199 Institutes, 40 Women's Institutes as separate Institutes, and throughout the entire year and the entire State the Farmers' Institutes presented agriculture at 217 Institutes.

We have come now, as I say, to this Closing Institute presented at Kenosha. The program which we have prepared has been made up with Kenosha conditions in view, the soil conditions, the dairy conditions, all the conditions which you have in this community, and we shall speak to you as farmers. Perhaps some of the practices that will be presented will not be practicable to you, but this meeting is not only for Kenosha, we are speaking not only to Kenosha county today, but we are speaking for the whole State, because all of the work thus presented here will go into the Farmers' Institute Bulletin, which will be distributed at the Farmers' Institutes next year, so we hope you will take this into consideration in looking over the program which we present to you today.

THE TESTING AND DISSEMINATION OF PURE BRED GRAINS.

Noyes R. Raessler, Beloit, Wis.

Mr. Raessler.

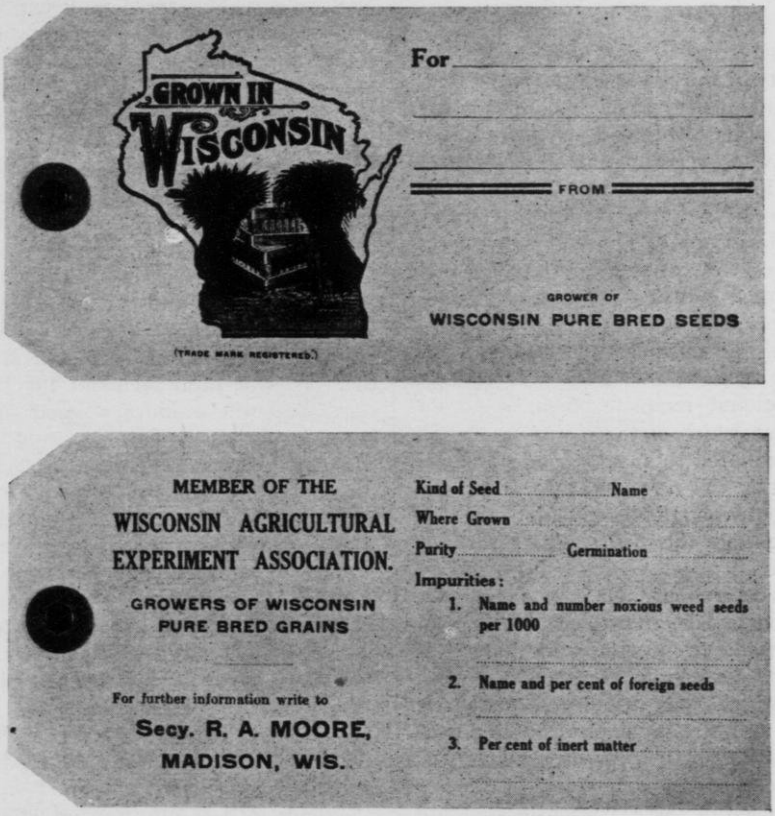
As seeding time approaches, we find everywhere the busy farmer asking himself the question, "What can I do to increase my yield of corn and grain crops?" The high price of land, of labor and excellent prices which are now realized for meat and dairy products, are strong inducements to every farmer in Wisconsin to increase his herds of cattle, hogs and sheep to the utmost.

Since the amount of live stock kept on a farm depends largely upon the amount of cereals produced upon that farm, we naturally look upon these crops as the foundation of our income. One important factor too often overlooked is in selecting the right kind of seed to obtain the largest crops. It is a recognized fact that only about 50 per cent of the farmers in Wisconsin are using the seeds best adapted to their soil and climatic conditions.

We see everywhere in Wisconsin the splendid herds of pure bred and grade

live stock which have taken the place of scrub stock. Why? Because the better bred stock produces greater profits for the amount of feed consumed.

That the same relation exists between pure bred seed and scrub seed is not so of corn, oats, barley, wheat and rye, which have become famous throughout the world for their productiveness and excellent market value. It has been predicted that Wisconsin will soon become the seed market of the world. Even now



Tag used on Inspected Grain Sold by Members of the Agricultural Experiment Association.

well known at present, otherwise we would see different crops in driving out in the country during the summer months. Fifteen years ago we knew practically nothing about pure bred seeds. Today, thanks to our Experiment Station, we have pedigreed strains we are unable to supply the demand at home some years. It is only a matter of growing the right kind of seed and keeping the quality up to the required standard. The sale of seeds, however, is only a small item compared to the increased income derived from feeding

these extra bushels of grain crops to farm animals. In order to get a clear idea of what pedigreed grains are, it is necessary to go to the early stages of breeding somewhat and make some comparisons.

Pure Bred Corn.

Twelve years ago we were growing twenty or thirty varieties of corn. Some matured early, some late, and others were either low in yield or badly mixed. True we were getting fair crops, but they were far from what they should be.

There is unfortunately a strong temptation on the part of many farmers to grow varieties too late for their particular soil and climatic conditions. The result is very often immature corn of low and unwholesome feeding qualities.

The first requisite, then, is to determine which of the many varieties is best adapted to any farm and to make sure this will ripen in the growing season between the last killing frost of spring and the first killing frosts of autumn.

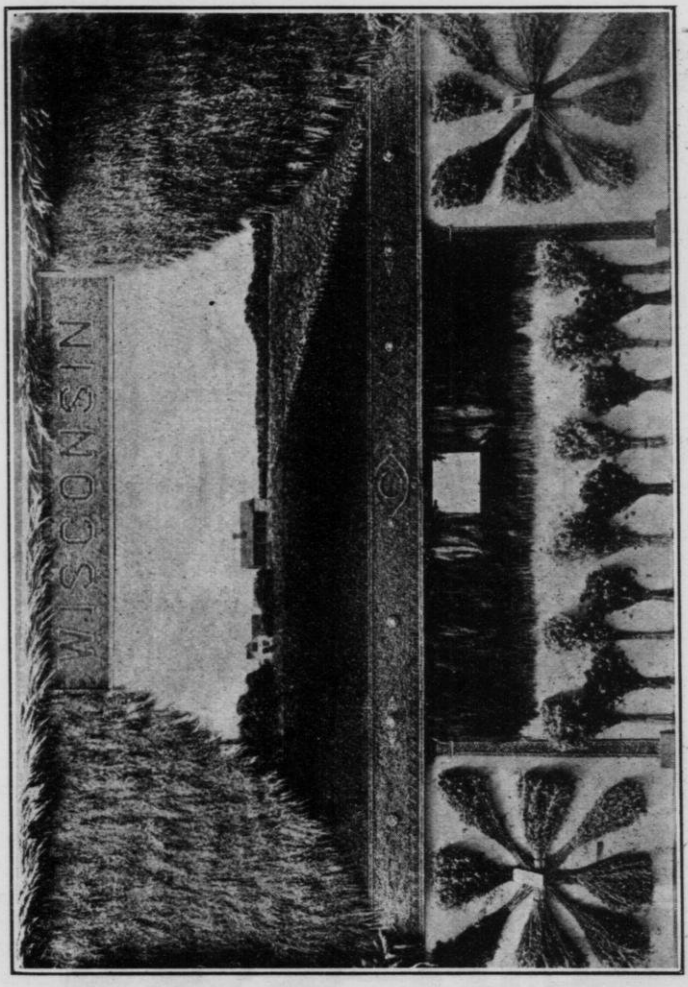
The Agronomy Department of the Wisconsin Experiment Association has done some wonderful work along the line of developing certain varieties of corn which ripen in different periods of time and have gained a nation-wide reputation for their productiveness, high feeding qualities and strong vitality.

As each of these Wisconsin standard varieties are adapted to large sections of the country corresponding to varying climate over different parts of the State, a brief description will be of help in determining the proper selection to make in starting out.

Silver King or Wisconsin No. 7 is the heaviest yielding variety of Wisconsin pure bred corn. It may be grown successfully in southern Wisconsin, all of Illinois, northern Iowa and similar latitudes. In a field test covering five years, in which six hundred Wisconsin farmers took part, it produced over ten bushels more per acre than the average of all other varieties grown under the same conditions. This variety is also a great silage corn, producing from sixteen to twenty tons of rich, succulent forage per acre on good soil. The ears are creamy white in color, about 9 inches in length, of rather deep kernels, having a rough indentation; about 120 days are required to mature the crop.

Golden Glow, Wisconsin No. 12, is the next highest yielder and is fast coming into popularity for several reasons. It ripens about ten days earlier than Wisconsin No. 7 and can be grown in central Wisconsin, Michigan, Minnesota. Even in the corn belt states there is a growing demand for early corn that will produce a good yield. Some farms are on low and wet land where it is often impossible to plant corn until the latter part of May or the first of June, making it very important to plant a variety that matures quickly. On most every large farm some of the planting is done late in the season and if the late varieties are used altogether there is apt to be considerable immature corn in the fall. Golden Glow has been known to yield 100 bushels of shelled corn per acre in Wisconsin. The stalks are of medium height, growing strong and erect—a decided advantage during wind storms. Ears about 8 1-2 inches in length, of rich golden color, kernels slightly dented, but rather deep for such an early corn.

Wisconsin No. 8, or early Yellow Dent, ripens about one week earlier than Golden Glow and is now grown successfully in northern Wisconsin, Dakota and in the New England states. In fact, it is being planted in many regions where it was thought impossible to



An Attractive Rural Scene in the Wisconsin Exhibit.

It was contributed by C. J. Berg of Tigerton, Wis., and is a replica of his own farm and made entirely out of grass seeds, mosses, corn silks and grains. Many have admired it and pronounced the maker a true artist.

Grains and Forage Crops were not Alone Represented.

The great Dairy industry of the State was portrayed by an immense Dairy scene, 106 feet long and 19 feet high. Mrs. Adda F. Howie, of Elm Grove, Wis., widely known for her success as a dairy farmer, was given charge of the display throughout the entire time of the Exposition.

grow anything but flint corn heretofore. Of course, being an extra early variety, the stalks are naturally short. The ears are about 8 inches in length, kernels smooth and quite shallow; however, it is possible to obtain better crops as a rule from this variety than from the flints.

The farmers living in the extreme north end need not feel discouraged, even if they cannot grow dent corn successfully. This applies also to some of the farms not so far north, but located on high altitudes where the nights are cold and the "ideal corn weather" is limited to only a few weeks.

The flint corn is still a profitable corn to grow, even though it may be small. The low yield is partly offset by its higher protein content, making it really more valuable feed (pound for pound) than dent corn. A pure bred strain known as "Smut Nosed Flint," or Wisconsin No. 15, has been developed, it producing better yield of forage and grain than the common varieties of flint.

Pedigreed Oats

Next to "King Corn," oats is probably the most common grain crop grown by the farmers of Wisconsin. Because of its splendid feeding qualities, it has grown very popular with the live stock farmer, containing a high percentage of the food elements in which corn is low. Its merits are especially apparent where it is fed in combination with the latter feed. Unfortunately, however, the oat plant has some bad qualities which have been a source of annoyance and a detriment to its profitable cultivation. Smut, lodging and inability to withstand the hot, dry winds are chief among these.

Realizing these deficiencies, Prof. Moore and his assistants at the Wisconsin College of Agriculture have been working for a number of years to produce varieties of oats which were not so easily affected by these parasites and adverse conditions, but could be relied upon to produce a good crop year after year under average conditions. How well they have succeeded is quite evident by the great demand for the pedigreed varieties which were sent out by the Station within the last two or three years.

The pedigree oats may be divided into three classes, as follows:

The Wisconsin No. 1, or long type, which are the most popular, as they possess the highest yielding qualities. The not overly large straw is very strong and rigid, standing up well under severe storms. The heads are uniform, of good size, well filled, and do not easily shatter. Another good feature is its ability to resist the damaging effect of the hot, dry winds which are liable to occur during the season. Being naturally a hardy plant, the pedigreed varieties are not as susceptible to injury by smut. In the latter case, however, it is unnecessary to take any risks, but the seed should be treated to prevent smut. Taking ordinary precautions and making use of the knowledge and information sent out by the Experiment Station, using good seed and proper preparation of the seed bed, the farmer can feel secure of a bountiful harvest.

The difference in yield between Wisconsin No. 1 and common oats was seven bushels per acre in the field test carried on by Wisconsin farmers.

The Wisconsin No. 5, or barley type oats, were developed from the Swedish select. These are adapted to the lighter soils, having a rather deep root system, and therefore have a tendency to grow rank, causing lodging where food plant is abundant.

The Wisconsin No. 6, or sixty-day oats, are adapted to the rich bottom

Upper Portion Wisconsin's Agricultural Exhibit at the Panama-Pacific Exposition. The Exhibit was of an Educational Character, Representative of the Agricultural Resources of the State.

lands where it is practically impossible to grow other varieties. The short, stiff, hard straw prevents lodging and rust. These oats are not intended for upland, although many dairy farmers prefer them to the late oats.

Pedigreed Barley

Where a superior barley has been developed from a single seed and carried through a course of several years breeding by selection or hybridization and selection and a record kept of the same, it is known as a pedigree barley.

Six-rowed barley. Through several years' experimentation, it has been found that the common six-rowed barley is preferable to other varieties and more profitable for the average farmer to grow. The yield far surpasses that of the other varieties and the market demands for the six-rowed class far surpass that of all other varieties combined. At a conservative estimate, 98 per cent of all the barley now grown in the State is six-rowed barley and about 50 per cent pedigreed barley.

Farmers throughout the State have quickly availed themselves of the opportunity of securing pedigree seed barley from the growers or seedsmen. Through this rapid method of dissemination, the Wisconsin pedigree barley has displaced the common varieties until whole communities are now growing this one breed of barley to the exclusion of nearly all other varieties.

According to the reports from 1,500 members of the Experiment Association who were carrying on tests with pedigree barley in different parts of the State, they show an average yield for six years of 34.0 bushels per acre; 4.7 bushels above that of the best varieties compared with it. The average yield of the State for five years is 27.7 and the average yield of the United States for five years is 24.5

Wisconsin has produced an average of 844,400 acres of barley annually for the past five years, or a total of 4,222,000 acres. Had this entire acreage been sowed to pedigree barley, there would have been produced 20,000,000 bushels of barley more than if the common barley had been used. At the average price of fifty cents per bushel, this would amount to $10,000,000 added to the wealth of the farmers of the State during that period of time.

Pedigree Rye.

In developing pedigree rye at the University of Wisconsin, three important things were accomplished; an increased length of head, averaging one-third longer than common rye; a larger and plumper berry, and a much stiffer straw, causing it to stand up well even on very rich soil.

The millers and distillers were the first to recognize its superiority over common rye and in many cases offer to pay prices above the market for all they secure.

The value of winter rye is becoming more apparent every year. It is much hardier than wheat and can be grown on a greater variety of soils that would not produce a fair crop of wheat. It will thrive, even in sandy seasons and on sandy loam. It is sown not only for grain, but for hay and soiling purposes also. On sandy soils, where humus is badly needed, there is nothing better (except clover or soy beans) to plow under in spring.

When sown for pasture it makes the earliest feed and starts up quickly after it has been eaten down by stock. When allowed to mature, rye does not exhaust the soil as badly as do other

grains, hence it can be grown on the same soil longer than any other crop.

In an extensive field test, pedigree rye outyielded common rye by eight bushels per acre, while some growers reported yields ranging from forty to fifty bushels per acre.

Dissemination and Inspection of Pure Bred Seed Grains

The disseminating centers consist of farms operated by men who have finished the Agricultural Course at the College of Agriculture in good standing. These men are organized in what is known as the "Wisconsin Experimental Association" and each member receives enough pure bred seed to plant one acre. The product of this acre is resown the following year and by this time there is enough harvested to supply others. By this system it is possible to change the entire seed of the State in the course of three years' time.

The disseminating centers now number nearly 2,000, some of which are located in practically every county in the State.

In order to maintain the high standard of Wisconsin seeds, the growers are requested to have their fields examined during the growing season. In this way any impurities can be detected and eliminated. The threshed grains are again examined before being placed on the market, to make sure that they may be in first-class seed condition, and a copy-righted tag is furnished to all those whose seed is found to be up to standard.

DISCUSSION

A Member—Is there any difference in the feeding value of the different corns, that is, in the amount of protein?

Mr. Raessler—There is some difference in the amount of protein content between flint corn and dent. There is a higher percentage of protein in the flint varieties, but no difference in the different varieties of dent as compared with each other.

Dr. Porter—Is it not possible to breed a greater percentage of protein into corn of different varieties?

Mr. Raessler—It certainly is. By breeding in that direction, it is possible to breed for higher protein content, for higher oil or for more starch, but, generally speaking, comparing one variety of dent with another, there is no difference.

Mr. McKerrow—While in North Dakota a couple of weeks ago, the statement was made that in their analyses of corn an increase in protein was shown up as high as three per cent between the true dent type, which is very starchy, and the small flints that they are growing.

A Member—They have found the same thing in Illinois between the flints and the dents.

Prof. Moore—I think it is barely possible to find that on some individual varieties, but if ten thousand or one thousand samples were taken they would not get any such variation, unless special breeding had been carried on. At the Illinois Station, where they took up the varieties and specially bred some for high and others for low protein, they got a difference practically of seven per cent, but we do not know that it would be profitable to do a thing of that kind, because they were not able to maintain the yield with the high protein corn. At the Wisconsin Station, we have paid more attention to the general yield of corn than we have to the amount of protein. We feel that we can get protein in other directions at a less cost than by attempting to breed corn regardless of yield into certain varieties, so, consequently, while we have naturally select-

ed in a way, and I think have improved our corn to a certain extent from our general protein standpoint, yet we have not put forth special efforts in breeding corn in that direction but have paid more attention to the yield of corn.

A Member—What is the total amount of nutrition per acre that would obtain as compared between "Golden Glow" and No. 1?

Mr. Raessler—That could be figured by figuring the difference in yield. In some localities there is practically no difference in the yield of corn and we do not believe there is much difference in the chemical analysis or the feeding value of those two varieties, so it would depend upon the increase in the bushel of corn. I am afraid that is not answering your question, but the difference is very slight in the yield. I have not the figures of the average difference in yield. Have you, Prof. Moore?

Prof. Moore—The data so far that we have in regard to the difference in yield where special tests have been carried on between "Golden Glow" or No. 7 or No. 8, where one thousand tests were made, resulted in about eight bushels in favor of the "Silver King."

A Member—Along the lake shore counties?

Prof. Moore—No, that was practically in the southern part of the State. We are recommending the "Golden Glow" for the lake shore counties, from the Illinois line north. We believe the "Golden Glow" will mature more bushels, a nearly perfect yield, through this section than would the "Silver King", but farther west, where you get out of the influence of the lake, the "Silver King" is a heavier yielder than the "Golden Glow."

Mr. John Imrie—When you get a little farther north, I believe in a good many tests the "Golden Glow" has made a larger yield than the No. 7. What is the reason for this?

Mr. Raessler—The No. 7 would not fully mature, owing to the short season, except the very earliest types, proving that it is wrong to attempt to change a late corn into a very early strain. While we can do this to a certain extent, there is a limit to how far we can go. It is much better to select the variety best adapted to any particular section of the State, and then breed for high yield, always keeping in mind that we must maintain "safety first" in maturity and yield next in order. Immatured corn means low feeding value, poor keeping qualities and low yield. If selected for seed, it always means poor vitality.

ALFALFA.

Prof. R. A. Moore, Madison.

From Wheat Raising to Clover, Alfalfa and Dairying

For thirty years the Wisconsin farmers grew wheat without rotation until the fertility of the land became exhausted. Nearly every farm in the State had a mortgage upon it before the true condition of affairs was fully realized. The farmers were then in desperate condition and were willing to listen to what they considered previously theoretical farming.

The line of effort proposed to them was that of dairying and proper rotation of crops in which clover figured prominently every three or four years. It is surprising the rapid strides that were made in the establishment of cheese factories and creameries. At the present time Wisconsin has 2,985 cheese fac-

tories and creameries and the dairy output of the State is over ninety million dollars annually. One-half of all the cheese factories in the United States are located in Wisconsin and one-fifth of all the creameries.

This great feat was accomplished after thirty or forty years of ruinous wheat raising. While so great an amount of money is taken in annually by the Wisconsin farmer, we find many hundred thousand dollars are spent away from our State for high protein feed. Our dairymen fully realize if they are going to excel in their chosen vocation it is necessary to feed their animals a balanced ration in which we have a proper proportion of protein.

Alfalfa Ready for Cutting, June 13, 1912.

Alfalfa a Great Source of Home-Grown Protein

In order to do this, it has become necessary to send to the south and elsewhere for their high protein feed. While this practice has been commendable in the way of aiding the soil, yet at the same time it does not seem to me the average farmer is justified in spending so much of his hard earned money for high protein feed that can be successfully grown at home in the shape of alfalfa. Therefore, I wish to highly commend to you this plant and hope that the few words I may say concerning this forage plant will be sufficiently interesting so that you will try at least a small acreage the coming year. The readiness with which alfalfa adapts itself to the older sections of the State where dairying is most prominent, and the opportunity we have for paving the way for alfalfa in the newer sections, certainly commands our attention to this great forage plant at the present time.

Alfalfa Gathers Nitrogen from Air

Alfalfa belongs to the legume family, or leguminosae, to which the common red clover belongs. Like other members of the family, it is able to use the free nitrogen of the air to build up plant tissue through the activities of certain bacteria which inhabit nodules upon the roots. However, it is able to use the nitrogen of the air thus only when these bacteria are present.

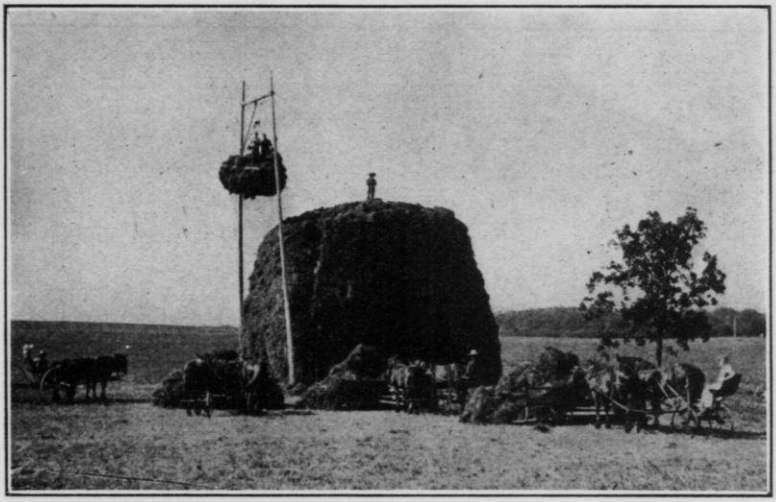
The readiness with which alfalfa is able to take up this atmospheric nitrogen accounts for its high protein content. Well cured alfalfa hay has a total protein content of approximately eighteen per cent, or a digestible protein content of eleven per cent. This large amount of digestible protein makes it rank closely with our grain feeds.

Root Growth

Alfalfa through its large rooth growth exerts a beneficial effect upon the soil upon which it grows and through its power to feed on the soil elements and secure moisture at great depth below the surface is able to stand severe drouths and maintain itself upon the soil for many years without the necessity of reseeding.

Through the nature of the plant to send into the soil such a vast number of roots, the soil even though previously compact becomes porous and friable, so in later years when plowed and fitted for other crops, the physical condition of the soil will be found very much benefitted. The great mass of root growth which decays when the plant is killed adds materially to the humus and fertility of the soil and thus enables the farmer to have a field high in fertility where he can grow fine crops of corn or special seed grains.

When it is desired to plow an alfalfa field, the strong root growth of the alfalfa will severely interfere with the plowing unless the plowshare is kept sharp. The frequent use of a coarse file upon the plowshare will make the plowing much easier for man and team and enable the plowman to do a better job. It is almost an impossibility to break up thickly seeded fields of alfalfa properly with a dull plow. Some farmers are supplied with special grinders for sharpening plow points and other edged tools and with these conveniences plow-



Stacking Outfit on Cornfalfa Farms that can handle from 50 to 75 tons a day. Each sweep rake load of Alfalfa is dumped anywhere on the stack by a sling. Each weighs from 800 to 1500 lbs.

shares can be sharpened mornings and evenings so as not to retard the work.

Alfalfa in the Rotation

Except where alfalfa has become thoroughly established upon the farm, no attempt has been made to encourage a regular rotation with other crops. On account of the special care given to the selection and proper fittings of the field for alfalfa, it has seemed advisable to leave the alfalfa on the same fields as long as it is produced well. As soon as conditions are unfavorable and the field becomes patchy and crowded with June grass and white clover, it is best to cut the alfalfa late in the season and then plow. The field the following season should be put into corn or some other cultivated crop and intensive cultivation practiced to subdue weeds. The year following the intensive cultivation, the field can be sown to alfalfa to advantage.

Alfalfa is capable of yielding three times as much protein per acre as clover, nine times as much protein as timothy and twelve times as much protein as brome grass. At twenty dollars a ton for hay, good alfalfa will yield forage valued at $100.00 per acre. Land that will grow alfalfa is readily worth $200.00 an acre. As alfalfa is a perennial plant if established under proper environments, it will continue to grow and give three or four cuttings a year for many years.

Selection of the Field

Caution should be exercised as to the location of the field. Alfalfa can be grown on a wide variation of soils, yet on its first trial on a farm it is best to sow on high, well drained land. A rich clay loam on top of gravel or lime stone is the ideal location, but it will grow on all types of soil, varying from a heavy clay to a medium sandy loam, if other conditions are favorable. A gentle slope should be selected. On level land water will gather on the surface from rains or melting snow, and if freezing weather follows, ice will form and smother the

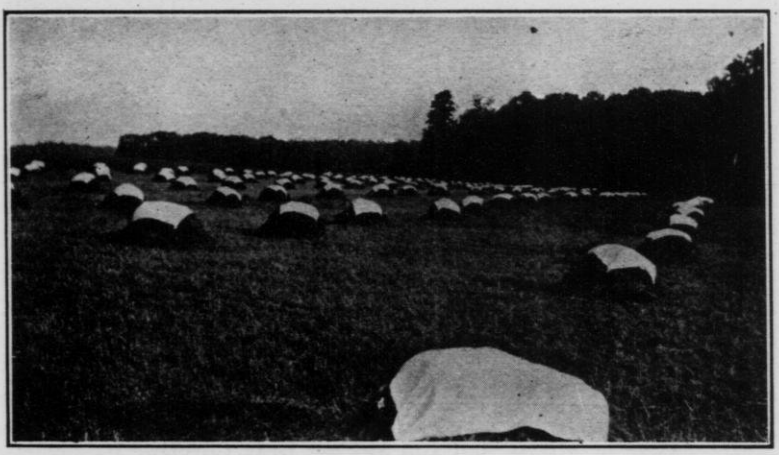
Close view of the Three-side Delivery Rakes at Cornfalfa Farms and how thick Alfalfa Hay looks when one cutting goes two tons to the acre.

plants. The fields will then become patchy and should be plowed and reseeded. For the same reason a creek or river bottom that is subject to overflow should not be selected, as the alfalfa plants if submerged for a few hours will die from suffocation. Land that has the water line only two or three feet below the surface should be avoided, as the plant needs well drained soils.

Correcting Acid Soils for Alfalfa

The natural home for alfalfa is on lime stone soils, or soils that have a goodly supply of carbonate of lime in them. No matter how favorable other conditions may be, if the soil is sour and gives a strong acid reaction, it will be necessary to neutralize the acidity to some extent before it will be possible to get the best results.

Acid land can occasionally be determined by plants, such as sheep sorrel and mares-tail, that thrive thereon. It can always be determined by testing with blue litmus paper, which can be obtained from the druggist. Take some moist earth from a few inches beneath the surface of the ground and press it firmly over a strip of litmus paper. Do not handle the litmus paper when the the hands are moist, as the perspiration from them may cause the paper to show an acid reaction when no acid is present in the soil. After the paper has remained in the soil for ten or fifteen minutes, if it has changed in color from a blue to a pink or red, the soil is acid and this acidity should be corrected to a certain degree before alfalfa can be grown to advantage.



The Safest Way to Cure

Acidity can be corrected either through the application of pulverized lime rock (lime stone) or dry marl, or by the use of slacked lime. The best results seem to be obtained by the use of lime stone or marl. No evil results follow their use, as is occasionally the case with caustic lime. Pulverized raw lime stone or dry marl should be scattered over the field at the rate of one to

four tons per acre. Heavy applications of barnyard manure seem to benefit most soils sufficiently to get a catch of alfalfa. After alfalfa has become well established on land high in fertility, it seems to thrive even on acid soils.

Preparation of the Seed Bed

No plant responds more readily to good treatment than alfalfa. If properly seeded, it will grow and give good crops through a long series of years without reseeding, and pays well for careful treatment. The beginner should sow only a small acreage until he has studied the conditions of the farm in relation to this crop. One or two acres is sufficient to start with. Land that has been in young sod the previous year and then run to potatoes, corn, peas or some root crop where clean culture was practiced, is most suitable. This should be fall plowed seven or eight inches deep, so as to have a deep, mellow seed bed.

Sowing Without a Nurse Crop

In the early spring, run the disc over the land and then follow with a fine-tooth harrow at weekly intervals until about June 1st, so the weeds will sprout and be killed. This treatment will conserve moisture and heat the soil. The alfalfa seed is then sown without any nurse crop, using 20 pounds of seed per acre.

If the land is known to be very weedy, it is best to continue the cultivation through June and a portion of July, and then sow the seed. If conditions are favorable and seed is sown June 1st, one cutting of alfalfa hay may be secured the same season. Alfalfa can be cut in Wisconsin with safety any time previous to September 5th, provided it has reached the cutting stage. Sufficient growth will be secured before freezing weather to protect the plant through winter.

The practice of sowing alfalfa with a nurse crop is being displaced by the method of sowing the seed alone, and

Load of Alfalfa Soil and 24-Foot Drag Covering it.

with much better results, provided the land is not weedy. The tiny alfalfa plants should have a chance to take full possession of the ground, which they cannot do to advantage if crowded by a nurse crop. While experiments show that good catches of alfalfa are occasionally secured by the use of a nurse crop, yet much better catches and a more lasting seeding can be secured by sowing the alfalfa seed alone. The alfalfa seed can be sown with a hand seeder, or when broadcasted with a seeder attachment, a slant-tooth harrow should be run over the land once after seeding to cover lightly. It should be sown less than an inch deep on clay soils, or the tiny plantlets will not be able to push their way to the surface. Land plowed in spring for alfalfa should be dragged as soon as plowed to prevent drying out, and planker or roller should be run over the land before and after seeding. Always finish by using a fine-tooth harrow, so as to leave the surface loose enough to prevent rapid evaporation. The alfalfa crop is benefited by a light coating of well rotted manure, or manure that is free from coarse litter. It should be put on during a dry spell, or after the ground is frozen in the fall, so as not to injure the plants by driving over them.

Showing Length of Alfalfa left for a Winter's protection. Taken in January, 1913, at Cornfalfa Farms. Fully 1 ton to the acre was left on the field and none winter-killed; it was also the best and heaviest yielding alfalfa field in 1913.

Sowing With a Nurse Crop

If you wish to grow a grain crop the the season the alfalfa is seeded, much care should be taken in preparation of the seed bed. If the land has previously grown alfalfa, it will be much easier to get a good stand than if it is the first seeding.

Experiments show that on rich soil barley is one of the best nurse crops, although oats or spring wheat may be

used. The nurse crop should be sown thin, using only about half as much seed as where the cereal crop is sown alone. When alfalfa is sown with a nurse crop, the time of seeding should be governed by the best time for the cereal. If the season is extremely dry, it is best to cut the nurse crop early for hay and thereby give the alfalfa a better opportunity to grow, otherwise the cereal crop can be left to ripen and can be harvested in the usual manner. Many good stands of alfalfa have been secured in this way.

Soil Inoculation

Alfalfa requires certain bacteria to act in conjunction with the plant for the successful growing of good crops. Where the soil contains these organisms in limited numbers, the plants not acted upon by the bacteria soon wither and die. In some sections of the State, the ground is sufficiently supplied with the alfalfa bacteria, but there are localities where they are present in so limited a number that it seems impossible to get a good catch of alfalfa that will survive the first winter.

Sweet clover, an ordinary roadside weed, which naturally grows five or six feet tall throughout southern Wisconsin, is one of the alfalfa bacteria distributers. When a farmer is in doubt as to whether his land contains the proper bacteria, he can successfully inoculate his fields by scattering on them soil from an old alfalfa field, or soil on which sweet clover has grown.

For the best results, one ton of earth per acre should be scattered immediately preceding the sowing of the alfalfa seed. Alfalfa responds readily to these methods of inoculation, and nearly all plants will be found to have the proper nodules on the roots the first season of growth. If the infected soil is mixed with the alfalfa seed and then sown, a small amount of soil will inoculate a considerable area.

An excellent plan to supply the soil with the proper bacteria is to use the mixture of one-fourth alfalfa and three-fourths clover or grass seed to seed down a portion of the farm. The clover or mixed hay will be of a better grade with alfalfa grown in connection. The alfalfa plants that survive become bacteria producers and distributers for future crops of alfalfa.

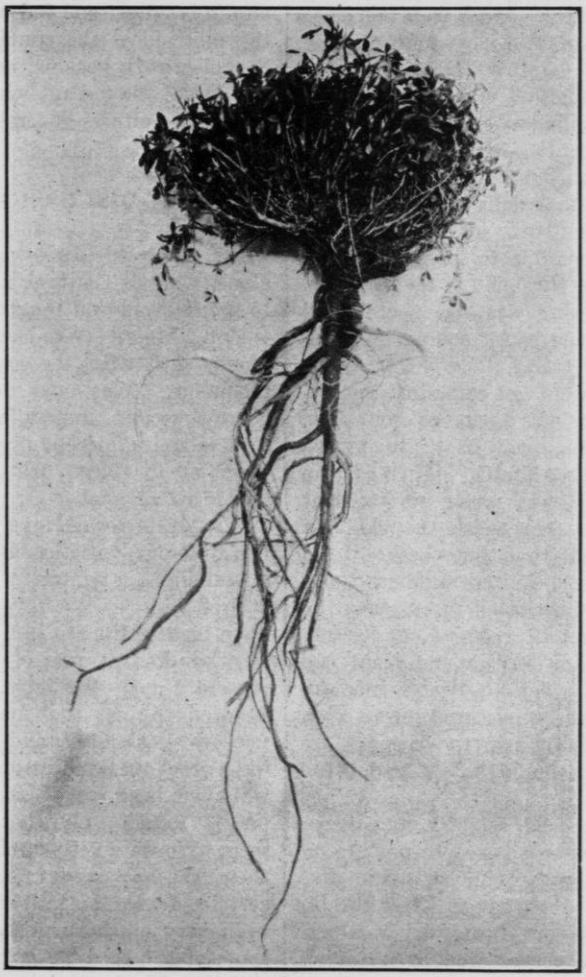
Commercial cultures of organisms are advertised for inoculating alfalfa seed previous to seeding. The experiments carried on at the Wisconsin Station during the past eight years with these inoculating cultures show so much uncertainty that alfalfa growers would not seem justified in expending money for such cultures. Experiments indicate that much more certain results can be obtained by the use of infected soil. After alfalfa has been grown and fed upon the farm and the manure made from the alfalfa scattered over the farm, all the soil on the farm soon seems to be filled with the proper germs. Where exceedingly heavy applications of barnyard manure are placed upon small areas, the alfalfa does well and in the second year of its growth has the proper nodules, even in the absence of inoculation.

Cutting Alfalfa

Where alfalfa is sown as described, no hay crop can be expected the first season, except under the most favorable conditions. In no event should the alfalfa be cut or clipped after September 5th. The year following seeding, three good crops may be expected. The first crop will be ready for cutting early in June, a trying time for curing alfalfa. Cut when the alfalfa is in advanced bud

and a few plants in blossom, on a day that promises fair weather. Occasionally the alfalfa will come into bud and hestitate to blossom; sprouts will then

Much of the feeding value is lost through stacking, as the hay is porous and rain penetrates the stacks two or three feet; however, little of the alfalfa



A Sturdy Alfalfa Plant

immediately start at the base. It should be cut when those conditions prevail, even though no blossoms appear.

is lost when stored under cover. An outside mow with roof does fairly well, or a covering of marsh hay or a tar-

paulin will prevent damage to the stack. It is well to let the alfalfa sweat in the cock, otherwise it will heat and get musty in the barn or stack.

Alfalfa as a Soiling and Pasture Crop

No forage plant will so conveniently give such good returns throughout the summer as alfalfa. The crop is ready to cut for soiling about June 1st and can be cut continuously until September 5th. By beginning to cut early and arranging so that daily cuttings can be taken through the advanced cutting stage, it is possible to have good succulent alfalfa throughout the summer. In good growing weather, a crop will mature sufficiently for soiling purposes in twenty or thirty days.

Alfalfa has not yet come into general use in Wisconsin as a pasture crop. The attempts so far made have proven disastrous to the alfalfa. There is no doubt that it will make an excellent pasture, but stock relish the plant to such an extent that they pasture it too closely. Only a limited number of animals should be turned in, so that the fields may be pastured and cut for hay also. As a hog pasture, no plant can excel alfalfa. Ten to twelve medium sized hogs can be pastured on an acre. The surplus alfalfa in the hog pasture when mature should be cut and made into hay.

Ruminants, such as cattle and sheep, often bloat when allowed to pasture on luxuriant growths of moist alfalfa, but there is not much danger after the alfalfa is in blossom during dry weather. Green alfalfa serves well as a soiling crop.

The great amount of valuable forage taken from a limited acreage has led many to think that a large portion of the farm should be sown to this important crop regardless of conditions. A word of caution to farmers who have never grown alfalfa is necessary. Try only a limited acreage on the start, not more than one or two acres, for the purpose of studying the plant and the soil conditions on the farm. The longer alfalfa is grown and fed upon the farm, the more ideal the conditions for successful growth become, and we feel the day is not far distant when alfalfa will be grown quite as generally as common red clover.

DISCUSSION

Mr. Griswold—In sowing alfalfa seed alone, what is the best machine to use to get it evenly on the ground?

Prof. Moore—We just use the ordinary drill with the grass seeder attachment. We have used a wheelbarrow seeder and different whirling seeders quite successfully, but I think the best for large fields is the grass seeder attachment.

Mr. McKerrow—Have you tested out the different varieties as to hardiness in standing our winters?

Prof. Moore—We have. I suppose we have on the Experiment Station Farm two hundred strains of alfalfa at the present time. We have several acres devoted to just that particular thing you are speaking of, and we are receiving a great many surprises. In the past we have been very careful to advise people to get only the northwestern seed. We were very careful not to have them get any seed raised south of a certain degree of latitude. We have been very much surprised to find that some of the seed we got from Arizona and New Mexico is doing just about the same as that grown up near the Canadian line. We have not yet made any statement in bulletins—probably will not for two or three years—because we want to test this out thoroughly, but

we do not think there is so much difference as we formerly believed as to whether the alfalfa seed was grown north or south, providing we hold to a certain strain.

We have quite a number of alfalfas that belong to what we call variegated strains, and those seem to stand our winters very well, even though the seed was produced in the southwestern protion of the United States.

There are people who are advertising particular seed at four or five times as much as it is really worth, and some of those parties have been giving out the advice only to put in three or four pounds to the acre, claiming it is better to buy from them at one dollar a pound and use four pounds per acre than to buy other seed of which we advocate the use of twenty pounds of seed. Avoid securing alfalfa that is advertised to be so much better that the people have to charge you fifty, seventy-five cents, or a dollar a pound for the seed. We know that good seed can be secured for eighteen, nineteen or twenty cents a pound, seed that is just as good as a great deal of this seed that is put out at a dollar a pound, so do not be misled by this highly advertised seed. We have been experimenting for the past fourteen years with different strains of alfalfa seed. Grimm's alfalfa is good seed, but it is not any better than a great many other kinds that sell for a quarter of what Grimm's is selling for. Again, we cannot tell when we get Grimm's seed—whether it is the pure Grimm seed or not.

We find that a great deal depends upon the vitality and energy of the seed that is purchased. We like to have seed that will give a germinating test of 95 and having a purity test of 99 or above. We are interested in having the seed inspection law enforced and we have put a party upon the road who is visiting seedsmen throughout the State of Wisconsin for that purpose.

Of course we can exercise no jurisdiction upon the seedsmen outside of the State, but many of those are observing the Wisconsin law very rigidly, and when they send seed into this State they usually send samples to the inspection department for testing. I suppose they know we will find the seed upon the market and if it does not come up to our standard we will advise the purchasers to ship it back. This law has been the means of keeping hundreds of carloads of weed infested seed out of our State.

I think Wisconsin was the second or third State to get a seed inspection law and the law is doing a great deal in the way of keeping foul seeds out of our State.

Dr. Porter—How about alfalfa as a soiling crop? Two years ago I bought a ticket to ride up and down the valleys of Switzerland and everywhere I went the farmers were working in rain and sun—it was May—cutting little piles of what I thought was clover and hauling it to their cows in the barns. I learned that what they were cutting was lucerne. Now, can we make that use of alfalfa in Wisconsin? Does it grow high enough so it can be cut during May as a soiling crop for cows?

Prof. Moore—It is one of the greatest soiling crops we have, because it can be grown through the entire growing season and it grows very rapidly. Any plant that will grow at the rate of one and a half inches a day, you may know that it will grow of sufficient height so that it can be cut for soiling in a remarkably short time, and by starting in at one end and cutting down a certain distance, so as to cover the field in eighteen or twenty days, you are able to start right at the beginning point again and you will find it just

right for soiling. Cattle take to it readily and we consider it one of our very best soiling crops. We are able to cut alfalfa several times a season for soiling purposes.

Mr. Raessler—In case alfalfa refuses to grow, will sweet clover grow there successfully and what is the difference in yield and quality of hay as between sweet clover and alfalfa?

Prof. Moore—It might be barely possible for sweet clover to grow in a place where alfalfa would not grow, but many of the good things that have been said about sweet clover do not appeal to me the way they do to some people in our State. I am ready to say that sweet clover is undoubtedly a great boon to the semi-arid west, but in a country where we can grow alfalfa and our wonderful red clovers the way we do in Wisconsin, I do not think that sweet clover has a very great future.

It is possible that in time we may be able to get sweet clover to thrive on some of the soils that will not produce red clover and alfalfa crops to advantage. If the price of seed maintains its high standard, I think we will be able to grow sweet clover for seed profitably, but I never look forward to growing sweet clover as a great forage crop for Wisconsin. We can force our cattle to eat it, but as a rule stock will let it alone in a pasture if you have good blue grass and clover and some of the better forage crops near at hand. We are experimenting with sweet clover at several points in the State and we hope to get something definite regarding this crop in the near future.

Mr. McKerrow—I understand you to say that in mixing alfalfa with clover seed you would recommend sowing a quart of alfalfa seed mixed with the clover seed per acre.

Prof. Moore—Yes, at least a quart to the acre.

Mr. McKerrow—Will it be safe then for stock to pasture on that?

Prof. Moore—I was thinking particularly of sowing for a hay crop, but I will say that I think it would be perfectly safe if it is put in for inoculating purposes, because there won't more than one plant out of a hundred remain there. All plants will come on the first year, but those plants will die of their own accord that are not fortunate enough to be acted on by the proper bacteria.

Mr. McKerrow—We have been mixing seed for twenty years and we got to mixing too freely and one year one hundred of our sheep and some cattle were either killed or infected by bloat and we have gone back to the lighter mixture.

Prof. Moore—If the land was inoculated, you would not need to mix it for inoculating purposes.

Mr. McKerrow—It was seventeen or eighteen years ago that we had the heaviest losses.

Prof. Moore—I thought about a quart, or not to exceed that, per acre, would be about right for the mixture. We have not been running a much heavier mixture, unless it was for hay. For hay purposes it is safe to use half and half. Some people are doing that and getting their lands prepared for clear alfalfa a little later.

Mr. Cheeseman—You know Prof. Draper found out last year from very reputable seedsmen that there was five times as much so-called Montana seed sown as grew in all of the State of Montana. People who bought this seed at seventeen or eighteen cents a pound may be pretty sure that it was grown in Nebraska or Kansas.

Another thing: We should not in Racine or Kenosha counties attempt

the cutting of alfalfa after the 5th or 10th of September.

Prof. Moore—I feel that in the past there has been a great deal of advertising done in regard to alfalfa that was not legitimate advertising. I know a few years ago, when the Turkestan seed was shipped here to this country by the United States Department of Agriculture, I think they brought in six bushels and they had not much more than got the alfalfa seed here before you could purchase Turkestan seed most anywhere in the United States. We feel that a great deal has been done in the past few years to do away with that sort of advertising.

Under the present arrangement, the seed inspector has a right to go into each seed store to find out where a shipment came from—the seedsman must open his books and show just where the seed came from. Any seedsman that will send out alfalfa without putting on it the name of the State where that seed came from lays himself liable, so we have many restrictions upon parties selling seed that we did not have a few years ago, and we sincerely hope that we will be able to make people who are selling seeds live up to their advertising.

Chairman Imrie—Wouldn't it be possible for a man in Montana to buy in Oklahoma, then ship it to Montana and sell it as Montana seed?

Prof. Moore—Yes, it is possible.

A Member—A wise man wouldn't do that; he would have too much at stake.

Mr. McKerrow—When I was near the Montana line that question was raised, and they said some of their seed came from California, but it came through Montana and consequently it was Montana seed.

Prof. Moore—The seedsmen are now co-operating with the seed inspecting department of the College and seem to be working faithfully for honest and better seeds.

SOILS: FERTILITY, MANURES, ROTATIONS

Supt. C. P. Norgord, Madison, Wis.

Wisconsin is a great dairy State. Wisconsin has more silos than any other State in the Union; its dairy cows are unsurpassed; we shall produce this year one hundred million dollars worth of dairy products. These products bring profits to the farmers of Wisconsin, but in order that the dairy cattle can be kept at a profit, good crops must be produced, and to produce good crops the soils must be fertile and well fed, therefore, the care of the soil and soil fertility is fundamental.

Humus Important Factor in Soil Fertility

One of the most important factors in soil fertility is that of humus. Humus is a product of organic matter produced by the roots, stems and leaves of plants. Humus opens up the soil, makes it friable, puts it in a workable condition, gives it good tilth. It binds together a sandy soil and helps to prevent leaching; it opens up a clay soil, gives it a darker color, and admits the air so that bacteria

can work and put the plant food in condition for crops to feed upon it and grow.

Well decayed organic matter forms humus, which is a sticky substance surrounding each soil particle. This material holds the water in the soil and a soil well supplied with humus will produce a crop in a dry year, while a soil lacking in humus will dry out.

Some of the Elemental Plant Foods

Another factor in soil fertility is the actual elements of plant food present. The most important of these are nitrogen, the organic plant food, and phosphorous and potash, the mineral plant foods. There are a number of other elemental plant foods needed by crops, but these are usually present in so large quantities that no special mention need be given to them.

The decay of organic matter and humus forms nitrogen, coming particularly from the decomposition of the protein of this matter. Nitrogen is the plant food whose particular function it is to build up the roots, stems and leaves; the vegetative growth. Its presence in large supply is indicated by a dark green color of the leaves. A small supply is indicated by a light color. Alfalfa fields not inoculated frequently turn yellow. This is due to the fact that our soils are not sufficiently supplied with nitrogen to give alfalfa a full feed of nitrogen for a very long time unless bacteria are present on the roots so that the plants can take a part of the nitrogen from the air.

This suggests the air as a great source of nitrogen. The air above every acre of land contains 125 tons of nitrogen in the form of a gas, which can be condensed and deposited in the roots and in the soil by means of bacteria living on the roots of alfalfa, clover, sweet clover, peas, beans and other leguminou crops. Nitrogen is the element which goes to make protein. Protein is high in price, so also is nitrogen. When bought on the market in the form of commercial fertilizer, nitrogen costs 15 cents a pound, while phosphate and potash can be purchased at from five to six cents a pound.

Potash, another important plant food, forms a part of every cell in the plant and is of great importance in the digestion and chemical actions within the cells of the plant whereby the plant foods from the soil and the air are digested and assimilated by the plant. While potash is important, yet the supply in Wisconsin soils is sufficient so that we need not worry about this element. However, in many instances the potash is bound up with other substances in the soil so that it is not readily available to plants, hence the application of potash in commercial fertilizers in a readily available form often increases the crop materially.

The third element, phosporous, is by far the most important element to look after in building up our soils. There is but a limited amount of phosporous in our soils. Moreover, we cannot get phosporous from the air as we can get nitrogen and every crop permanently removes a definite part of the limited supply of this valuable element. There are but two ways in which our soils can be built up in phosphorous. First, by the use of rock or acid phosphates. In certain parts of the United States, as Tennessee and South Carolina, are great deposits of phosphate bearing rocks. These can be ground up and the powder thus produced applied as a phosphate fertilizer. The application of rock phosphate is advocated by Dr. Hopkins, of Illinois, and has been successfully used by him on many of the Illinois soils. This is also recommended by Prof.

Whitson, of the Soils Department of Wisconsin, and has been applied in many places with success.

While many of our soils are fairly well supplied with phosphorous, in many instances this element is bound up with rock so that it is not available to plants. This is true on many of what appear to be our good soils throughout the State. On such soils the application of rock phosphate may be profitable. Farmers should, however, test out rock phosphate by its use on small areas, to see whether it can be used with a net profit, before entering into its use on a large scale.

Certain of our soils are unbalanced, such as sandy soils and marsh soils, the latter particularly lacking in phosphorous and potash. On the most of these soils, it is profitable to apply phosphorous and potash to build up the soils and thus be able to save the manure for the more properly balanced uplands.

Rock phosphate should not be applied alone. It must be applied in connection with organic matter, the decay of which forms acids which loosen the rock with which the phosphorous is bound and makes the latter available to plants. It can be applied with manure, placing it on top of the loads or put in the stalls under the cows with the bedding, where it holds the liquid manure. It can also be profitably applied to fields of clover and alfalfa to be plowed under.

Phosphorous is the element which particularly affects the growth and ripening of seeds. Corn treated with phosphorous usually ripens up in a more plump condition and sometimes earlier than untreated corn on the same soil. In wheat and other grains the kernels are usually plumper and heavier in weight per bushel than if not treated. Farmers applying phosphorous to a part of a field are often disappointed because they cannot see by the height or more vigorous vegetative growth the effect of the phosphorous. By remembering that the phosphorous affects the kernels, it is readily seen that the difference in favor of the phosphorous is seen in the total weight of grain produced per acre rather than in the visible increase in height of plant or leaf development.

Rotation and Manure the Great Soil Builders

The soils of Wisconsin need particular care, especially in building up their organic matter. They are timberland soils not well filled with organic matter and humus in such proportion and to such depths as are the great prairie soils in the west. The prairie soils have grown grasses which have decayed in large quantities each year and have gone into the soil, while Wisconsin soils have produced trees, growing for years before they drop down to decay and form humus. The most important and practical method of building up our soils in Wisconsin is by adopting a proper system of rotation and the careful application of our manures. Few farmers realize the true value of manures. Their value cannot be determined accurately by their appearance, neither can it be practically and satisfactorily determined by the chemical analyses. The most effective and practical method of determining their value is by finding out through long continued application the increase in crops produced by such applications.

Such a determination was made by Director Thorne, of the Ohio Experiment Station, who for seventeen years handled two sets of fields, each consisting of three fields, on which was run a three-year rotation of corn, wheat and hay. To one set of fields was applied manure hauled and spread directly from the barn day by day and thus applied

to the fields to grow corn every third year at the rate of eight tons to the acre. To the other set of fields no manure was applied. The following table gives the actual increase per acre in corn, wheat and hay produced by the eight tons of manure applied once in three years:

DON'T WASTE MANURE!

Seventeen-Year Test With Manure and Three-Year Rotation Shows Striking Increases Due to Fresh Manure.

Treatment	Average Increase per Acre			Net Value of (Increase)		Cost per acre
	Corn 1st year bu.	Wheat 2nd year bu.	Hay 3rd year tons	Per acre for 3 years of rotation	Per ton manure	
Yard Manure	19.8	8.9	.4	$20.80	$2.60	.....
Fresh Manure	23.9	10.2	.7	26.48	3.31	.....
Fresh Manure, Rock Phosphate	31.3	14.3	1.10	35.75	4.47	$1.60
Fresh Manure, Acid Phosphate	35.5	15.6	1.3	39.12	4.89	2.24
Commercial Fertilizers‡	10.7	4.2	.2	3.26	.....	7.54

Application per Acre—‡Acid phosphate, 80 lbs.; Muriate potash, 80 lbs.; Nitrate of soda, 160 lbs.

Taking the actual market value of these crops year by year, the total increase made by these eight tons of manure in three years amounts to $26.56. Since the eight tons produced a value of $26.56, one ton would produce one-eighth of this, or $3.32. The actual value of a ton of manure for increasing crops therefore is $3.32.

On a similar set of fields, manure was applied at the same rate as when taken from the barns after having lain in the yard as made through the winter up to April 1st. The value of this manure determined by the increases in crops was shown to be 70 cents less per ton than the fresh manure lying in the yard during the winter, which therefore loses a large part of its value through leaching and fermentation. The proper method of applying manure is as it is made, directly from the barn to the field.

The value of the manure is of course also determined by the materials fed to animals. We should pay special attention to the phosphate content of feeds fed. Feeds high in this element are of special value for increasing the value of manure. In order to keep up the supply of phosphorous in the soil, it is necessary that either rock phosphates or feeds high in phosphorous should be purchased, in addition to feeding the crops grown on the farm. The one feed which is best adapted to building up the

soils in phosphorous is bran. One ton of wheat bran will add to the phosphorous in the manures 58 pounds of phosphoric acid. It is of special interest to note that bran, which is one of the best feeds for furnishing protein to dairy cows to increase their production of milk and butter fat, is also the feed which gives the best results in building up the soil in phosphates. When we remember that 80 per cent of all the valuable soil elements, the nitrogen, phosphate and potash, that built up the plants fed are returned to the manures, we ought to value the manures and handle them with as little loss as possible.

MANURIAL VALUE OF FEED STUFFS

Cost Per Pound

Nitrogen	*Phosphoric Acid*	*Potash*
17 cents	6 cents	6 cents

POUNDS OF FERTILIZING INGREDIENTS PER TON

	Fertility value	Manurial value after feeding	Nitrogen	Phosphoric acid	Potash
Corn Stalks	$4.05	$3.04	21	6	28
Timothy Hay	4.31	3.23	25	11	18
Clover	7.26	5.45	41	8	44
Wheat Straw	1.98	1.49	12	2	10
Corn	5.31	3.98	36	14	8
Barley	4.77	3.58	30	16	10
Oats	6.18	4.63	41	16	12
Wheat	6.63	4.97	47	14	8
Wheat Bran	10.41	7.81	53	58	32
Peas	9.06	6.80	62	16	20
Linseed Meal—O. P.	15.78	11.84	109	33	27
Cheese	12.18	9.13	91	23	5
Butter	.42	.32	2	2	2
Beef	9.49½	7.12	72	10	9

Crop Rotation

Another important method of keeping up the organic matter and the plant food element in the soil is that of crop rotation. Every man should have a crop rotation and system of farming which returns to the soil as much fertility and organic matter as is taken out. It is impossible for any farmer to know absolutely from a few years' experience whether or not his system is thus keeping up his fertility. In order to measure the value of his system for keeping up the

fertility, it must be continued for many years and carefully checked up in regard to drafts from the soil and deposits of fertility in the soil. Experiments wherein different systems and rotations have been carefully tested for many years have been carried out by various Experiment Stations throughout the world. The Rothamstadt Experiment Station, England, the Pennsylvania, the Ohio, the Minnesota and the Illinois Stations have all conducted such experiments. The following table gives in brief statement a part of the results at the Illinois Experiment Station and shows the relative merits of several systems of farming measured by the yields of corn at the beginning of the experiment and after 13 and 29 years' use of the land respectively under the several systems.

ROTATE YOUR CROPS. THESE RESULTS COUNT

Original Yield per Acre 70 Bushels Corn

Crop System	Yield after 13 years	Yield after 29 years
Corn Every Year	35 bushels	27 bushels
Corn and Oats	62 bushels	46 bushels
Corn, Oats, Clover	66 bushels	58 bushels
Corn, Oats, Clover and Manure	69 bushels	.....

At the Illinois Experiment Station, a field which formerly produced 70 bushels of corn to the acre was 29 years ago divided into various parts to form the experimental farm of that Station. One part was set aside to produce corn every year and after 29 years of corn growing this field has been reduced from 70 bushels to 27 bushels per acre. Another produced corn and oats and after 29 years the yield was reduced from 70 bushels to 46. Another plot produced corn, oats and clover and has been reduced from 70 to 58 bushels per acre. Another plot has been rotated to corn, oats and clover and has within recent years been manured with 12 tons of manure every third year. This field is still producing 81 bushels to the acre, showing that clover alone in a three-year rotation will not keep up the fertility, but when reinforced with 12 tons of manure every third year it will keep up the fertility and crop producing power of the soil.

In any given soil the amount of plant food is a limited quantity and only a certain definite number of crops can be produced by this amount of plant food present in a given soil. Below is given a table showing the relative amount of fertility of various kinds in different kinds of soil.

CHEMICAL COMPOSITION OF THREE CLASSES OF SOIL

Soil	Percentage			Pounds per Acre, Surface 8 Inches		
	Nitrogen	Phosphorus	Potassium	Nitrogen	Phosphorus	Potassium
Clay and silt loam	0.15	0.08	2.50	3,000	1,600	50.0
Sandy loam	0.10	0.04	1.00	2,500	1,000	20.0
Peat	3.00	0.15	0.20	10,500	525	7
Muck	1.00	0.10	0.75	10,000	1,000	7.5
Marsh border soils	0.50	0.05 to 0.10	1.00 to 2.00	10,000	1,000 to 2,000	20.0 to 40.0

It will be noticed that potash is present in sufficient amounts in all soils except muck soils. Sandy soils are lacking in nitrogen particularly, also in phosphorous. Muck soils are very rich in nitrogen but low in potash and often low in phosphorous.

Since the number of crops that can be produced is limited by the supply of plant food and since the kind of plant food of which there is the smallest amount is the limiting factor in crop producing, it is important that farmers know something of the total amount of the three most important elements of plant food in the soil. This can be determined accurately by a chemical analysis. Of course the analysis does not indicate what part of the plant food can be taken up by plants or is available, nevertheless the total supply and the kind of food contained in the largest or smallest amounts is information of much value.

The Soils Laboratory of the College of Agriculture is equipped to make determinations of this kind for any farmer in the State who makes application. The cost of a determination on one farm is $5.00. Where two or more farmers club together, the cost is only $3.00 for each. The laboratory sends a man to the farm to take samples and make observations. When the analysis is made, he brings it to the farmer and interprets it to him and recommends practices on the farm in accordance with the results of the analyses and study of the farm conditions.

DISCUSSION

Supt. Norgord—The test shown on this chart has been repeated at many places, for instance, at Pennsylvania and at Illinois. In England, at the Rothamstadt Station, an experiment was started in 1837. They have experiments there which have been running for half a century, which give results showing the value of the manure to be almost as high as these at the Ohio Station. I present this experiment at Ohio as one most nearly fitting our soils and farm practices.

A Member—There the manure was hauled every day?

Supt. Norgord—Yes.

The Member—And spread fresh upon the land?

Supt. Norgord—Yes. of course, on land that is exceedingly steep, there might be considerable losses from washing and it might not be advantageous to put the manure on a steep hillside at all times, and yet many people are doing that and finding that the loss is frequently not so great as expected. You will notice when the spring comes and the thawing takes place, the snow thaws all around the manure before it thaws under it, and you will find the manure frozen on top and holding the snow, while the land around it is bare, and when the manure does thaw and begins to leach away the land has also thawed and is in condition to catch the fertility from the manure as fast as it runs away.

Mr. McKerrow—The fields in Ohio where these experiments were carried out were what we would call rolling, not hilly. Conditions prevail in Ohio very much as they do in Wisconsin.

A Member—I think a man would have to use his judgment as to where he spread the manure.

Supt. Norgord—There is no doubt about that, and yet on this rolling land we can answer that question with this seventeen-year test at the Ohio Station showing the actual yields under both methods of handling manure. These actual yields and carefully planned experiments answer the question far better than an opinion. Such tests conducted for long periods of time are the only real means of solving soil problems.

Chairman Imrie—We will have to depend a good deal too on the character of the soil on the hillside, whether it is old pasture or clover sod, or what it is.

Supt. Norgord—Yes, that is true, particularly if some of the material is applied while the land is not frozen.

The application of manure on a new seeding in a three-year rotation is good practice. Manure applied to new seeding in the fall protects it during the winter and its fertility insures a heavy crop of hay the following year. The clover roots catching the fertility of the manure transmit to the corn of the following year. In a four-year rotation, the application of manure to the hay land in the second year of the rotation means that the second year's hay, which is apt to be the lighter of the two years' hay, will be materially increased. Usually the manure is applied during the fall or winter and in the spring it is evened out with the harrow. The manure spreader is particularly adapted to spreading on hay land.

Mr. McKerrow—Didn't Prof. Thorne put this manure on the clover stubble?

Supt. Norgord—Yes, on clover stubble and on new seeding of clover.

Dr. Porter—Would you recommend applying rock phosphate to that manure?

Supt. Norgord—That depends on the soil; most of our soils will need the application of some form of phosphate at some time. There are certain soils, particularly some types of marsh soils and sandy soils, that are low in phosphates while still in their virgin form. On such soils it is very necessary to apply phosphates. They are poorly balanced and need more phosphate even than manures alone can supply. But on fairly good soils, however, you had better try a little rock phosphate a few years before you expend a large amount of money. You can then judge for yourself whether or not your soil will yield you larger returns from the application of rock phosphate. You must bear in mind in measuring the results of such an application that phosphates increase the plumpness and weight of the kernels and not the growth

of leaves and stalks, hence you must weigh the grain to get the increase. It is absolutely necessary to apply rock phosphate with manure or plow it under with a good covering of grass. It requires the acids formed in the soil by the decaying organic matter to loosen the phosphorous from the rock with which it is bound in order to make it free and available and in shape for plants to use. A good many of our soils in Wisconsin have large amounts of phosphates that are not available but bound up with rock, and while the total amount of necessary phosphate may be there, that may also be a case where the application of phosphate may be necessary.

A Member—Wouldn't the acid phosphate be better?

Supt. Norgord—I think it probably would. Dr. Thorne found that acid phosphate put in with the manure made a net profit of $4.89 per ton, whereas the rock phosphate with manure paid him a profit of $4.47 per ton.

Supt. Norgord named the following committee on resolutions: Mr. W. S. Dexter and Mr. L. E. Scott.

Recess to 1:30 P. M.

AFTERNOON SESSION, THURSDAY, MARCH 11.

Mr. Geo. McKerrow in the chair.

CO-OPERATIVE DRAINAGE AND DRAINAGE LAWS.

E. R. Jones, College of Agriculture, Madison.

Too often as trivial a thing as a line fence has interfered with both natural and artificial land drainage. For years farmers have contented themselves with a little ditch a foot deep down to the neighbor's land, when if the two would co-operate they might have a ditch four feet deep across the land of each and benefiting each. A large line of tile would be better still.

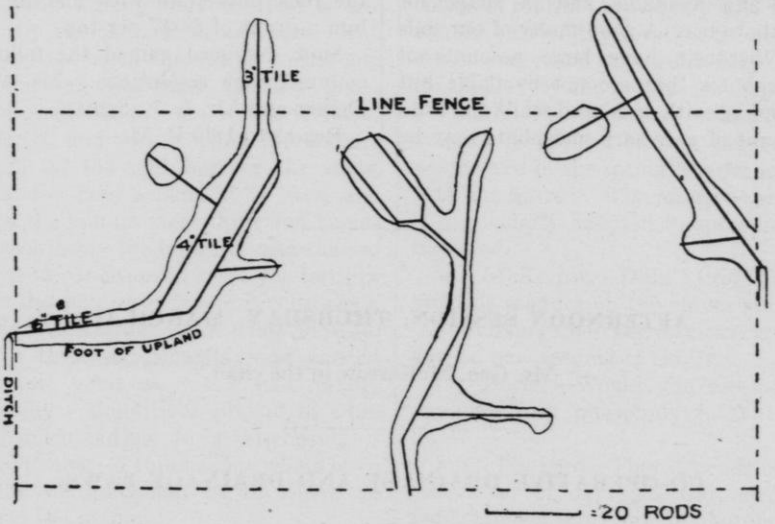
Vertical Drains

Sometimes farmers have got tired of waiting for the neighbor below to help them with an outlet and have dug a vertical hole, perhaps 30 feet deep, with a long handled post auger, hoping that the water would run through this opening into the subsoil. The hole is kept open by six-inch tile placed end to end. If the subsoil is coarse and the water it contains is not under pressure, some water will escape in this way. The success of a vertical drain depends more upon the condition in the subsoil than it does on the fancy drain-head at the top of the vertical column of tile that is advertised so widely by the manufacturing company as a cure-all for drainage evils. Sometimes the water moves upward instead of downward in these vertical drains. If a horizontal outlet can be secured without a deep cutting,

the vertical drain is not worthy of serious consideration, unless the neighbor below is stubborn.

A Large Outlet Benefits All Concerned

It is seldom that the drain damages the lower land owner. Frequently he objects because he thinks it will damage him. He may be honest but not correctly informed. So long as the drain carries none but the water of the drainage basin, the deepened drain will not carry any more water in a year than did the old shallow one. It may carry it faster at times, but if so it does not have to work so long a time to do the same amount of work. Generally it is better to have a big discharge for a short time and have it over with, than to have a small amount of water bothering all of the time. Where damage has resulted, it is usually due to the poor outlet below. I have seen a lower land owner allow his outlet to fill up so that he would have a damage claim against the neighbor above him. He succeeded in drowning himself, but failed to get his neighbor into trouble. I have yet to find a case where it has been proven to a jury that a drain, unaided by other damaging factors, has caused damage below its outlet. Commonly by drying the upper land it causes the absorbtion of more of the rain water by the upper land, and the run-off is made actually less because of the drain.



A Farm Profitably Tiled

On this 80-acre field three systems of tile drainage were necessary. This shows the advantage with which two neighbors can co-operate in putting in a line of tile. An obstacle so trivial as a line fence should not be permitted to prevent economical drainage. The owner of this land says that tile pays for itself every year and that $200 expended on tile has raised the value of the 80 acres $1,000.

Co-operate with Your Neighbor for Mutual Benefit

If you cannot agree with your neighbor with whom can you agree? Mr. Brown and Mr. Smith are adjoining land owners. Smith has 10 acres of

marsh that he can drain only by laying a six-inch tile down through 40 rods of Brown's land. But Brown also has a strip of marsh that this tile will benefit. Brown would have to have a line of four-inch tile there anyway and a six-inch tile is all that is needed to carry Smith's water also. A great many of our Smiths and Browns are putting in such drains jointly. Brown pays what a four-inch tile would cost and Smith pays for the extra cost of the six-inch tile. If Brown wants to use this line as a main, he, too, would probably need a six-inch tile. In that case an eight-inch tile would be required to serve as an outlet for both. Brown pays for what a six-inch tile would cost and Smith pays for the extra cost of the eight-inch tile.

Surface Runs Usually Cheaper and Very Often Better than Capstan Ditches.

Three or more land owners can co-operate with fairness to all by extending this method somewhat. If there is a case where a man is justified in standing out against the construction of a joint drain, it is when his neighbors want to put in a capstan ditch. These ditches are seldom made more than three feet deep, the claims of the contractors notwithstanding. They are dug with a big plow that does not dig deep enough in the high places to drain the low places at all, and it is the low places we want to drain. Near Baraboo, George Carpenter's neighbors let the

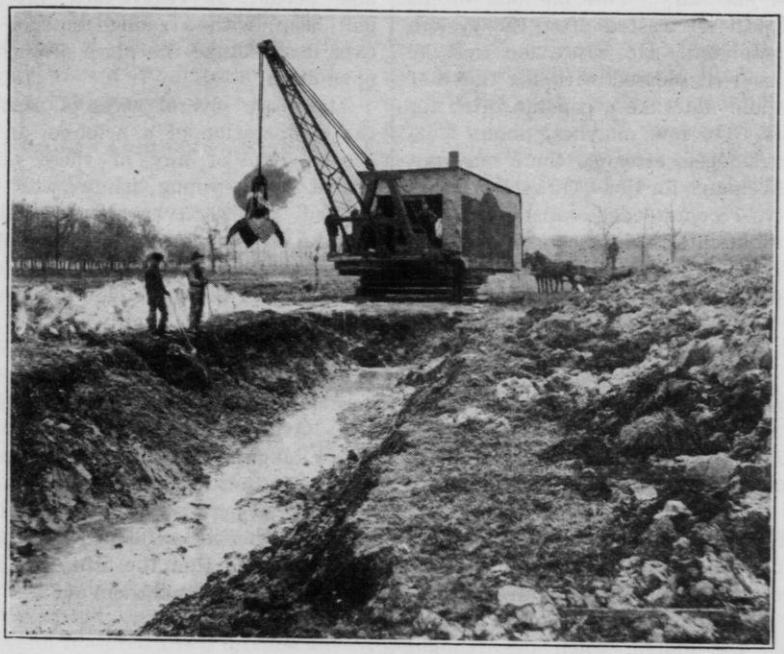


Figure 9. An Open Ditch with Dredge.

The dredge is of the drag-line type. The ditch is seven feet deep and about 20 feet wide at the top. Such slopes as these made smooth with a garden rake and seeded with grass seed, may be made permanent and attractive. The dredge is moved on rollers worked on a track. Many marshes can be drained only by the co-operation of several land owners in digging such a ditch to carry the water to a sluggish, winding creek.

capstan ditch men put in a ditch for them, but he stopped them when they came to his land. In place of the ditch, he laid an eight-inch tile up through his marsh four feet deep. Near it he has made a little depression about a foot deep and 10 feet wide with a road grader. He cultivates this surface run just as he does the rest of his field, but it is there to carry off flood water when necessary. Not an inch of his land will be wasted after the system is completed. He wrote me that he was so well pleased with his tile that he would not take a capstan ditch for a gift. On low marshes, about level along sluggish streams, there may not be fall enough for tile. On such marshes I have recommended capstan ditches as a makeshift until the creek is dredged, so that the tile can be laid. Even here a capstan ditch is sometimes a mistake.

The Lamertine Capstan Ditches Failures.

On the Lamertine Marsh in Fond du Lac county, against my advice, they put in a network of these shallow ditches about five years ago, instead of dragging the creek and getting a good outlet for tile. They thought they were draining the marsh. Three-quarters of these ditches have stood full of water ever since they were dug. The farmers blame the marsh, when they should blame themselves for putting in such shallow ditches. The sad attempt at drainage that they have made has left a bad taste in their mouths and will delay thorough drainage perhaps twenty years.

Co-operation in Dredging

By co-operation in dredging a creek two or three miles long, twenty or thirty land owners can get a dredge on the ground that will dig an open ditch for ten cents a cubic yard. If they put it in a piece at a time, the work will have to be done by hand at a higher cost. In Iowa and Illinois they are co-operating in putting in thirty-inch tile in lines several miles in length. In Wisconsin it is safe to say that in any place where a ditch three feet wide at the bottom, six feet deep and fifteen feet wide at the top is large enough, a big tile is cheaper and better. A twelve-inch tile five feet deep, with a sodded surface run over it, will take the place of such an open ditch.

There are several ways of securing the co-operation of a neighbor in the construction of any of these outlet drains. One young fellow who was bottled up by a stubborn neighbor found a happy solution to the problem. Evening after evening the young man pleaded with the more elderly man for the right to dig a ditch across the old man's land. Then he got interested in the old man's daughter, and I suppose he began to plead for something else. At any rate, he married the old man's daughter and they made a family affair of the ditch. The son-in-law not only got permission to dig the ditch, but the father-in-law helped him dig it, and I am told that the bride stood on the bank and cheered them on.

The Town Ditch Law

But all drainage controversies have not been brightened by romance. It has been necessary to enact State drainage laws to prevent one land owner from playing dog-in-the-manger to the extent of preventing the neighbor above him from draining his land. We have both a town ditch law and a drainage district law. Suppose that A can drain his land only by going through B's land, but B is unwilling to yield. Mr. A can call out the town board. All he has to do is to prepare a petition

addressed to the town board asking for the outlet. Five other land owners anywhere in the town, and not necessarily marsh land owners either, have to sign this petition and it is handed to the town board. They advertise the date of hearing and if it appears that the benefits of the outlet will exceed the damages and cost, the board orders the drain laid out. The lower land owner must not only allow the drain to go through, but if the board decides that it benefits him also, he must pay toward it whatever sum the town board thinks is just.

Forming a Drainage District

Unfortunately the action of the town board is frequently governed by petty politics. In such cases, and in all cases where large areas affecting two or more land owners are concerned, the drainage district law is a better law to follow. Here three commissioners appointed by the Circuit judge take the place of the town board. A petition for a drainage district must be signed by the majority of the interested land owners. The form for the petition for drainage districts and also town ditches will be sent upon application to the College of Agriculture.

More than a hundred drainage districts have been organized in Wisconsin and several hundred town ditches have been put in. Over half a million acres have been given an outlet in this way. Most of the drains that have been put in by such co-operation have been open ditches. Recently they are putting in big tile as well as open ditches.

Distributing the Drainage Tax

The drainage tax for town ditches and drainage districts is based on the benefits. The benefits are estimated by the town board or drainage commissioners. Suppose that they estimate the present value of the wet land to be twenty dollars an acre, and its value after drainage to be fifty dollars an acre. The benefit is thirty dollars an acre, and if A has fifteen acres of such wet land on a forty the benefits to that forty are four hundred and fifty dollars. Supposing that all of the benefits in a district amount to $30,000.00 and the cost to the work is $10,000.00. This means that the cost is one-third of the benefit and A's tax will be one-third of $450.00 or $150.00.

Good soil adjacent to a deep ditch that was too shallow before the improvement to be tiled, receives a maximum benefit. If the soil is poorer, as if a parcel is farther away from the ditch, or if the ditch adjacent to it is shallow, or if the land is high enough that the dredging of the creek is not necessary for the drainage of that particular tract, the benefit is less. On these bases, drainage taxes in the same district may vary from two to twenty dollars an acre.

It has been argued that all of the land in a drainage basin, even the hilly land, should be taxed for the construction of a ditch in the marsh on the valley bottom. This is wrong, because when the upper land owners bought their land they paid perhaps one hundred dollars an acre for it because of its good drainage. The owner of the marsh land got his land for twenty dollars an acre because it had poor drainage. When you make the upper land owner help pay for draining the lower owner's land, you are making the upper owner pay twice for his drainage. It is good enough an investment for the lower owner to pay twenty-five dollars an acre to make his twenty dollar land worth a hundred dollars an acre. Drainage districts permit the sale of bonds to pay for the drainage. If the land owner so desires, he can have fifteen years in which to pay his drainage tax. This

enables the land to pay for its own drainage.

Drainage Convention and Drainage Bulletins

In December, 1914, over a hundred drainage commissioners, engineers and owners of marsh land had a convention at Madison and organized the Wisconsin State Drainage Association. They discussed many subjects related to the drainage of large marshes. These discussions are published in pamphlet form and will be sent to any one upon request. Bulletin 229 of the Wisconsin Experiment Station will also be sent upon request. Drainage laws and other details are discussed more fully in that bulletin than this paper permits.

DISCUSSION

A Member—I have tile emptying into a ditch that was dug over 20 years ago, but the neighbor below me has allowed the ditch to fill up and he has helped to fill it up with stones. How can I improve my outlet?

Prof. Jones—Get five other land owners besides yourself in the town to petition the town board for a town ditch as far below you as you need it. If you are the only one benefited, you will have to pay for it, but if others are benefited they also must help pay for it.

The Member—They say that the old ditch is a town ditch. It is the only outlet for the flood water from one thousand acres.

Prof. Jones—Even though it is an old town ditch, the old depths would have to be established, and it is better to start with a clean slate and organize a new town ditch, and see that a record is made of it in the town clerk's office and in 20 years you will not have to depend on hearsay.

The Member—Can I not stop this man from filling my ditch on his land?

Prof. Jones—You can recover damage from him if he stops a running stream so that it backs on you. He has not the right to dam such a stream higher than the surface of the ground or higher than the bottom of a ditch that has been there for 20 years or more. But since your ditch has been gradually filling up, it is hard to say what its natural depth is. Furthermore, I believe he has the right to dam surface water to keep it from entering his land. It is hard to say what is surface water and what is seepage water, so it is best not to quibble over these fine points of law. What you need is a big tile or a ditch for an outlet and the best way to get it is to get the town board to lay it out, so that it will be protected in the future.

A Member—What form of dredge is giving the best satisfaction?

Prof. Jones—The floating dredge will do cheaper work than any other kind, and for that reason they are useful on big jobs. Your floating dredge will start at the upper end and the ditch is full of water and they cannot see where they are digging. Unfortunately the sides are pretty nearly straight and big chunks are apt to fall in. The prettiest ditches I have seen were made with the Austin ditcher, which gives you a sloping out, and that can be seeded to grass, but these dredges are expensive to operate. I would rather have June grass grow on the slopes than to have a lot of weeds. It is better for the ditch and looks better.

A Member—I think the sooner we can drain those pot holes the better it will be for the public health. In the neighborhood where I come from we have those pot holes. In just such places our veterinarians have found the germ—the living worm that does as much damage as the lung worm—both in sheep and cattle—they originated right in those pot holes.

Prof. Jones—There is no question but what drainage improves the health conditions, and in fact one of the things they have to prove in every district before the court has jurisdiction is that the public health is going to be improved. Mosquitoes cannot find a better breeding place than these pot holes that we have. Down there in Panama, the one thing that made it possible for Americans to build that canal was the draining of the pot holes.

A Member—We have had a drainage case and we have had a decision from two different attorneys. One said as long as we had an outlet to go ahead and drain it. The other man's attorney claimed that we were taking unnatural water in there.

Prof. Jones—You had plenty of advice, but I am more interested in knowing whether or not the ditch was dug.

The Member—It was.

Prof. Jones—And what was the result; has damage been done down below the outlet?

The Member—The man below me filled it up before it had time to damage him or benefit me.

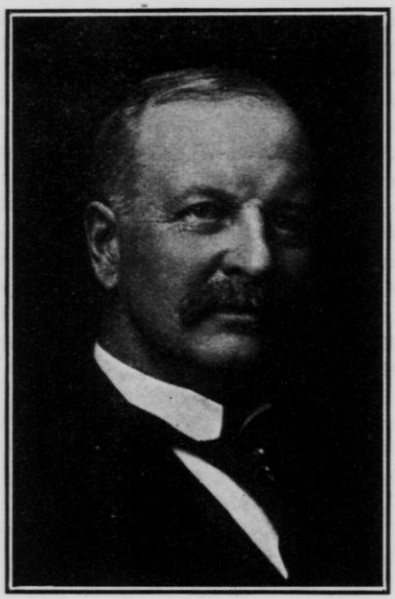
Prof. Jones—He was acting beyond his rights. If your town ditch was legally laid out he could be prosecuted and held liable for the damage he did to your crops by obstructing your legal outlet.

The Member—The obstruction he put in the ditch damages his land also.

Prof. Jones—Then he is cutting off his nose to spite his face. It is often necessary to organize a town ditch or a drainage district to prevent a stubborn man from drowning his own crops—to help him against his will, in other words.

SILAGE AND SILOS.

L. E. Scott, Stanley.



L. E. Scott.

With more than fifty thousand silos in the State of Wisconsin, embracing nearly every type that the ingenuity and caprice of man has ever devised, and well distributed in every county and practically every neighborhood; with all the bulletins and articles that have been published by experienced men upon every phase of the subject, it would seem like "carrying coals to Newcastle" to present the "A, B, C" to a Wisconsin audience. I shall therefore only attempt to hit a few of the high and somewhat bumpy places.

The Silage Crop

Corn is pre-eminently the outstanding silage crop. It may be reinforced with some protein crop, like soy beans, second crop clover or the last cutting of alfalfa. I have mixed in second crop clover with corn, about half and half, when I have been short on corn and too lazy to cure the clover into hay in freaky September weather. Results were fairly satisfactory, but, generally speaking, I believe it better to raise sufficient corn to fill our silos and feed the clover and alfalfa in the form of well-cured hay.

Silage made wholly of any nitrogenous crop, including pea vines, will have a strong flavor that will be imparted to the milk unless fed carefully. Good, sound corn silage will improve the flavor of the milk.

Value of Corn Silage

Of the value of silage it is hardly necessary to speak. Our Experiment Stations have produced from five to fifteen per cent more milk by its use than from the same amount of corn cured and fed in a dry form, together with an identical amount of hay and grain fed in each case, but to my mind they have not yet carried the experiments far enough. Every dairyman knows that the profit lies in the amount of feed an animal can well use in excess

of the food of support. With silage a cow will convert more hay and grain into milk than with the same amount of matter the silage contains, cured and fed in a dry form, but you will observe that in these experiments only the same amount of material has been fed and yet they record the gain stated above.

While the amount of milk produced is the basis in Wisconsin upon which the value of food stuffs is reckoned, silage plays an important part in the economic feeding of all stock, with the exception possibly of hogs, but with an increased milk flow it indirectly assists that industry also. A little bright silage is good for the horse. From two to four pounds daily may be fed at a profit to a sheep, especially to a breeding ewe, if not too sour, while an experiment with thirty steers shows a daily increase of fifteen pounds of live weight and a decrease of five per cent in cost of feed by introducing silage into the ration.

Losses in Curing Corn

Losses in nutrients have been found to be from 31 to 43 per cent in curing in the shock in the field when the fodder looked bright and inviting to the eye, while, according to Prof. King, the loss in a well constructed silo need not exceed five per cent.

Best Time to Cut Corn for Silage

Corn increases in every element except water till it is fully ripe. The water decreases after the milk stage is reached. This has induced some to defer silo filling till the corn is fully

Increase in Nutrients During the Stages of Maturity

Total Yield and Amount of Water and Nutrients in an Acre of Corn

	July 30 in Tassel	Aug. 9 in Silk	Aug. 21 Milk Stage	Sept. 7 Kernels Glazed	Sept. 23 Fully Ripe
Dry Matter	1,619.0	3,078.0	4,643.0	7,202.0	7,918.0
Protein	239.8	436.8	478.7	643.9	677.8
Carbohydrates	653.9	1,399.3	2,441.3	4,239.8	4,827.6
Fat	72.2	167.8	228.9	260.0	314.3
Ash	138.9	201.3	232.2	302.5	364.2
Water	16,426.0	22,666.0	27,957.0	25,093.0	20,542.0

ripe and to use water in place of the natural juice. This, I believe, is a mistake. While the chemist may find larger amounts of nutrients, there can be no doubt that such silage is less palatable and less digestible than that put in while the stock cells are still well supplied with the natural juices, as they are at the glazed stage. Putting it in too green means low nutrition and high acid, so avoid either extreme. A slight degree of acidity is desirable in allaying excessive bacterial action, which will cause mold or decay.

We have heard more complaints this winter of moldly silage than ever before and we believe that much of it comes from having passed the limit of maturity in harvesting. I am equally fearful of the other extreme and if corn is very immature I would prefer to have the leaves killed with frost rather than put it in too green.

Filling the Silo

There can be no iron-clad rules as to methods of filling. The fact that a man has no cutting outfit need not deter him from building a silo. With the present day spirit of co-operation in the air, he can combine with his neighbors in the purchase of an outfit and in changing work. If he, himself, is a good neighbor, he will have good neighbors, but with the best of neighbors I would greatly prefer to have my own cutter and power and fill with my own crew. This enables one to commence when he wishes and to fill slower, which insures a better quality of silage and a greater amount in the silo. Whichever method is employed, I would insist upon having things handy, to enable one to accomplish the maximum amount with a minimum of energy expended.

A commodious cutting outfit, low down, with belts out of the way of the operators, a low down, wide wagon with rear wheels far apart, are time and labor savers.

If a machine is to be moved frequently, a blower is more convenient, but it takes more power. If your power is limited, you will do better to stick to the chain carrier.

The Best Kind of Silo

There is no best kind of silo. Any silo is good if properly constructed, of a good quality of durable material. I believe, however, that the most economical silo one can construct, under average conditions, even if he has to ship in his material, is a solid wall, or monolithic, concrete silo. This is everlasting, will preserve silage as well as any and will cost less to construct.

I am greatly in favor of farmers constructing their own, but most of them lack self-confidence and shrink from stepping outside of the furrow they are treading. They say they have not time and find it easier to look over a highly colored picture of a silo, the center of a beautiful landscape, and sign a contract to the sweet and soothing music, running like rippling rills, of a flute-like voiced agent, for a silo that will keep your silage perfectly, that will never freeze (or if it does, it will thaw out by sunrise) and that will be put up on your farm without even a jar upon your nerves and all the trouble you will ever have with it will be the slight annoyance of stepping into the bank and paying your note when it is due.

Or you will engage a contractor to construct a concrete silo for you at a price ranging from $3.50 to $5.00 per foot in height, you to furnish the materials on the ground and the contractor to furnish the forms and do the work.

If you choose the latter plan, it is well to be personally informed on the essentials of construction and to faithfully superintend the work.

Details of Construction

For details of construction, including forms, I would refer you to "Farmers' Institute Bulletins" Nos. 24, 1910 and 25, 1911. If you have not these books in your book-case, you should be able to find them in your school libraries.

There have been many of these silos built since the publication of these Bulletins and the greater number of them are giving good satisfaction; in fact, most of the complaints that we have heard have not come from the owners themselves but from those interested in the sale of other kinds of silos.

Concrete Mixtures for Silos

I would advise against a too cheap construction. I would use a mixture as rich as 1 to 5 of unscreened gravel. If screened, then the standard 1:2:4 proportion is all right.

I would see that ingredients are thoroughly mixed to a slush mixture and thoroughly spaded in the forms. Use plenty of water. Some contractors are in such a hurry to remove the forms that they make the mixture too dry and the wall is not nearly as impervious. This is one fault with concrete blocks.

I would use a little stronger reinforcement than is usually advised and I think you get a little better inside surface by applying a coat of plaster composed of two parts of finely screened sand to one part of cement and sufficient lime to make the plaster pliable and to stick well. The lime had better be slacked a few days in advance and reduced with water to a thick cream. The cement and sand should be thoroughly mixed dry and then the lime water worked in. This should be finished with a steel trowel and you will have a surface as hard and smooth as a glazed tile and nearly as impervious. Wet the wall well before applying.

If you wish an artistic outside finish, wet the wall and throw on the same mixture with a whisp broom. This will cover up the marks and make a very pretty stucco finish.

There can be no better silo than this, but the first question you will ask will be about some silo made in pieces, "cement stave," "wood stave," "cement block," "glazed tile," "soft tile," or some other. It seems the more pieces you can put together, the better you are pleased. Never mind the cost if you can only get something just a little different from your neighbors.

Why! If you were going to cast a kettle, you wouldn't cast it in pieces and hoop them together, would you? If you were going to make a fruit jar, you wouldn't make it in sections and cement them together. No; you would cast or mold these articles in one piece. Why not cast a silo in one piece? Modern inventions enable you to do this with concrete.

Freezing in the Silo

As to the freezing problem, which is always the solicitor's talking point, they have been making some observations at the University, the full results of which will not be published until they have been carried on another year, but I am permitted to say that upon December 31st, last, after several days of zero weather, the stave silo was frozen in more than 10 inches and the actual temperature ten inches from the wall was 27°, while in a brick silo the same date the temperature three inches from

the wall was 34°. At no time was the concrete silo frozen in over six inches.

An Iowa bulletin says, "It may be impartially said that, so far as the prevention of freezing is concerned, the stave, stone, single wall brick and concrete silos are of about equal merit." The same bulletin says that they have found concrete silos in actual use which have been filled eleven times without any noticeable action of the acidity of the silage in softening the walls.

Keeping the silo well closed up, so that there is no radiation of heat from the surface, is more effective in resisting frost than the hollow wall.

A Covering of Hay Prevents Freezing

I would not put a cupola or ventilator in the roof. I have known frozen silage to thaw out in a short time under a ten-inch covering of hay. It costs but little energy to apply this and the value of the hay is not impaired for feeding.

In closing I will state that Mr. Frank D. Otis addressed letters of inquiry to seven hundred of the eight hundred owners of silos in Barron county. He received 175 replies and all but four expressed themselves as being highly pleased with the results of their experience in feeding silage. From these replies Mr. Otis figures an average profit of $2.00 per year from increased production and decreased cost of feed, from these herds averaging 14 cows each. From this data, one could almost say that with 14 cows a silo would nearly pay for itself in one year.

DISCUSSION

Mr. Jacobs—Don't you think that the fact that a great deal of corn was blown down this year may have had something to do with the extra amount of moldy silage that you have found? Than again, isn't it a fact that many times silage is moldy from the top when people really think it is caused by something else?

Mr. Scott—I presume that may have had something to do with it, but I know that my corn was put in exceptionally ripe. I was waiting for machinery that failed to come when I needed it, and we have had a good deal of trouble this winter from overheating. The silage is very sweet, but very poor. A slight degree of acid will allay that bacterial action and you will get less mold, I believe if the corn is a little more immature and slightly acid.

Mr. David Imrie—Give us some idea of the different cost of the different silos.

Mr. Scott—Why, prices vary so much. With the concrete silo, of course, some have gravel within a shovel's throw, and others have to haul it a number of miles, so that the cost will vary greatly. I have a few figures here. A gentleman up in Richland county is building concrete silos 36 feet high by 14 feet inside diameter for $200.00, with a board roof, and he furnishes the material, all but the gravel. With a concrete roof, the cost is $250.00 Several other styles of silos without roof or without foundation, of the same size, in the same neighborhood, cost $225.00 A wood panel silo the same size costs $350.00. Vitrified tile—"indestructible tile silo," as it is called, the same size, $540.00.

A Member—Don't you find that a good many men build a silo too large, that is, of a larger diameter than the size of their herd will justify, and too high for the diameter?

Mr. Scott—Not so much now as in former years. I want to say I would much prefer to put in my corn at the proper stage, when it contains the right amount of moisture in its natural juices,

than to let it get too dry and then put in water. I would rather have green apple pie than pie made of dried apples soaked up with water.

A Member—Don't you put in salt to stop fermentation?

Mr. Scott—I have done so; the slight amount you would put in would not allay the fermentation.

A Member—We have used salt for several years and I think that since using the salt we have had less moldy silage than before.

Dr. Porter—I do not like to hear you discourage the practice of putting water into the silo. I have put a great deal of water in for the last twenty-seven years and I have always felt I did not put in enough. A year ago last fall an early frost came and caught our corn and we could not get it all into the silo as quickly as we wanted. I kept some of my corn cut almost two and a half weeks; the stalks were green and the tassels were dry. We had a gas pipe and a pump and we ran in about forty barrels of water. It took us somewhere in the neighborhood of two weeks with only our own help to fill a silo forty feet high and eighteen feet wide, and it got pretty dry. I put in lots of water and had very good results. When I got through I covered it with about two feet of grass and sowed a bushel of oats on top, the oats sprouted and in a few days there was a mass of thick oats there, four to six inches tall, and it just sealed that silage right up and we had none of it spoiled. When we took the old hay off the top of the silage, it was perfectly fresh.

Mr. Scott—Wisconsin is something like three hundred miles long from north to south and conditions vary. I presume in the northern part, where I live, that the corn holds rather more moisture than in the southern counties.

Dr. Porter—You are right in saying that the natural moisture in the corn stalk is best, but in our country the tobacco season and the County Fair knock us out. We cannot get help at the right time.

Mr. Scott—Then do not talk against putting corn in at the right stage.

A Member—If you have a four-hundred acre farm, sometimes you cannot put your corn in when you want to—the frost may catch you. I submit it is all right to get it in in the best condition you can.

Chairman McKerrow—Mr. Scott advises putting it in in the best condition with its own juices. If you cannot do that, you may put in some water.

A Member—Did you ever hear any complaint against the concrete silo because of molding near the wall?

Mr. Scott—Yes, in case of a poor concrete silo wall. There has been a great deal of poor work done in the building of concrete silos. We have been trying to make them too cheaply, not putting in enough cement. But if you have a good wall, well glazed inside with a rich mortar, or even a wash, I cannot see why it should absorb any more moisture than a tile or stave silo.

Dr. Porter—Do you consider that the lime in that cement lining aids it in becoming water proof? It is essential to put in a good deal of lime in order to make the thing impervious to water.

Mr. Scott—I am not expert enough as a chemist or a mason to answer that question, but I do know that lime will make it stick better and be more plastic in the application, and possibly it may make it more impervious.

Mr. John Imrie—Our method is to take a wide whitewash brush and put it on about the thickness of cream. We generally put it on in two coats,

Mr. Scott—I think you would be a little safer in plastering.

Mr. David Imrie—We have a cement water tank in our house; it is about two inches thick and it never absorbs water. That was simply washed with a cement wash. If you make your concrete rich enough and give it a wash inside of clear cement and water, two coats, then a few years afterwards give it another wash, your silage will be good right up against the wall.

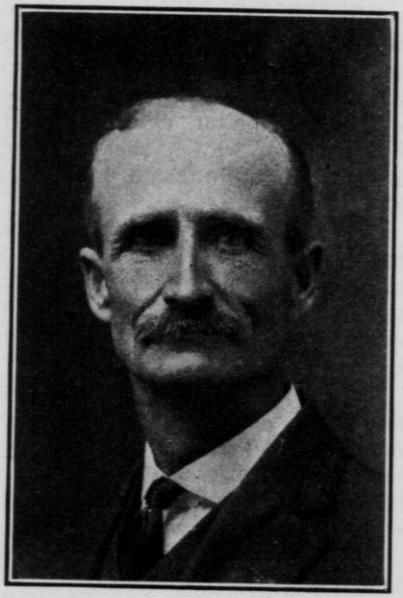
Mr. Scott—I agree with you if the wall is sufficiently dense and you are using a 1:2:5 mixture, but in a great many cases a 1:2:7 or 8 is used. On those walls I believe the plaster would be the safer.

Mr. Cheesman—Ninety per cent of Chicago's milk is produced within seventy-five miles of Chicago. By building silos with more height, I believe you will get more pressure and greater storage capacity within convenient reach.

Mr. Scott—That may do in the south. I think in the north forty feet would be the limit, as the corn there carries more moisture and in the bottom of silos of great depth there is so much juice expressed by the greater pressure that we find the silage more acid than in the more shallow silos.

HOG HOUSE CONSTRUCTION.

[John D. Imrie, Roberts.



Mr. John D. Imrie.

In taking up this topic as given in the program "Hog House Construction", I will do so more from the practical hog farmer's or raiser's standpoint than that of the fancy breeder, and in doing this I wish to state in the beginning that in thirty years of hog raising and feeding I have found that for best results as to health and growth the pig or hog should not spend most of his lifetime in any kind of a hog house or pen, as the young of all farm animals, especially the pig, needs plenty of good, healthy exercise to keep in the best condition and make the most rapid growth. Therefore I will speak more especially of the house for farrowing and feeding purposes than as a living place.

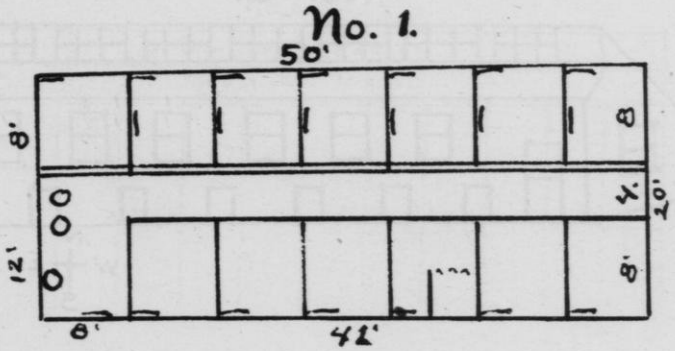
There is one kind of a hog house that I like better than any other. Figure 1 shows a plan of a very good hog house of thirteen farrowing and feeding pens,

is 50′x20′ and 8′ posts. The feed room is 8′x12′, with water in same. This is called the double house and is very handy, but has some serious objections in that the yards on the north side are in the shade most of the day, is rather expensive and has no room for corn or other feeds. Figure 2 shows the elevation of this kind of house.

As I have used both the double and single style of hog house, I must say I like the single style as shown in figure 3 far better. This one is 16′x80′, 8′ posts, containing ten farrowing pens, with a feed room 8′x12′, with water supply and place for swill barrels. The feed alley is four feet wide and the corn crib which extends the entire length of the house is four feet wide at the bottom and five at the top of posts. This is the best, handiest and cheapest house for its size I have seen. The advantage as regards farrowing pens is that all pens have a southern exposure and have little yards 7′x16′ in which the pigs can take needed exercise when the mud is too deep to turn them in the yard or field. Figure 4 shows the elevation of this kind of house.

Figure 5 shows an A-shaped hog house, which has a good many things to recommend it as a farrowing pen. The main objection to this kind of house is that where from 12 to 20 brood sows are kept too much time is taken up in feeding and caring for the pigs. When help is scarce and high-priced, this is a serious fault and in a muddy time it is not a pleasant job to wade to each pen to feed twice a day; however, this is a good house where only a few sows are kept.

Figure 6 shows fenders for farrowing pen. They are made of 2″x6″, 3 feet long and fastened as shown in cut eight inches from the floor. They are to prevent the mother from overlaying the pigs when returning to the nest. This is an important part of the farrowing pen. The little pigs learn to get under the fender two or three days after birth. This arrangement has saved the life of many a pig, so do not forget to put in fenders.



I like the concrete floor best, as it can be kept clean and sanitary. The floor in each pen should slope about an inch toward the trough, where there should be a shallow gutter to carry off the liquid. This gutter should run along the entire row of pens and follow the wall of the last pen to the outside of the house. This keeps all liquid from spreading over the floor and making the

bedding damp. In case of a shortage of good bedding, it is a good plan to make a platform of 4'x4' of inch boards, with a 2"x4" nailed flat-wise on two edges. Lay this in the corner of the pen as shown in figure 3. This helps to hold the litter and keeps the pigs from contact with the cement.

As the comfort and health of the pig or hog is the first item to be considered and the saving of time in feeding and caring for them must also be taken into account, I think the plan as shown in figure 3 will come the nearest to the needs of the practical hog raiser.

Mr. Imrie—No, I have not. The platform is simply to keep the little ones off the cold cement.

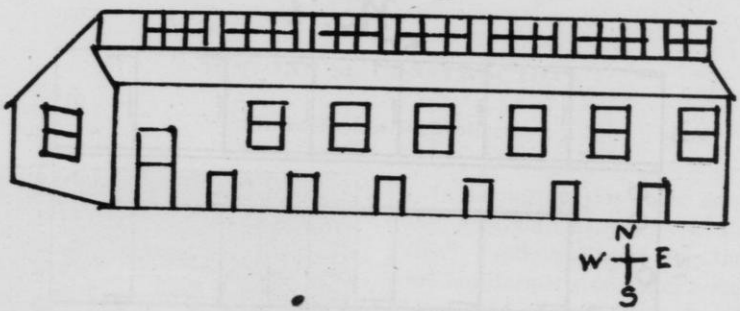
The Member—If you insulated in that way, you would have a warm floor. Do you let the little pigs run around on the cement floor?

Mr. Imrie—Yes, but I always keep it well bedded.

Mr. David Imrie—If you have these little platforms in each one, they will stand on those a good deal of the time.

Mr. John Imrie—In our actual practice of raising hogs on the farm, they are in these pens only a few days, that

No. 2.



DISCUSSION

Mr. Imrie (Continuing)—I like the open pens facing south, where the little ones can get sunshine all day. There is one improvement I would make another time: I would have these gates so I could swing them alongside of the hog house, so I could drive right in and clean out those pens.

Mr. Jacobs—What is the floor of those pens?

Mr. Imrie—Cement, by all means.

A Member—Did you ever try to insulate those walls by having some dead air chambers underneath, so you would not want a platform?

is, all day long. A few days after birth they are let out into the field, or yard, unless too muddy. As soon as they begin following the mother, they are all right.

A Member—That platform is bottom-side up?

Mr. Imrie—No, the 2x4's are on the upper side.

A Member—How are the partitions built?

Mr. Imrie—They are made of inch boards, with a door passing through each one to let the little pigs pass into the next pen to eat.

A Member—In some places they are building these houses of heavy steel.

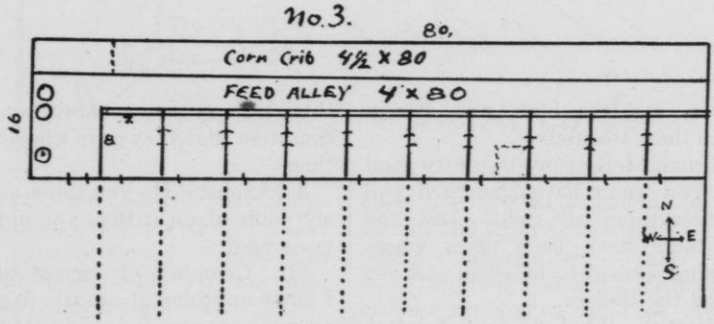
Mr. Imrie—Of course that would be more expensive. This kind of a hog house, the material for it, costs about $250.00.

A Member—Are the partitions movable?

Mr. Imrie—No, they are not. I have seen some where about half the partitions were movable, and it is a very nice arrangement, but in our practice our hogs are fed mostly outside; mostly spring pigs, growing over the first season and then fattened for market.

A Member—You don't have the cholera?

Mr. Imrie—Not for thirty years.



Mr. David Imrie—We had it in our neighborhood a year ago last fall but we were out of the district. If there are hog cholera germs about you are sure to get it.

Mr. John Imrie—I think if a hog is perfectly healthy, there is more resistance to hog cholera germs; however, if the hog comes in contact with the germs, in all likelihood the cholera will develop in the herd. The only immunity is the power of resistance.

Mr. Jacobs—I would like to say a word in favor of our friend's small pens. I feel that that is the most serious problem with the little pig—when he is a few days old he wants to get out on the ground. In that big hog house he has no place to go out of doors, except in the mud, there are never satisfactory surroundings. You want to have it so you can easily move that hog pen and change the ground.

Mr. Imrie—When you have fifteen brood sows, it is an hour's job to feed those sows if they are in small houses, and in muddy times you will have to wade in a lot of mud to give them their swill. It works all right up to about six, but if I have more than six brood sows, I want a clean place where I can feed rapidly, and keep them clean; time is money.

A Member—You better not have more than six sows if you do not keep them clean.

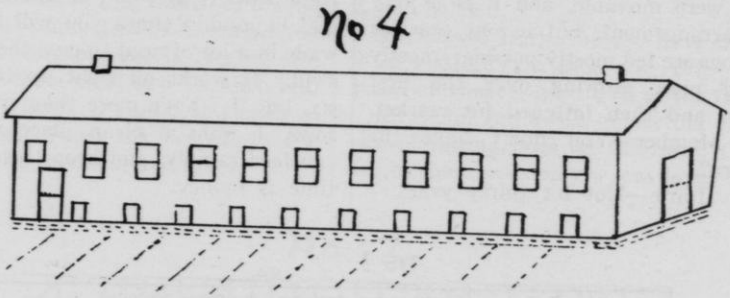
Mr. Imrie—We keep our pigs clean.

A Member—If you can keep your hogs clean and give them good, clean feed, are you likely to have hog cholera?

Mr. Imrie—It is a great help in avoiding it.

Mr. Rasmussen—When I was in Denmark last year, I went to a great many big farms. I was interested in hogs and cattle. I went to one large place where they had a double hog house with a cement floor and a feeding alley up the center. I think they had about fourteen pens. They always

had one pen empty and one was cleaned and whitewashed every day. Then the next day another one was cleaned and whitewashed, so they were all cleaned that way regularly, and they never had the cholera. In order to keep them clean, they had a platform elevated



one foot, and the little pigs always went up there themselves.

Chairman McKerrow—A pretty good plan. You won't have cholera if you have everything all right. Just the same, there have been cases where everything seemed to be clean and yet they had the cholera.

A Member—What do you disinfect your hog house with?

Mr. Imrie—I never use anything but fresh lime.

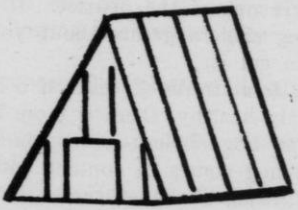
Mr. David Imrie—We had an old Scotchman from Canada once who had his hogs sleep upstairs, so they would keep clean. He had stairs for them to go up and he said he had no trouble teaching them to go to bed.

Mr. Campbell—Some twenty-five years ago I met Mr. McKerrow and he recommended the A-shaped pens. Well, I had a set of them made. I have twenty-five little yards about twenty feet deep and four feet wide. I agree with what Mr. Imrie says about the mud. When you are feeding twenty-five brood sows, you go wading through considerable mud and I made up my mind to have a different kind of a pen. We keep our conditions as clean as possible as a preventive of hog cholera, but even that will not prevent it coming in your neighborhood. I have lost some forty-odd head before we got through, and they couldn't be in better condition than they were when it caught them.

A Member—Do you think you know any more about it than you did twenty years ago?

Mr. Campbell—I cannot say that I know anything about it. We vaccinate our hogs now and we do not have it.

5.

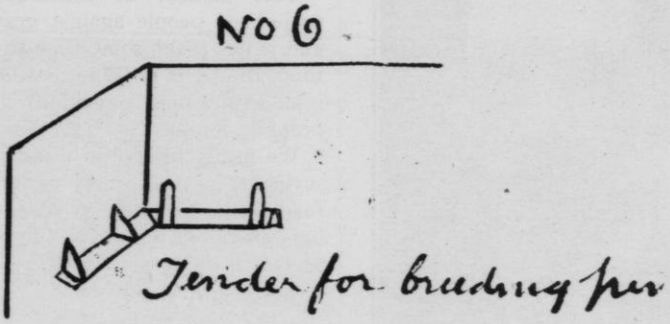


Mr. Imrie—About thirty years ago I rented father's farm and we had about one hundred and fifty hogs running free. We lost all but one with cholera. When we had about forty-five left, I bought a young sire, a splendid young

animal, he was right with those hogs every day and he never contracted the cholera, so I think there is something in the resistance idea. He had been fed and treated right.

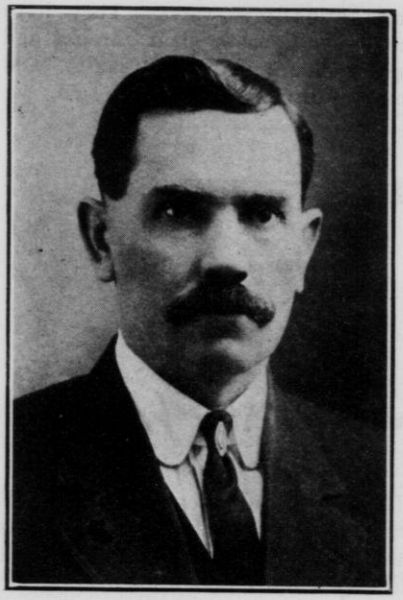
Mr. Cheesman—Most everybody leans heavily on the serum treatment. I am not going to discuss that, but I want to tell you something that was done in Massachusetts a few years ago. A certain man had an awful dose of hog cholera. We called in the faculty of the medical college. We had about fourteen left, we turned them out in the month of February on the snow and ice and they all got well.

A Member—Over in our country, a neighbor had sixty hogs. They began to die last September, he called the veterinarians in and one prescribed for swine flake, and another for hog cholera, but they did not succeed in stopping it. I asked this gentleman, "What kind of a place have you got for those hogs? Are they running out in a clean place, that is, did you disinfect?" He replied: "We have a kind of pot hole that our supply tank runs into and my hogs get in there and wallow in this pot hole and sometimes drink this water. They have tumors underneath their throats and they decline and die." I said: "Did you ever disinfect?" "No," he said, "we killed one of those hogs and opened his throat, and he had this tumor under his neck containing a nasty liquid. We cut that open and I took a microscope and examined it, and we could see germs and those wire worms, even with the bare eyes. Then we cut farther down and all along we found those little wire worms, even in the lungs and the intestines. We killed another and it was the same way." The man lost all his hogs.



GRAVEL ROADS IN WISCONSIN.

J. T. Donaghey, Chief Inspector, Wisconsin Highway Commission.



J. T. Donaghey.

The subject of gravel roads has become very important for many of the towns in Wisconsin. There has been built under the provisions of the State Aid Highway Law during 1912, 1913 and 1914, 440 miles of such roads. Previous to that time, hundreds of miles had been built throughout the State with varying results. Some were built fairly well, but the majority were built by simply hauling the gravel from the pit as it came and dumping it on the surface of the road, without any preparation of the subgrade, no attention being paid to alignment, and in many instances not taking time to spread it, thereby causing the traffic to take to the ditches until the elements had assisted in leveling the surface to a point where it was safe to attempt traveling it.

This manner of construction had prejudiced people against gravel roads and it has taken some time to convince them that it is possible to build a good road with almost any kind of gravel if properly handled.

We firmly believe in using gravel for surfacing at least ninety per cent of the roads in the counties of Wisconsin having gravel available, and there are several good reasons why we advocate its use whenever possible.

Why We Recommend Gravel Surfacing

(1) The construction cost is less; therefore, more miles can be obtained for the money expended.

(2) Repair and maintenance cost is less.

(3) No other type of road will return as great a percentage of its cost to the local unit that pay the tax.

(4) More satisfactory results are obtained for the traveling public.

(5) When the increased traffic demands a higher type of road, the gravel may be used for shoulder material.

Construction Cost Less

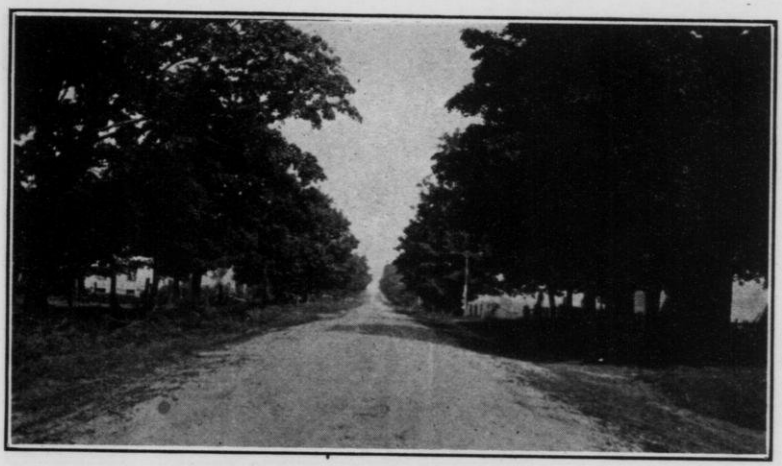
The principal reason for the cost of construction being less than for other types of roads is due to the fact that where gravel is available it can be delivered to the road at a much less cost

than can any other material, on account of shorter haul and ease of handling. The cost of grading, culverts and preparation of the subgrade should be just the same for a gravel road as for any other type if you expect to have a high-class road when completed. Our nine-foot gravel roads are costing on an average about $2,200.00 per mile, and the cost per cubic yard of material in place is $1.15. The average cost of our nine-foot macadam is $3,200.00 per mile, or $1.75 per cubic yard of material in place.

The cost per mile in both cases includes grading, culverts and guard rail. This shows a difference of $1,000.00 per mile in favor of the gravel road, which is nearly all chargeable to the difference in first cost of material, and getting it to the job. However, a small portion is chargeable to the extra rolling that stone requires over gravel.

In the early stages of road improvement in any locality, the greatest problem is to educate the people to a point where they demand better roads and are willing to produce the money necessary to build them. The first road built in any community along modern ideas is severely criticized, and mostly on account of its high cost. If gravel is used, more miles will be improved, therefore giving better satisfaction to the tax payer and creating a sentiment for better roads in the community.

After the people have seen the benefits of the improvement, a higher type of road may be built in the same locality and receive less criticism than the cheaper road did to begin with. This matter is worthy of consideration, for if at first the tax levy is very materially increased due to the improvement, there is apt to be some change in sentiment.



Nine-foot Gravel Road, town of Summit, Waukesha County, built in 1914 at a cost of $2,200 per mile, including grading and culverts.

Repair and Maintenance Cost Less

It is a fact beyond dispute that the repair and maintenance cost is less on a gravel road than on any other type of road. Where the building of gravel

roads is recommended, the material must be available at a reasonable cost; therefore, it will be available for repair and maintenance at nearly the same cost. If a hole or rut appears in a gravel road, or if the surface becomes worn flat, it can be repaired very satisfactorily without the use of expensive machinery, necessary for the repair of a stone macadam or other type of road. When you consider the interest on the difference in the investment between a fifteen-foot gravel road at $3,700.00 per mile and a fifteen-foot concrete road at $12,000.00 per mile, which interest is about $450.00, you will readily see that you can maintain the gravel road from year to year for that amount and have at the end of almost any period of years a road as good or better than when built, providing that amount is expended each year in the addition of necessary material and a surface treatment of some good asphaltic oil or tar product.

Money Returns to Tax-Payers Pockets.

Where local gravel is used, which is the case on practically all of Wisconsin's gravel roads, at least eighty-five per cent of the cost of the work is for labor. This money is usually spent in the locality where the road is built, and eventually gets back through the different trade channels, to the pockets of the tax-payers. This argument may sometimes apply to a stone macadum road, but never to a concrete, brick or asphalt road. When you demonstrate to the tax-payer that he is getting the road he travels improved, and that the money spent for the improvement is returning to his pocket, he naturally wants more of that kind of road, and less of the kind that sends his hard-earned cash out of the county, and, in many instances, out of the State.

Nine-foot Gravel Road, town of Delafield, Waukesha County, built in 1913, at a cost of $1,800 per mile, including grading and culverts, and surface treated in 1915.

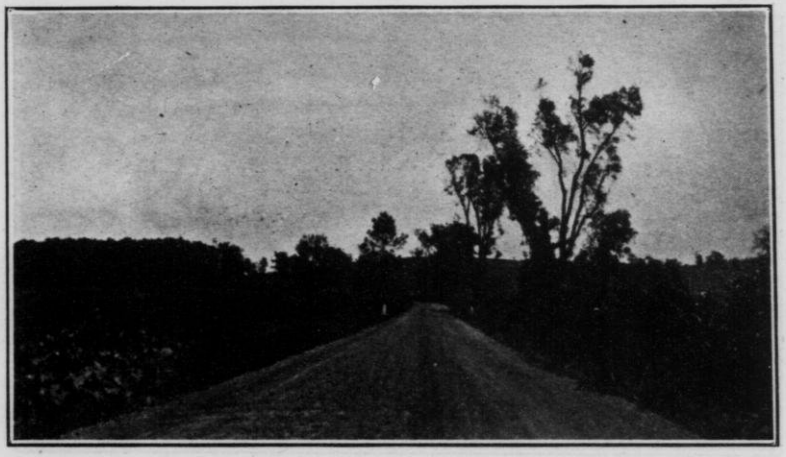
More Satisfactory to the Traveling Public.

There is no question but that a well-built gravel road with a proper surface treatment is easier on both horses' feet and automobile tires than any other type of medium-priced surfaced road. This is a very important feature, and one that does not receive enough consideration. In localities where both gravel and stone macadam roads have been properly built in the past and not surface treated, the gravel surfaces stand out plainly as being far superior for both horse and automobile travel.

May Use for Years and Still Have Nearly Original Value.

The last reason to be considered is a business one entirely. The argument is often advanced that in building gravel roads, we are wasting money for the reason that very soon traffic will demand a higher type of road, therefore causing the loss of a great portion of the cost of the gravel road. When that time comes, and it will come sooner or later, for our main roads at least, the gravel can be rooted up and pushed to the outer edge of the grade and used for shoulders to the concrete, brick or other type of road that may be best suited to meet the traffic conditions.

This "used gravel" will make excellent shoulders and in many instances by using it the width of the higher type of surface may be reduced, thereby reducing the cost of the new road an amount nearly if not fully equal to the first cost of the gravel road.



Nine-foot Gravel Road, town of Delafield, Waukesha County, before surface treatment.

Characteristics of Good Road Gravel

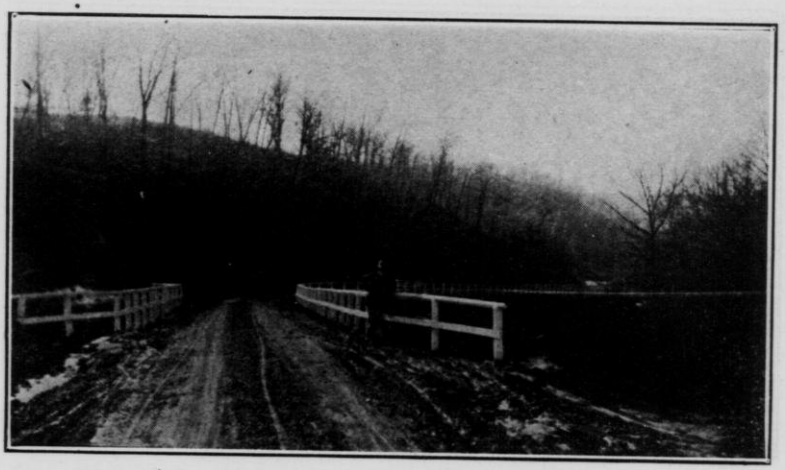
Very few of our gravel pits contain material that conforms to our ideas of a good road gravel. In some cases, it does not contain binder enough and clay must be added. Again, it may contain too much of either clay or sand or both and some must be removed

by screening. Where the pit contains many stones larger than two and one-half inches in their longest dimensions, we believe in crushing the gravel, as it is just as cheap in the end and gives us a much more uniform and valuable product.

If we could have gravel pits made to order, our specifications would provide for stone from one-quarter of an inch to an inch and a half in size, with just enough clay and good sharp sand evenly mixed to fill the voids. This would mean about eighty-five per cent stone from one-quarter of an inch to an inch and a half and fifteen per cent binder material. However, we have come to the conclusion that a good road can be built of any kind of gravel, if properly handled.

Construction.

The surveys, plans and cross sections for gravel roads should be the same as for other types of surfacing and standard concrete culverts should be built. Where necessary, provide under-drainage and insist upon just as good a foundation for a gravel road as for any other type; it is impossible to get a good surface on a poor foundation. The subgrade is prepared in the usual manner, by cutting out a trench the full depth and width that the finished surface is to be, having the same crown the completed surface should have.



Nine-foot Creek Gravel Road in the town of Jamestown, Grant County, built in 1915. This is one of the largest jobs completed under the State Aid Law in 1915. It consisted of 25,000 cubic yards of dirt; 10,000 feet of guard fence and 155 cubic yards of concrete culverts, in a distance of 9,800 feet. This work was done by one of County Commissioner Henry Mink's crew under the direct supervision of foreman Fred Skem, a local man.

Pit-run Gravel.

In building a pit-run gravel road, remove the large stones, if any, at the

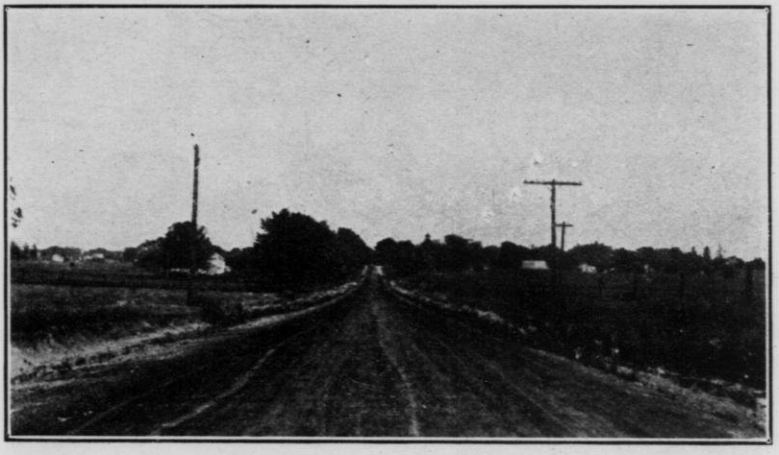
pit, preferably by the use of an elevator and screen, delivering the gravel to the elevator by the use of wheel or slip scrapers. If extreme care is used, they may be removed at the time of loading by the use of five-or six-tine forks. On small jobs, this method is very satisfactory.

Haul loads of exactly the same size in length, width and depth, and be sure they are dumped so as to cover the same length, insuring an even depth of material. Uneven loads as a rule mean an uneven surface.

Practicaly all gravel roads should be built in two courses, plus the binder necessary. Spread the first course evenly to a loose depth of not to exceed six inches. It is generally best to begin at the end nearest the pit and haul over the material as the work progresses. This method saves some rolling.

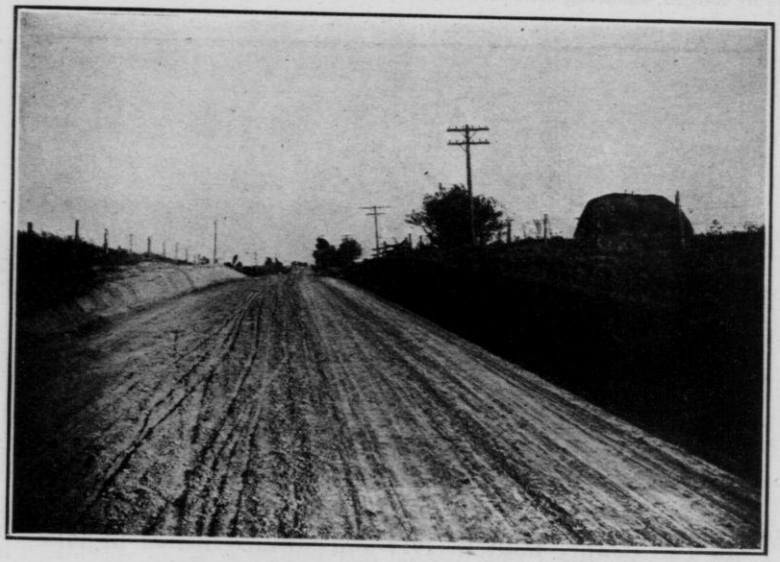
Go over the first course several times with a small road grader, with blade set nearly at right angles, to even up the surface before rolling. After proper rolling of the first course, start the second course at the opposite end and work towards the pit, spreading to a loose depth of about five inches. Harrow thoroughly with a heavy pegtooth harrow before rolling. Most pits run uneven; the harrow will tend to mix the material and will also bring the coarse stone, if any, to the surface, where they can be raked off. Sometimes it is necessary in clay to help in bonding, which can be done at the same operation. Use the light grader again a sufficient number of times to insure the removal of all wavy appearance, and to give the surface the proper crown.

It is often necessary to use the grader a second time after the rolling has been started to remove all of the wavy appearance. Fill the voids in the surface if there are any with fine gravel; then roll thoroughly and flush. Occasionally better results may be obtained by thoroughly wetting the material and allowing it to dry to such an



Fifteen-foot Limestone Macadam Road in the town of Metomen, Fond du Lac County built in 1914 and Surface-treated in 1915.

extent that the binder will not pick up on the roller, before attempting to roll. This method insures the proper bond from the bottom up. It is difficult to advise the proper amount of water for a gravel road, as no two sections can be treated alike. If possible, throw the road open to travel while the roller is yet on the job and if ruts appear fill them at once by use of the light grader or road drag and roll again.



A First-class Earth Road, town of Shullsburg, Lafayette County, built in 1915.

Make provision for following up with maintenance immediately if necessary, as well as surface treatment when the surface becomes well cured. It requires no more material to build a high-class gravel road than one you must apologize for every time you have occasion to travel it, the difference in cost being mostly chargeable to extra care in the methods of construction, which adds but little to the total cost of the work.

Crushed and Screened Gravel.

In many of the eastern and southern counties we have numerous gravel pits of excellent quality, but usually containing a rather high percentage of large stone, and many of them contain an excess of binder. To handle this particular kind of gravel economically and to get the very best results it becomes necessary to crush and screen the material. Use the ordinary portable rock crusher, screen and bins, with a capacity of from 80 to 120 cubic yards per day.

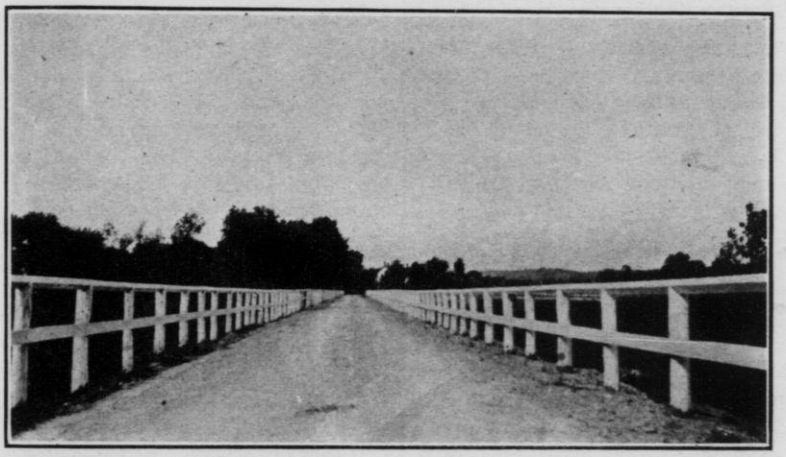
Deliver the material to the crusher by teams with slip scrapers and block and tackle, or one of the various gravel conveyors that are on sale. The past season, one of our progressive counties purchased three improved gravel outfits, consisting of crusher, screen, bins and a conveyor that permits of deliver-

ing the material to the conveyor with wheel scrapers from where it is elevated to the crusher, with no additional labor cost.

Each outfit costs complete about $1,800.00 and will easily save to the county its entire cost in one season's work. The crushers should be equipped with two section screens, each section thirty inches in diameter and four feet long, the first, or lead section, having one-half inch perforations and

1 material spread to an even loose depth of about five inches, and well rolled, the voids having been filled with the necessary amount of No. 3 material. This course should be laid for a distance of 400 feet before starting with the second course.

The same care should be taken in having uniform loads evenly spread. The second course should consist of from four to five inches of No. 2 material evenly spread and rolled, the voids



Nine-foot Limestone Macadam Road, town of Jamestown, Grant County. Note Standard Guard Fence.

the second two-inch perforations, which separate the material into three sizes. The No. 1 size consists of material refusing the two-inch ring; the No. 2 size the material refusing the one-half inch ring and passing through the two-inch ring; the No. 3 size, the material passing through the one-half inch ring.

Prepare the subgrade the same as described for pit-run gravel, but start construction at the end of the road opposite the gravel supply, in the same manner as for a stone macadam road. The first course should consist of No.

well filled with No. 3 material, the surface brought to the proper crown with the small grader, then thoroughly rolled and flushed in the same manner as a stone macadam road. Some pits contain quite a percentage of clay and in this case a harrow should be used to work in the No. 3 material, thereby greatly benefiting the job. In some cases there is a surplus of No. 3 material, which should be distributed at convenient points along the road for maintenance purposes, or used for surfacing private entrances or road inter-

sections. In many pits better results may be obtained by crushing fine enough for practically all the material to pass through the No. 2 ring, and carry over into the No. 2 material just enough of the No. 3 for binding material to fill the voids. The latter is done by placing a sheet iron jacket around the inner portion of the first section of screen, which does not permit the finer material to pass through the one-half inch perforations, but carries it over with the No. 2 material. This must be regulated so as to just fill the voids in the No. 2 material and no more.

The balance of the No. 3 material will naturally drop into the No. 3 bin and may be used in finishing the surface where additional binder is required, or for future maintenance and other purposes. If this method is pursued, both first and second courses are built of the same material and results in a better type of road, which is easier to build, cheaper to maintain and one which gives better satisfaction than any other type of gravel road.

Use just as much care in finishing a gravel road as one costing three times as much. Trim up the shoulders properly and clean out the ditches so the water can get away from the road immediately after each rain. The last fifty dollars spent in an intelligent manner shaping and trimming up any mile of road stands out more plainly than does any other one hundred dollars spent on the same road.

Typical Northern Wisconsin State Aid Work, town of Pike Lake, Oneida County.

In any locality where there is gravel within a reasonable distance, by all means use it, unless traffic conditions demand a higher type of surface. If it is not of the right proportions, by proper methods of handling it can be made so. Should it run too fine and contain too much sand, do not give up. Apply the proper amount of clay for a binder and mix it thoroughly by use of a disc or peg-tooth harrow. It will no doubt rut some after opened up for travel. If it does, use a road drag after each rain and you may rest assured that it will be a first-class road in a short time.

This is the method followed by the Highway Commission in the construction of the many miles of high-class gravel road built during the past three years under the State Aid Law, and we believe the results obtained for the money expended on these 440 miles of gravel road has gone a long way towards creating the present great demand for road improvement in Wisconsin.

DISCUSSION

A Member—Will a gravel road be as satisfactory on a heavy clay soil as a road built of crushed stone?

Mr. Donaghey—Yes, I believe the gravel will be more satisfactory, providing the road bed is properly drained, the gravel crushed and screened and the same care taken in the construction of both roads.

A Member—Do you advise the use of pit-run gravel without crushing?

Mr. Donaghey—In some cases, yes, where gravel runs very fine, or when it is impossible to get a crusher on the job. If gravel in the pit contains quite a percentage of stone larger than two inches, it is very necessary to crush it.

A Member—How great a distance would you advise hauling gravel?

Mr. Donaghey—That would depend upon local conditions entirely. In Marinette county, gravel is frequently hauled a distance of six or seven miles during the winter months, and a road is secured at reasonable cost. In most cases, a haul of three or four miles, if hauled during the road building season.

A Member—Is it advisable to break up field stone for building roads in Wisconsin?

Mr. Donaghey—This is also a question which local conditions must govern to a great extent. In many counties of Wisconsin, field stone is the only material to be secured for surfacing our highways, and in these counties it is advisable, but in any county where gravel can be found at a haul of not to exceed four miles we can usually build cheaper roads than by crushing field stone.

A Member—Does the concrete road meet the needs of both automobile and heavy team traffic?

Mr. Donaghey—I believe it does. Concrete is the very type of road to build where there is extremely heavy auto travel combined with heavy team traffic.

A Member—The concrete road built here last season is cracking to quite an extent. How can it be repaired?

Mr. Donaghey—During the past three years we have built 84 miles of concrete roads in the different counties of Wisconsin and cracks have appeared to some extent on all of this work. However, they are not serious and do not injure the surface materially. They can be repaired very cheaply by cleaning out the cracks and filling them with asphalt covered with good sharp sand. I know of other roads where cracks have appeared fully as frequently as in your road that have been treated in this manner, leaving the surface in practically as good condition as though no cracks had developed.

A Member—We had a few holes appear in our road. We cleaned them out and filled them with cement, leaving them as good as ever.

A Member—Would it not be better to reinforce concrete roads with wire?

Mr. Donaghey—We do not deem it necessary to reinforce a concrete pavement, except when built wider than the eighteen feet possible to build under our State Aid Law. Where village or city streets are paved with concrete, it is advisable to reinforce at least the center twenty feet of the pavement.

Adjourned to 7:30 P. M.

EVENING SESSION. 7:30 P. M.

Supt. C. P. Norgord, presiding.

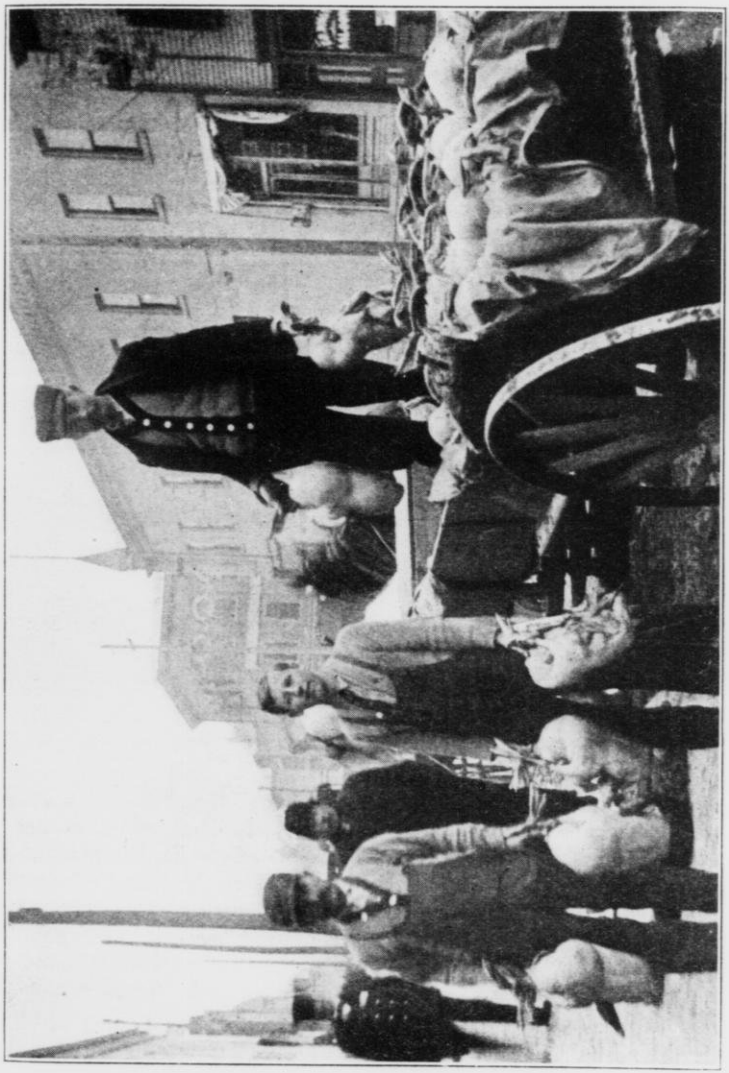
POULTRY MARKETS AND PROFITS IN POULTRY.

Geo. W. Hackett, North Freedom.

For several years we have been active in preaching the doctrine of "more and better poultry" on the farm and statistics show that the past ten years have brought an increase in poultry products in Wisconsin amounting to more than 85 per cent gain. This has been going very well when the extent of the product is taken into consideration. Better methods of housing and care are being employed each year and the industry is gaining in prominence and importance. It is now time that more attention should be given to the marketing of our poultry and eggs if we are to receive the greatest benefits in cash returns. It is easier to cater to a present demand than to create a demand for special products and in most cases the common demand will bring the greatest profits, all things considered. All food products should be standardized for classification on the markets, but so far as poultry and eggs are concerned, but little progress has been made in that work. It was not until within the past two years that even the leading poultry organization of the country, the Ameritan Poultry Association, took any active steps to create a standard whereby to classify and judge market poultry and eggs. A committee especially qualified to do the work has carefully prepared a text for such a book, the publishing of which has been authorized, and it should appear upon the market in the near future. The work has been approved by the leading marketmen and commission men of the country and its general use is sure to result in great good.

Wisconsin Conditions Favorable.

From the standpoint of market poultry, Wisconsin is admirably situated. We have an abundance of the two most important foods to successful feeding of poultry for market, corn and buttermilk. I have taken pains to inquire of the commission men of both Milwaukee and Chicago as to what are the greatest faults with our Wisconsin poultry when placed upon the market. The answer was practically the same in each instance; thinness of condition and lack of uniformity. It would be hard to estimate the loss sustained annually by our Wisconsin farmers alone from these causes and they could both be easily remedied. Our poorest farmers do not think of putting their hogs or cattle upon the market without first having given them special feeding to fit them for market. There is just as good reason for fitting the poultry for market as there is for fitting the hogs or cattle.



A scene on the Goose Market before Thanksgiving day at Watertown, Wis., the home of the stuffed goose industry in America. Mr. August Koepke markets 62 stuffed geese which average 22 pounds at 24 cents per pound.

Fitting for Market.

For improving the quality of dressed poultry, there is no other method of fitting equal to crate feeding, but the farmer is not ready to adopt that method, nor is it to his interest to do so, for the reason that crate fed chickens, when shipped upon the market in small lots, do not command any better price than the thin stock if they are equal in market type and uniformity. Most of the grading is done after the stock is dressed, except when bought up for feeding purposes by the packers for their large feeding plants. It will, therefore, be seen that the farmer's principal interest in feeding lies in the additional weight thus secured and no other feeding he can do will bring better returns on his investment. Any improvement in condition adds improvement to quality as well and will work to the desired end and to closer grading and better market conditions. The constantly increasing shortage of the production of meat animals adds materially to the possibilities of poultry keeping.

Wisconsin Conditions Unusual.

Not alone in the possession of corn and buttermilk for poultry feeding do Wisconsin conditions excell for market poultry work. Our numerous beautiful lakes afford extensive summer resorts where thousands of tourists spend their vacations, and thus supplies a market at our very doors that is well worth considering. The tender broiler is a toothsome morsel much appreciated by the tourist, who is willing to pay a good price for such things.

Even the "egg farmer" cannot disregard the market poultry end of the proposition, for in raising his required number of pullets he must, of necessity, produce a large number of cockerels that should return a good profit. These should be ready for the market during the season when tourists are numerous at these resorts, and at from one and one-half to two and one-half

Peter West Taming Geese, preparing for the stuffing.

pounds will bring about as much as the same chicks will bring if allowed to run on the farm until late in the fall, and their room is much preferred to their company while the pullets are being developed into layers.

Feeding Stations.

With the rapid increase in the poultry business in Wisconsin, the time is now ripe for the establishment of large feeding plants, such as are in operation in several of the States farther south, where more attention has been paid to this line of work. Up to the present time, we have but few feeding stations in Wisconsin and they are but small ones.

By feeding stations we mean the establishment of plants where chickens purchased from the farmer, considered by him to be ready for the market, are put in fattening crates and there fed for from fourteen to twenty days on a ration of corn meal, low grade flour and buttermilk mixed to a batter. This method of feeding not only puts on the flesh rapidly, but also whitens and makes it very tender. Crate fed chickens command a fancy price from special city trade.

At the present time some of the large packing plants of the country are looking for locations in Wisconsin where the farmers will supply the required stock to insure success in such a project. It would be better if farmers would organize and co-operate to develop this enterprise, but if they will not, the feeding and cold storage plants of the great packing concerns should be encouraged.

A Flock of Toulouse Geese Ready for the Stuffing Process.

We are pleased to note the following statement from a circular letter issued by the Mazo Poultry and Egg Company, of Mazomanie, Wis.: "It is gratifying to us to note the improvement in poultry in the last two years, and from the enthusiasm displayed, there will be much bigger efforts made this coming

season to improve the quality as well as enlarge the flocks in this community. Let quality and uniformity be your slogan." They state further that in May, June and July of last year that they paid as high as 30 cents per pound for broilers and could not get near enough to supply the demand. They also recommend that the later cockerels be caponized and agree to contract for all capons offered at prices far in excess of that paid for ordinary chickens. This comparatively small enterprise only indicates the great possibilities of market poultry in Wisconsin.

The stock for these crate feeding establishments, like that which would be considered in good market condition, should be specially fed by the farmer before being offered for sale, as the crate feeding is simply a finishing process. The farmer will therefore find it profitable to yard his fattening stock in small runs and feed a good fattening ration for from two to three weeks before selling. At least one feed daily of mash mixed soft with buttermilk would be advantageous.

Raising the Chicks.

There is no one phase of the poultry business upon which so much depends as the raising of the chicks. Artificial means must be employed to produce numbers in paying quantities. This involves considerable careful attention during the earlier stages of the chick's life and, in fact, it can never be neglected. Rapid growth from the start is as essential in the chick as in the pig or calf if best results are to be obtained.

Back of the chicks should be good, vigorous, well developed breeding stock, supplied with the nutriments in their food that give life and vigor. The brooding method, if artificial, should provide ample ventilation and a system of heating that will be dependable. Clover chaff and other suitable litter should be provided to induce vigorous exercise, and care should be taken not to over-feed during their early stages of development. Milk, either sweet or lobbered, is good for chicks at all ages and beef scrap is necessary to most rapid development.

It is doubtful if any better method of developing broilers can be found for the general farmer than that of allowing them to have the regular runs, with all the good, wholesome feeds they will consume.

Too much cannot be said of the importance of providing additional room adequate to the rapidly growing youngsters, that their quarters may not become crowded, and these quarters should be kept scrupulously clean.

Growing chicks require a lot of green feed, either growing in the runs or supplied in various forms. Sprouted oats are very good if the sprouts and roots are not allowed to grow too long and fibrous.

Uniformity of Stock.

Uniformity of stock can only be secured by raising pure bred stock that has been bred for a definite purpose for many generations. Not only that, but it would be of still greater advantage to breeders if they would do a little community work and as far as possible raise the same kind of chickens in one locality. It would work to the same advantage that it does in other lines of live stock breeding, and the satisfaction alone would well repay the required effort to change from the common mongrel to the pure bred fowl.

Goose Feeding.

There is one line of poultry feeding in which Wisconsin excels, and that is the

fattening of geese by a special process which produces a carcass of the most excellent quality that demands an extraordinary price, which is fixed at two cents per pound above the average number of pounds weighed by the geese offered by a feeder; that is, if the average weight of the geese offered was 24 pounds, the price would be 26 cents. This special feeding is carried on in only a limited territory in the state, namely, around Watertown and Fond du Lac. The extraordinary weight of 351 pounds has been attained by this method of feeding. Corn meal, low grade flour and milk constitute the feed in the main.

The producing of winter ducklings is also a profitable department of poultry keeping in our State, where the work is reduced to a science and all the conditions are right, but it is not to be recommended to the general farmer.

Marketing Eggs

Much has been said and written about the co-operation of egg marketing in this country, but only in a few instances has any progress been made, although wherever tried out the profits have been greatly increased. The average farmer will not take the care necessary to gather his eggs strictly fresh and provide the means to keep them clean and to grade them as the best trade demands. The fact that about 17 per cent of the total egg product is lost on account of the condition in which it is offered for market should be an incentive to arouse farmers to more business-like methods in this important branch of industry. This will probably not be accomplished until stringent laws make it a necessity. At the present time, No. 3 eggs, or "blood-rings," cannot lawfully be shipped in interstate commerce. The Danish people have set an example for the world as to what can be done by cooperative egg marketing and the strict code of rules by which they must abide has made for them a reputation in the best markets of Europe that has made poultry keeping one of the most important industries with that people. Our American farmers should not be satisfied until they have reached that goal.

DISCUSSION

A Member—How are those chicks fed to make them weigh two pounds at the age of ten weeks?

Mr. Hackett—This weight is obtained by feeding soft mash exclusively after they are four or five weeks old. For best results the mash should be mixed with buttermilk or sour skim milk and for the last days of the feeding period the mash should contain a large percentage of corn meal and low grade flour.

Supt. Norgord—How is the stuffing of geese you referred to carried on at Watertown? Is it a profitable business?

Mr. Hackett—It is claimed to be a very profitable business, but it is not followed by a great many people. As stated before, the food is prepared in the form of noodles and forced down their throat. I understand there is a law against it, but it is not enforced. The law was enacted to prevent the use of cramming machines for forcing fattening poultry. These geese are fed by hand.

A Member—Are those geese good eating?

Mr. Hackett—They are indeed, most excellent eating. The material they are fed, especially the large amount of buttermilk, makes the meat white and of the finest flavor.

Dr. Porter—This process of stuffing geese is shown on the monuments of the Egyptians as being carried on there 3,500 years before Christ. They stuffed geese with wads of dough.

Mr. Hackett—I do not believe this method of feeding is inhuman. The use of the stuffing machine is a different proposition. In this day of research and invention, we find we can learn many things from the methods of the Egyptians of long ago.

A Member—At what age would a chick be at its best for crate fattening?

Mr. Hackett—Probably at about four months as a rule, but at any age a chick should be in good condition before going into the crate. By good condition I mean in a condition that is generally considered ready for the market. A chick in that condition can be finished in about ten days.

A Member—Could sufficient weight be added to make crate feeding profitable after chicks are already in that condition?

Mr. Hackett—If the profits in crate feeding depended entirely upon the additional weight obtained, the profits would be fair, but the greater profits come from the improving of the flesh, for which a fancy price can easily be obtained when a trade is once secured for the same. It is not unusual to obtain from three to five cents more per pound for these fancy chickens. We would advise the farmer to try crate feeding a few chicks for his own table.

Music by Orchestra.

KINDNESS TO OUR FRIENDS, THE DUMB ANIMALS.

Dr. A. S. Alexander, Madison, Wis.

"The greatest need of America is more education of the heart."—*Hiram Powers.*

"The lack of humane education is the principal cause of crime."

"Show me the laws of a State for the prevention of cruelty to animals and I will in turn give you a correct estimate of the refinement, enlightenment, integrity and equity of that commonwealth."—*Hon. L. T. Dashiell, Speaker of Texas House of Representatives.*

An interesting and instructive lecture on "Kindness to Our Friends, the Dumb Animals," was given by Dr. A. S. Alexander, of the College of Agriculture, of the University of Wisconsin. It was an extemporaneous talk and finely illustrated by over one hundred stereopticon slides.

Dr. Alexander in his introductory remarks asked, "Are animals dumb?" and to this he said he must answer in the negative. Continuing he said, "Animals have languages of their own, according to their kind, if we can but understand their speech and interpret the signs they make. To do so we must love Nature and her works and become keen, appreciative observers. There is no one so deaf as the person who will not hear and to such an one animals are dumb. But they do talk! Not as did Balaam's beast of burden, yet in simple comprehensive language."

To illustrate this, the speaker said that when a horse that has stood for a long time waiting for its driver on a cold winter's night whinnies to him as he appears at last, that call is speech, for does it not plainly mean, "Say! Old man; do you know that I haven't had my supper and that it's awfully cold standing out here?" Of course it meant that, but perhaps the driver paid no heed to the poor dumb (?) beast. "That was the speech of interrogation," said the speaker, "and we have all heard the loud neigh of recognition, the shriek of anger, the groan of pain and have read in the Bible of the 'Ha, Ha!' of the war horse among the trumpets scenting the battle from afar. It is true, however, that our servant, the horse, suffers in dumb misery under circumstances that would cause the dog to whine or yelp, and it is largely for this reason that men take so little notice of the suffering entailed by numerous cases of lameness and other sources of cruelty.

Nor can one say truly that our servant, the dog is dumb. What a flexible language is his of tongue and tail! I need but mention his growl of anger, his snarl of battle, his howl of dejection, his sad song to the moon, his ecstatic bark at play, his woeful yelps of agony, his expectant music of the chase, his exultant cry of victory. Have you not thrown a ball for him to fetch and had him lay it at your feet and cry in sign language, 'Say! Mister Man, do that again. It was lots of fun.'

Of course you have and you could give me hundreds of illustrations to show that our so-called dumb servants do talk, and that plainly, to those who have ears to hear. And are they not more than servants? Assuredly they are. Were it not for the loving companionship of his dog, many a lone shepherd out on the vast,

still plains of the frontier would go mad from isolation. Lost in the wilds of our own forest lands of the northern counties, hunters become insane, seeking the way home. Under such circumstances, a dog would be much more than a servant to the lost one. He would serve by finding a way out of the difficulty, but do more in the kindly companionship that would cheer the heart of his master and prevent his mind from becoming unbalanced. Away on the snow-clad peaks of the Bernese Alps, those heroic dogs are not servants alone, bringing succor and hope of life to storm-bewildered travelers. Their companionship saves as truly as the stimulants they carry. 'What is home—without a dog?' asked Bob Burdette, and he meant, in this inquiry, the companionship rather than the service of the beast. But whether we regard animals as dumb servants or intelligible companions, they deserve merciful treatment from their masters."

Many beautiful pictures of dogs of all kinds were used. Some of them showed the intelligent, perfectly trained collies of Scotland, the strong-set collie for slow work on the fertile farms of the lowland; the slim, fleet collie for fast work and long distance running in "herding" the Cheviot and Black Faced sheep of the green hills and heather-clad mountains. "One of these dogs will do as much work as could forty men on the mountains," said the speaker, "and they are trained by kindliness, but firmly, and are properly fed, managed and housed."

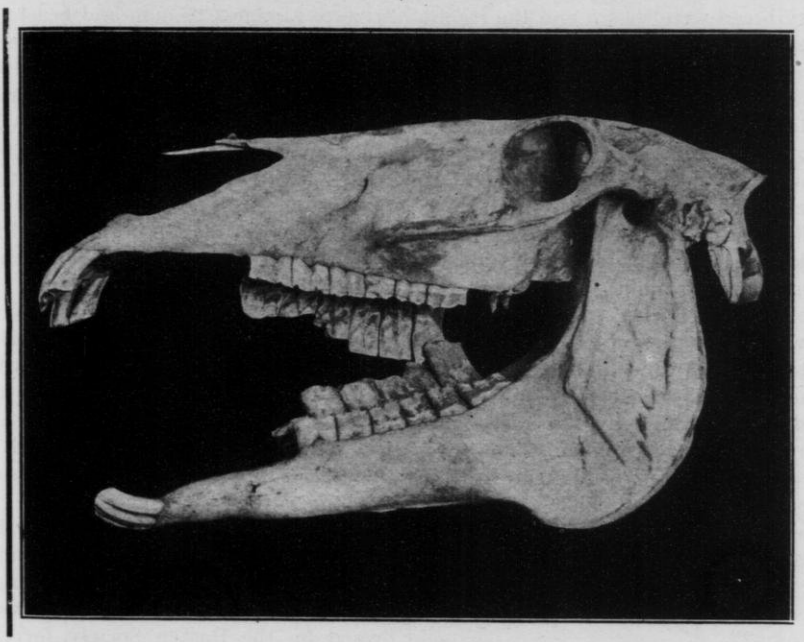
He then spoke of the hundreds of nondescript, "yellow cur dogs," so common in the country. The poor man's pet, "for did you ever notice," said he, "that the poorer a man seems to be, the more useless cur dogs he will keep—and fail to feed? Such dogs, when not howling to the moon and disturbing the peace of the neighborhood, often are out slitting the throats and supping the blood of somebody's good Shropshire sheep—living, in fact, at the expense of the neighbors and causing serious damage that is seldom fully paid for in Wisconsin, owing to the inadequacy of the present law relating to the subject."

Upper Jaw of Horse, Normal Condition.

The lecturer showed a good picture of kindly, intelligent Frank Kleinheinz, shepherd at the Wisconsin Agricultural Experiment Station, who has won international fame by the fitting and showing

of fat sheep, which have carried almost all before them at the Chicago International Live Stock Exposition, since the inception of those shows, and who is a strong advocate of better legislation relative to the sheep-killing dog. The need of good shepherds, properly trained collie dogs and the control of worthless curs was strongly brought home to the hearers by a slide showing among stock and game, in the veterinary hospital and in the lonely, dismal city "pound,"—"the place where a feller needs a friend," as the speaker said, in bespeaking kindness for animals, great and small.

Other slides showed that animals can be kind to one another, that kindness pays in keeping work horses in good condition for effective service and cows



Have the Teeth Attended Annually, Else this Abnormal Condition May Result.

192 sheep, out of a flock of 200, killed by two stray dogs one night on a farm in Michigan. Slides were also shown of St. Bernard dogs rescuing travelers on the Alps, and of the monument in Paris to the noted dog, "Barry," of this breed, who saved the lives of 41 travelers.

Many interesting anecdotes were told of the sagacity of dogs accompanied by pictures of dogs with children, working for a maximum production of wholesome milk.

Accompanying pictures showed galled, injured, paralyzed and suffering horses and the speaker told how kindly care may prevent such sores, many of the injuries, much of the suffering and azoturia, which is the commonest cause of paralysis. That disease is caused by feeding the customary ration of oats, or other rich feed, while a work horse is

standing idle for one or more days in the stable. "Never let a horse stand for a single day idle in the stable," advised the speaker, "and," he added, "greatly reduce rich feed and enforce exercise, when there is no work for the horse to do, and azoturia and lymphangitis ('Monday morning disease') will become practically unknown."

Pictures of the champion cow of each dairy breed were shown and the record of each cow stated, then dirty cows in filthy stables followed and the speaker made the point that kindliness helps materially in the making of great dairy records, that all cows deserve clean, light, well ventilated stables, that it is cruel to keep them in filthy, hot, dark badly ventilated hovels and that the milk of the cow kept in a dirty stable is dangerous and unfit for human use. The speaker clinched his argument by showing a picture of clean absorbent cotton through which had been strained clean and fairly clean milk and blackened cotton soiled by the dirty and filthy milk it had *cleansed*. "The wire sieve and the cotton readily remove solid objects, large and small," said the speaker, and then he added, "But let me ask you a solemn, serious question—and please consider the matter carefully before you answer—what becomes of the soup?"

The lecturer sketched the history of Humane Society organization in America and incidentally showed a good portrait of Governor Emmanuel L. Philipp, who for years has been the active and honored president of the Wisconsin Humane Society and "who is trying," said the speaker, "to make Wisconsin an Emmanuel's Land for animals." A portrait was also shown of Hon. Henry Berg (1820-1888) founder in 1866 of the American Society for Prevention of Cruelty to Animals, through whom was established the first society for the prevention of cruelty to children, and who established the first ambulance for sick and injured animals and invented the artificial or clay pigeon in seeking to abolish trap shooting of the live birds. Another slide illustrated the fine Henry Berg memorial fountain in Milwaukee, which has quenched the thirst of thousands of work horses and day by day silently preached the doctrine of kindness to man and beast.

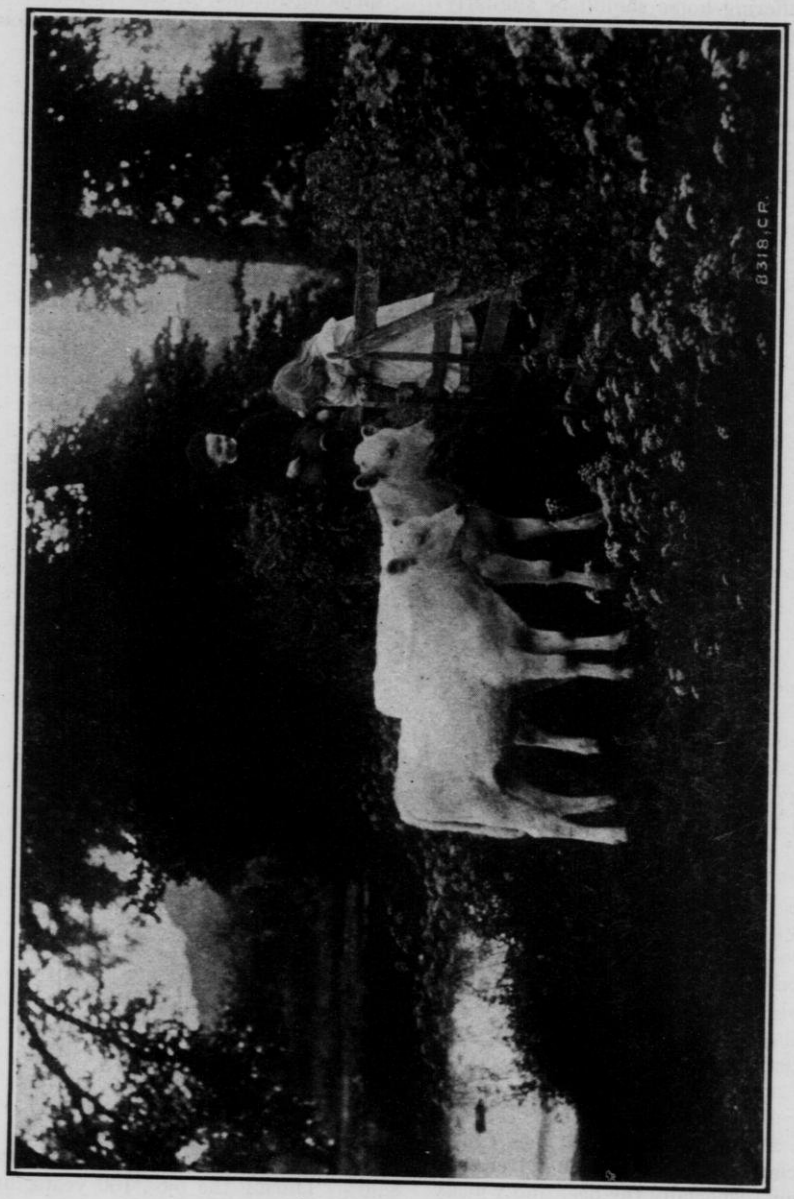
Then came a portrait of Hon. George Thorndike Angell, who died in 1909 after a long life devoted to the furthering of kindness, justice and mercy to living creatures, and a picture of the $200,000 Angell Memorial Hospital for Animals in Boston, Mass., which was built by public subscription. The lecturer told how Mr. Angell founded the Massachusetts Society for the Prevention of Cruelty to Animals some twenty-five years ago, and also the American Humane Educational Society for Prevention of Cruelty to Animals, which has disseminated free literature on the subject throughout the country and led to the orgrnization of Humane Societies all over the world.

To illustrate the good work done by the humane societies, Dr. Alexander showed a picture of the horse watering cart and its magnificent team of horses, owned by the Boston Society for the Prevention of Cruelty to Animals, and by which means 243,673 horses were watered on the streets of the city in 74 working days from the middle of June into September, when the law abolished public watering troughs for fear of spreading glanders. The subject of watering horses and preventing sunstroke and heat exhaustion was at the same time discussed by the speaker, who said that when the man at work on the farm in the hot days of summer every now and then tips up the "little brown jug" and remarks, "I do love thee,"

after each cooling draft of water, the harder working, more profusely sweating and suffering horse should be similarly remembered and its thirst frequently quenched. "Love the horse better than the jug—especially the beer and whisky jug"—said the speaker, "and the work will be better and more easily done by all concerned."

Speaking further on the organization of Humane Societies and urging their establishment everywhere, the lecturer said: "During the past 100 years, humane sentiment has waged an unceasing

Frank Kleinheinz, University of Wisconsin, Shepherd.
"A Man who loves Sheep and so Succeeds with Them."



"Bring Them Up in the Way They Should Go."
—Photo by Chas. Ried, Wishaw, Scotland.

warfare against cruelty—not to mankind alone, but to animals as well. The challenge note of the crusade was boldly sounded when in 1811 Lord Erskine arose in the British House of Peers and pleaded eloquently for justice to the lower animals. Then came "Humanity Martin," the Irish landlord, who on his vast estate in County Galway, organized a personal humane society and as judge, counsel and jury either committed offenders to jail on the spot, or "took it out of them" in person there and then.

In 1822 the "ill treatment of cattle bill," commonly known as "Martin's Act," was made law by the British Parliament and on June 24, 1824, Col. Martin and a few benevolent friends met in London and organized the first regularly authorized society for the prevention of cruelty to animals. From this starting point similar societies have been organized throughout the country. About 100,000 Bands of Mercy also have been formed since the first one was organized in 1882, and Audubon Societies and Bird Clubs are being established everywhere."

Dr. Alexander spoke feelingly on kindness to children as well as beasts and birds. As to animals, he pleaded that every driver of a horse should say, "I will treat this animal that is in my care just as well as I should like to be treated if I were this animal myself," and then he quoted Edward Everett Hale, who said, "We are all in the same boat—animals and men—you cannot promote kindness to one without benefiting the other." He threw on the screen a slide of the "Horse's Prayer" and speaking of it said that if a horse prays the prayer goes no higher than man, because God has said, "I put you into the world to till and dress the gardens. I give you all authority over the brute world. You shall be to them instead of God' (Exodus IV. 16). Let us treat them humanely. Let us anticipate their prayers, and above all, let us love one another."

"The farm boy and girl are by far the finest and most important crop in Wisconsin," said Dr. Alexander, throwing the picture of a big family of boys upon the screen, and then he made an eloquent plea for the orphans and the foundlings in the cities and wished that they might be brought up in the country and given animals for their companions, to love and be kind to and feed and manage properly. "Get an unruly boy to love a pup, or pig or calf or lamb or colt and you instantly regenerate his soul and change his heart so that he becomes easy to mold and lead in the way he should go," said the speaker, and in concluding the lecture he showed a beautiful picture of a child among animals—the celebrated millenium scene—quoted from Isaiah XI, 6, "The wolf also shall dwell with the lamb and the leopard shall lie down with the kid, and the calf and the young lion and the fattling together and a little child shall lead them," and after speaking of peace and good-will among men which, in His own good time and way, Jesus, the Prince of Peace, will surely bring upon earth and end war and suffering and sin and sorrow, he recited the familiar lines:

"He prayeth well, who loveth well
Both man and bird and beast
He prayeth best, who loveth best
All things, both great and small;
For the dear God, who loveth us,
He made and loveth all."

THE HORSE'S POINT OF VIEW

IN SUMMER

If a horse could talk he would have many things to say when summer comes.

He would tell his driver that he feels the heat on a very warm day quite as much as if he could read a thermometer.

He would say,—"Give me a little water many times a day, when the heat is intense, but not much at a time if I am warm; if you want me to keep well don't water me too soon after I have eaten."

He would say,—"When the sun is hot and I am working let me breathe once in a while in the shade of some house or tree; if you have to leave me on the street leave me in the shade if possible. Anything upon my head between my ears, to keep off the sun is bad for me if the air cannot circulate freely underneath it."

He would talk of slippery streets, and the sensations of falling on cruel city cobblestones—the pressure of the load pushing him to the fall, the bruised knees and wrenched joints, and the feel of the driver's lash.

He would tell of the luxury of a fly net when at work and of a fly blanket when standing still in fly season, and of the boon to him of screens in the stable to keep out the insects that bite and sting.

He would plead for as cool and comfortable a stable as possible in which to rest at night after a day's work under the hot sun.

He would suggest that living through a warm night in a narrow stall neither properly cleaned nor bedded is suffering for him and poor economy for the owner.

He would say that turning the hose on him is altogether too risky a thing to do unless you are looking for a sick horse. Spraying the legs and feet when he is not too warm on a hot day he would find agreeable.

He would say,—"Please sponge out my eyes and nose and dock when I come in tired and dusty at night, and also sponge me with clean cool water under the collar and saddle of the harness."

THE HORSE'S POINT OF VIEW

IN WINTER

If a horse could talk, he would have many things to say especially when winter comes.

He would tell his driver how a frosty bit stings and sears his lips and tongue when it is thrust into his mouth without being warmed first.

He would tell how it feels to have nothing but ice cold water to drink, when he is already shivering from the cold.

He would tell of the bitter wind that frosts his sides when he halts, steaming from exertion, and is tied for hours in an exposed place without a blanket.

He would talk of slippery streets, and the sensations of falling on cruel city cobblestones—the pressure of the load pushing him to the fall, the bruised knees and wrenched joints; the tightened straps and the feel of the driver's lash, the panting nostrils and heaving flanks, and the horrible fright of it all.

Yes, the horse would talk eloquently, if he had the power of speech. And having horse-sense, he would urge his driver, not merely for the sake of kindness, but for the sake of maintaining a faithful servant at the highest point of efficiency, to do these things:

Warm the bit before putting it in his mouth.

Warm his water up to a drinking temperature, if it is very cold.

Give him enough to eat, and spread plenty of clean bedding in his stall.

Put a blanket on him in the stable, on cold nights.

Do not leave him standing in a cold wind without a blanket.

Keep him sharp-shod during the winter.

Drive him carefully over icy pavements.

When he falls, quickly loosen his harness and help him to rise, without blows.

Watch for the appearance of gall-spots, and try to heal them before they grow worse.

Be humane with your horse. Treat him as well as he treats you.

MORNING SESSION, MARCH 12, 1915.

Mr. L. E. Scott in the chair. Prayer by Rev. I. W. Corey.

THE FUNDAMENTAL PRINCIPLES OF CO-OPERATION.

Prof. B. H. Hibbard, Madison.

Coming to my subject at once, I am asked to go over the fundamental principles of co-operation. I take it that that means the conditions under which co-operation is likely to succeed, or the conditions under which co-operation is perhaps likely to fall.

Some Causes of Failures

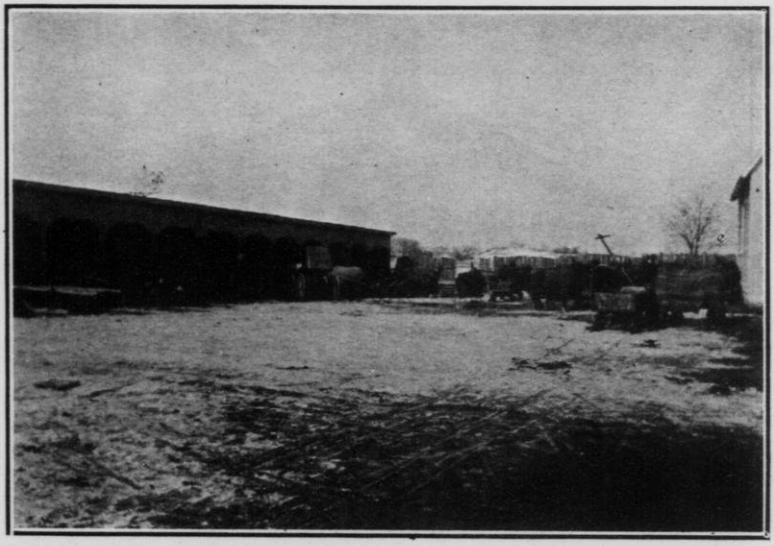
We have in this country an unknown number of co-operative farmers' companies. It has been estimated at 85,000—I do not know whether that number is forty per cent too high or too low. I do know this, that there are by no means 85,000 of any very great consequences from the standpoint of the finances of the farmer, because in that 85,000 are counted 15,000 or 20,000 telephone companies, good enough, it is true, but with, after all, a very small investment and with very little direct bearing on the income and outgo of the farmer.

Again, there are a few thousand insurance companies included in that list. They are splendid organizations, very much worth while, nevertheless it has to be admitted that as good as they are they are of very minor consequence in the management of the farm. So the number is very, very much reduced by taking off some of these big numbers. It is true that looking back over the last forty years or so, back to the days of the Grange, that a vast number of co-operative companies have been started and soon failed. A good prophet, and by that I mean one who understands the prospects of the future judging by the past, rather than by any occult vision, a good prophet would have predicted the failure of most of these companies. They were destined to fail because the conditions of success were not present and because the roots and the symptoms of failure were present. The Grangers started a large number of co-operative companies where there was inadequate business, and especially with poor and inadequate management. The reason for that was that the farmers, as a class, did not understand the value of business ability. They were jealous of the man who wore a white collar and what they considered good clothes—believed that he was getting his living easier than they were, and believed he was getting too good a living in proportion to his efforts. Consequently, when they started up co-operative companies of their own and put a man in charge they did not load him down very heavily with salary. They believed that if they paid him twice as much as farm help received they paid him well; they paid thirty-five, forty and sometimes fifty dollars a month for the manager of a co-operative business. They put him up against the managers

of private enterprises who were getting from one hundred to one hundred and fifty dollars a month. The result was inevitable failure, because they had incompetent men competing with competent men.

In southern Wisconsin such things as this happened: A man ran a store for a lot of farmers. At the end of the year, in the face of a pending audit, the manager left. He didn't take anything with him—he didn't have much to take either in the way of money or reputation—and they did not send for him because there was nothing for him to return, but they looked over the books and found they were all muddled up and the sureties got very little out of it. Most of those stores ran from six months to a year. They failed because they did not understand the real cost of running a business.

Then they did not always have money enough, and we will take that, perhaps, as the first point—that if a co-operative company is to succeed it must have an amount of business which justified the creation of such an organization. In other words, if you are going to start in business, there ought to be a reasonable amount of business in sight. It isn't very often you find a business man starting up a store or a bank, or anything else, unless there is some prospect of doing something after he starts which, in the ordinary run of events, is going to give him a moderate income at least.



The Horse-shed Club at Clover Leaf Hall.

But, you ask, does a farmers' company go into business without the prospect of enough business to adequately run itself? They have done it a vast number of times. It is one of the weaknesses of co-operation, but it is one that can be easily eliminated. Farmers will start up when there is not business enough to warrant the investment and the effort, and the reason

for it is probably because there is no one man who gives it his devoted and careful attention to the extent of finding out what the real prospects are. If one of those men was asked to put his own money into the establishment—to spend all he had, let us say—and to depend on it for his income, he would look the ground over with great care before making the venture. But some one suggests the organization of a farmers' company, the word "co-operation" is supposed to have some magic in it—a good deal is told about farmers' companies that have succeeded, and you say: "Well, I will take a share." It doesn't cost very much, it is not the major part of a man's investment, he does not give it very great attention, and there is always some shrewd promoter in a community to induce men to enter projects that are doomed to failure. Examples of such organizations are scattered all over this country, especially through the upper Mississippi Valley and again over the southern Mississippi Valley, where some shrewd men have been in the business of establishing co-operative creameries. This has been running now for the last thirty years. A man goes out from a company having its headquarters in some big city, he takes along some literature, "some undoubted facts," as he says, and he tells them if they will go into this they are going to succeed, their business is the best in the world and the most successful of all creameries are the co-operative creameries and what they need to stimulate the dairy business is a co-operative creamery.

Home of the Clover Leaf Club at Fairfield, Sauk Co., and part of Farmer's Institute Audience.

A large part of what he says is true, but he goes on and shows letters and testimonials and pictures and tells them that he will put up a building "exactly like this one," and he will

equip it all ready for them to take charge, and he will charge them only two hundred per cent of what it is worth, though he doesn't put it in those terms.

Down in North Carolina a year or so ago, two of these co-operative creameries were started near a certain town and according to good authority there was not enough butter being made around that vicinity to supply the wants of two small hotels—they were shipping in butter from the outside—and yet an oily-tongued gentleman was able to show them what they needed was a co-operative creamery. A gentleman working for the Southern Railroad, whose business it was to promote the dairy business, told me, "My main business seems to be to prevent the organization of co-operative creameries, yet I urge co-operation wherever the conditions seem favorable."

There ought to be business enough in sight to warrant the undertaking. Sometimes it takes a good deal of business; in other cases it doesn't take so much, but where there isn't much to be done we don't want to have great facilities for doing it. You don't want to use a $125.00 self-binder in cutting a half an acre of oats—it hardly pays. Either you would cut them by hand or let them go.

A Co-Operative Company Should Cover Relatively Small Area

Another thing: A co-operative company should ordinarily be confined to a relatively small area of country. There are some exceptions, but we can take the main proposition—that it should be confined to a relatively small area—and for this reason: If men are going to co-operate, it is almost absolutely necessary that they get acquainted. That is why the creamery, the cheese factory, the potato warehouse—things of that sort—furnish our best instances of successful co-operation. They are or-

A Fine Community Center.

dinarily confined to a small group of farmers. Over in Europe most of the co-operation is centered around a little village, a village of ten, twenty or sixty homes. Everybody is acquainted, and if they have difficulties they can get together at a moment's notice and discuss any question that comes up.

In this country, where we have a co-operative company reaching over many miles of territory, with many getting their mail in different post-offices and with meetings poorly attended, we have had failures.

There Should be a Definite Object to be Gained

There should be, in the next place, something to be gained—there should be a prize at the end of the course. Perhaps a little illustration of that will do as well as an argument.

Out in the stock-feeding districts of the corn belt, to the south and west of here, co-operative live stock shipping companies have not succeeded well, as a rule. To the north and west of here the live stock shipping companies have succeeded admirably well. What is the difference? In sections where there is a vast amount of live stock feeding for market uniformity, grade, etc., they do not succeed very well, but here, where they have a lot of mixed live stock they do succeed very well. There is a prize to be gained in the one case and not in the other.

Out in Iowa there are so many live stock buyers that they will pay all that the stock is worth and enough more so that comparatively many fail. They are always bidding up and bidding up. They frequently pay within thirty-five or forty cents of the Chicago market in northwestern Iowa on hogs. You can hardly ship them from here on that margin. They are always hoping that there would be a raise in the market in Chicago, but they do not always find it so.

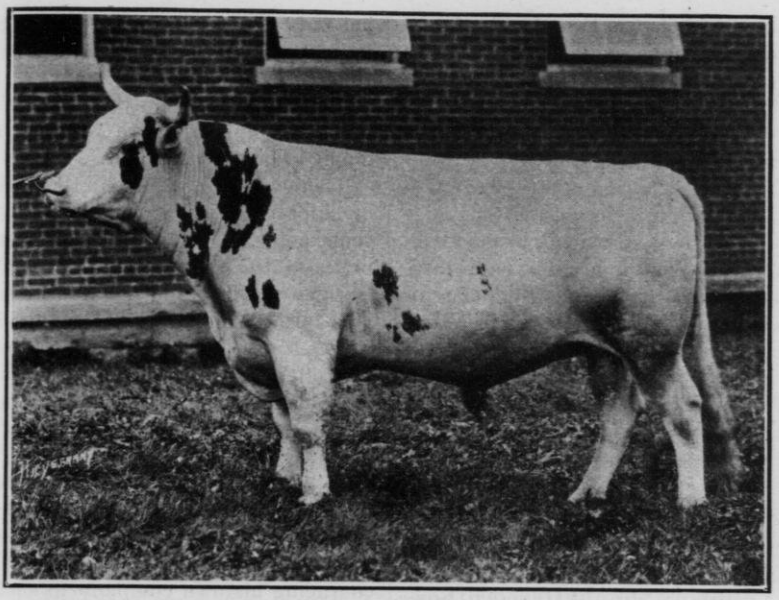
Thus when the Iowa farmers undertake to ship co-operatively, all they can hope to make is the margin going to the stock buyers.

That is hardly enough to cover the cost of the work, and they keep saying to one another: We would have made just as much if we had sold our stock in this country, and that is generally true. Around in this country they get more by shipping stock themselves. As a result we have thirty or forty live stock companies in this State doing a pretty good business. Minnesota has probably a hundred and thirty such companies, and with few exceptions they make flattering reports.

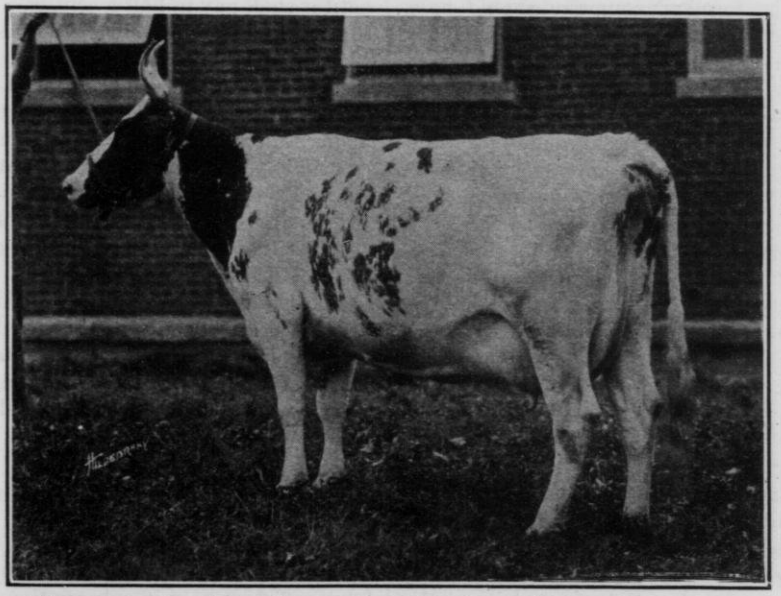
Co-operative Companies Should Be Composed of Farmers.

Now, another point which is an important one in co-operation: The company should be composed of farmers—producers, and it may be also as consumers. It should not be a motley company, made up of some who have a direct interest in the company and others who have an indirect interest in it. For instance, up in the northern part of the State there is a cheese factory doing a good business. About sixty per cent of the stock belongs to farmers and about forty per cent belongs to some other people who are not farmers.

The company is not organized under the co-operation law, but under the general corporation law. Forty per cent of the stock—that of the non-producers—is always fully represented at the meetings, and the owners insist on getting good dividends. They have been able to vote down the rest who are not always there and who are trying to get high prices. So you have this pulling



Champion Ayrshire Bull, Wisconsin State Fair, 1915, owned by Adam Seitz, Waukesha, Wis.



Champion Ayrshire Cow, Wisconsin State Fair, 1915, owned by Adam Seitz, Waukesha, Wis.

and hauling between two classes of people, one of whom wants to make ten or twelve per cent on their little investment, and the rest of them who want to get fourteen or fifteen cents for the cheese, instead of a cent less.

It is a bad situation and they are trying to reorganize. So, no matter under what law they are incorporated, no matter how you figure up your dividends, it ought to be done by a class of one character. Of course, it is true that under some circumstances you can let some others in, especially if you have the proper limitations, but, as a rule, it is best to have farmers run the farmers' business, if they are going to undertake it, and not have a considerable minority of the stock owned by somebody else.

The Company Should Have Authority Over Members.

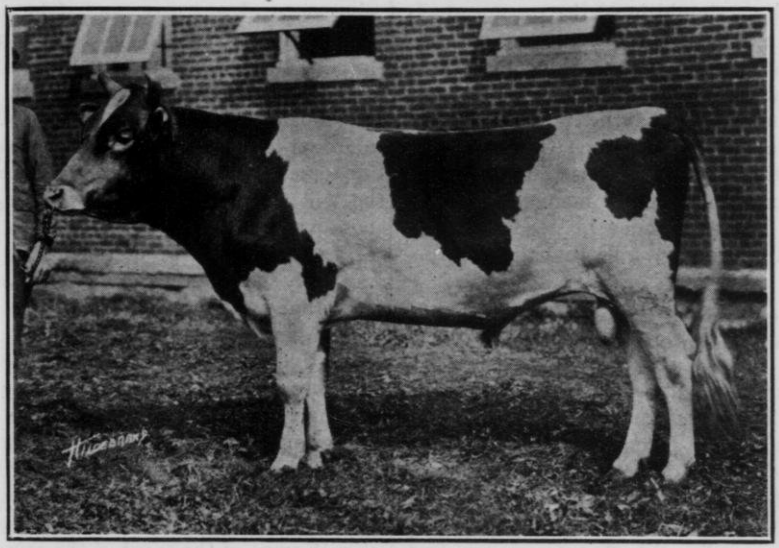
The farmers' company should have some authority over its members. They should put into their constitution or by-laws a clause providing that business of a given character is to be done for a certain period of time through this company and not somewhere else. For instance, we have a store up here a hundred and fifty miles to the northwest, a farmers' store, with sixty members belonging to it. That is enough to make a pretty good little store business, but the manager of that store admitted a few days ago that thirty of these farmers have never traded with him at all. What are they in the company for? They don't know. They are not getting any dividends because they are not doing much business, and the reason they are not doing a good business is because their people do not trade with them. They did put some money into it on the start, but nevertheless they are a drag on the progress of the store. They might better get out. They are not loyal enough to be members of such a company, and if the store is not worth running, they would better wind up the business and quit, and if it is worth running, they ought to be patronizing it.

There has been trouble in the business of shipping grain with respect to the same point. One of the biggest enterprises of the farmers of the northwest is that of the grain elevator business. The farmer, for some reason, has hard work to refuse to sell to a competitor who offers him a half cent a bushel more than his own company feels the grain is worth. It does not amount to very much, perhaps twenty-five or fifty cents on a load, but he has hard work to refuse it, because he thinks it doesn't cost anything and he might as well have the added amount. By doing so he is discouraging his own company to such an extent that they have provided rules to the effect that a man selling to a competitor shall pay in half a cent or a cent to his own company, but it is a question whether the plan is legal or not. Decisions have been made against the practice, but nevertheless the fact remains that if the farmers are going to run a company they have got to patronize it. If the patronage is not assured, the chances of success are small. They should either be loyal to their own company or get out.

The Danish companies are the finest in the world. They say: If you don't bring your eggs—your products—to us, you can take them somewhere else and you can take your membership along. They put them out, in other words.

There Should Be Sufficient Funds Available.

Another thing: The farmers should have sufficient paid-in subscriptions. It is not always necessary that they should



Junior Grand Champion Guernsey Bull, Wisconsin State Fair, 1915, owned by H. W. Griswold, West Salem.

Senior Champion Guernsey Cow, Wisconsin State Fair, 1915, owned by B. L. Wilson, Wausau.

subscribe every bit of the capital needed, but they should have the money available and have it when it is needed, otherwise they are going to be embarrassed and discouraged.

The farmers may be rich enough as a whole group to finance the company, but they are very unwise indeed if they attempt to start the manager off with only half the money he needs for paying the ordinary bills that arise.

The Spirit of Loyalty Most Essential Requisite to Co-operation

Another, and one of the most essential of all the requisites necessary to the success of a farmers' company is the spirit of co-operation, the spirit of loyalty.

These other things we could measure pretty well. Whether you can find and identify this and measure it, or whether you cannot depends on whether or not you are keen and shrewd in the discernment of things of a spiritual nature.

Suppose we put it in this way: A man representing some church society goes into a neighborhood for the purpose of organizing a church of his denomination. He does not go there determined in advance to make the organization anyway, but to see "whether or not it ought to be done." What will he look for? What will he inquire about if he should come into your community? Well, he will begin by asking whether there are any members of this particular denomination in the vicinity, won't he? He will ask whether there is a church near enough so they can attend conveniently, and if they say no, he will ask them what they think about establishing a new church, and he will ask: How much will you contribute to a church building and to the support of it after it is done? And if they don't show very much interest and they won't give sums of any size, and if he can't find anybody else who takes very much interest in the matter, he will, if he has any business ability along with his religion, decide that they are to be let alone, or to be dealt with by missionaries for some time to come. In other words, he will say: "I don't find any spirit here which is likely to support this sort of a thing, and if we do start it, it will probably be a failure." You have all seen that kind of a thing.

It is exactly the same with any co-operative business. If you find people who are vitally concerned and who are willing to give it some of their time and attention and energy, who are determined to see it grow, who are willing to put in some of their time for which they will receive no pay, who will go at it with some of the spirit of the crusader or the missionary, you are likely to have a success. If you don't have somebody to take hold of it like that, success is, to say the least, very, very doubtful. So it requires a spirit of co-operation, a spirit of loyalty, a genuine wish on the part of the prospective members that the company succeed.

Now, that is not to be found altogether in the same way that these other things may be determined. It is not a question primarily of dollars and cents.

A Competent Manager An Absolute Necessity

And now we come to the last point, and possibly the most important of all. If you are going to succeed you will have to have a competent manager. It has very truly been said that the different members of a co-operative company co-operate a great deal more with the manager than they co-operate with themselves. Substantially every trans-

action that is made is made between the member and the manager. You will have to give this manager a fair amount of latitude, a fair amount of discretion on which to act. You will have to give him the privilege of making a bargain, of determining within general limits laid down by the Board of Directors the policies to be pursued and the methods of carrying these policies into effect; and if you get the kind of a man you can trust that far, you will probably have to pay him fairly well. The successful companies that we have in this State are paying their managers from seventy-five to one hundred and fifty dollars a month. They are paying what the trade, as you may call it, demands that a manager get—and if they don't do that they fail.

It is well that co-operative companies be not too ambitious. It is well for them to undertake things which require a relatively small amount of the farmers' time. Farmers have good business ability, but it is difficult to serve two masters, and the farm, as you know, is a very exacting master, and if the other one is likewise very exacting, the chances are that one or the other will not be served well.

DISCUSSION

A Member—Can the by-laws that co-operative companies make themselves be enforced in this State?

Prof. Hibbard—Yes, if the members subscribe to them, and if the court in which the case is tried decide that they were reasonable in the first place, they can be enforced. There are those two questions: Did the man subscribe to them and are they reasonable? If he did subscribe to them, it is in the nature of a contract and he has to live up to it.

Mr. McKerrow—Is that true in this matter of a cent a bushel?

Prof. Hibbard—The courts have decided that it is not lawful in the State of Iowa. The court will pass on the by-laws, as to its reasonableness. In that particular case they ruled it out.

A Member—You say not to be too ambitious. What do you call too ambitious?

Prof. Hibbard—What I meant was this: Ordinarily a farmers' company should undertake relatively simple things, I mean such things as marketing fruit, the marketing of butter or cheese, and so on. In various cases they have gone into the manufacturing business, where it was an intricate one. Of course, farmers can do these things, but the question is: Should they do those things that require so much detailed attention and a good deal of investment—as farmers. And the facts up to date would answer that question, No.

Dr. Porter—It is not always necessary for the farmer to put money into such a co-operative concern. In Viroqua in one company they simply signed a contract to stand good for shortage, if there was any. Of course that was a failure and it cost each of them a hundred dollars.

Prof. Hibbard—"Where your treasure is, there will your heart be also."

CO-OPERATIVE CREAMERIES: PLANS OF ORGANIZATION, BUSINESS PRACTICES.

David Imrie, Roberts, Wis.

Not much was done in Wisconsin with co-operative creameries until about the year 1895, when a few were operated quite successfully. About this time creamery supply houses started the organizing of co-operative creamery companies and building and equipping the plants. This did the business harm, as these companies often organized a creamery where there were not enough cows to operate one successfully and as a rule they charged too much for the plant. After trying to run the creamery a year or a part of a year, the farmers found they had made a mistake and a good many were abandoned or turned to other uses, but those that were organized in the right way and operated in a business-like manner, succeeded beyond the expectations of the organizers. Since that time the co-operative creamery business has grown by leaps and bounds. Out of the 860 creameries in Wisconsin, 320 or 340 are co-operative. In Minnesota, out of 800 creameries about 600 are co-operative.

Since the year 1900 creameries have increased in size. By the use of the farm separator and the gathering of cream, they have been able to handle the product from a great many more cows. By the kindness of the secretaries of some of our large co-operative creameries, I am able to give you some facts and figures showing their rapid increase in growth.

The Barron Co-operative Creamery Co., Barron, Wis., was organized in 1902. Their first week's shipment of butter was 11 tubs, the highest week's shipment the first year was 41 tubs. In 1905 they shipped 125 tubs in a week; 1907, 331 tubs; 1914, 528 tubs. They have over 700 patrons. In the year 1914, they received for butter and buttermilk, $319,500.05.

The Baldwin Co-operative Creamery Association, Baldwin, Wis., 1907, net receipts, $157,046.90; 1910, $206,481.52; 1913, $288,820.68; 1914, $278,073.90. In the year 1914 they made 25,000 pounds more butter than in 1913, but owing to the lower price did not receive as much money. This also applies to the other creameries.

The Farmers' Co-operative Butter Association, Tomah, Wis., was organized December, 1912, and the first year did about $50,000.00 of business; 1907, $133,516.62; 1910, $173,503.54; 1913, $232,676.04; 1914, $214,814.83.

The Clear Lake Co-operative Creamery Company was organized 1907, paying their patrons that year $61,177.85; 1910, $130,615.91; 1913, $188,460.04; 1914, $184,686.05.

The Burnside Co-operative Creamery Co., was organized in 1895. The first year they received $8,250.18 for butter; 1905, $20,135.72; 1910, $33,269.07; 1914, $42,624.41. This creamery was one of the first co-operative creameries organized in northwestern Wisconsin and in a territory where cream cannot be hauled far on account of the hills, being near the Chippewa and Mississippi rivers.

In all co-operative creameries there are two companies, one the stockholders, the other the patrons, which is

the real co-operative company. The amount of stock a person can hold should be limited. The shares of stock should be small, say $10.00 each, and sold to cream producers only. It is always best to sell the stock and start out of debt. In this way you can compete with neighboring creameries.

A certain amount should be set aside as a sinking fund from each pound of butter fat delivered. From this sinking fund is paid taxes, insurance, permanent improvements and repairs on plant, and a reasonable dividend to the stockholders, say seven or eight per cent.

Never pay the patrons for their butter fat until you have sold the butter and received the money for same. Deduct the sinking fund and running expenses for the month and divide the remainder among the patrons according to the number of pounds of fat each has delivered. In this way you will never have to make an assessment. Assessments always go against the grain of a farmer and are apt to hurt your creamery.

Make arrangements with your neighboring creameries as to territory, so that there will be no over-lapping of cream routes. (We have had no trouble in St. Croix and Pierce counties in arranging this if done in a fair and friendly way).

A Few "Dont's."

Don't start a creamery where there are not enough cows to support one. Remember it takes cows to run a creamery.

Don't take spoiled cream and mix it with good cream and expect to keep up the quality of your butter. It takes good cream to make good butter and receive higher prices.

Don't pay too big a dividend to the stockholders and be obliged to pay less a pound for butter fat. Remember that the man who furnishes the cream is of as much importance (if not more) to the success of the creamery as the stockholder.

Don't expect your manager to work for nothing, but pay him enough so that he can afford to attend to the business.

Don't hire the cheapest buttermaker you can find, but get a good one and pay him a fair wage.

Don't take stock in a creamery and when some one else offers you a cent a pound more for your butter fat let him have it, but stick to your creamery through thick and thin if you want it to succeed.

Don't patronize a centralizer if you have a co-operative creamery in your locality, even if they will pay you more than the market price. This is done only to break up the creamery, then they can pay as they please.

Don't find fault about your test, but go and see your cream tested and be fair with the creamery and they will be fair with you.

Don't be a kicker. If anything goes wrong, go to the management and talk the matter over in a friendly and fair way and in nine cases out of ten it can be righted in a satisfactory way to both parties.

By adhering to business principles in organizing and in operating co-operative creameries in the future, they will as in the past grow in numbers and in size in Wisconsin.

DISCUSSION

A Member—What success have you had in operating machinery with gasoline engines?

Mr. Imrie—In our creameries, we use an electric motor. We have a small heater, because we must have some

steam in a creamery, but it is cheaper where you have electric power to use an electric motor for power and have a small heater for your hot water and steam.

I could not tell you as to the cost of a gasoline engine; it would depend on how cheap you could get coal, how convenient you are to the railroad station to get this coal. I think it is practicable.

Mr. Jacobs—I have tried that. Of course, as Mr. Imrie says, we have to have steam and we find it more economical to use steam all through. Another thing we found, the gasoline engine was not so positive and sure. But you said, don't sell co-operative stock to people who do not produce. Now, isn't it a fact that a good many times in starting the co-operative creameries that it is difficult to get a sufficient amount of stock, and business men in the city often take stock in order to promote the sale, just simply to help the thing along? What are you going to do in that case?

Mr. Imrie—The first creamery company we organized we had trouble in getting stock subscribed. It was a new plan in that part of the State and people thought they would be assessed and it would be a failure. Some of the merchants in the village took stock with this condition, that if any of the farmers wanted the stock after the creamery was started they would sell, and they did sell their stock. That is all right, but it doesn't work well unless the sale of stock is limited so that one man cannot get too much. I know of a case where a business man actually owned the creamery. We had these provisions put into the by-laws: That no stock could be transferred without the consent of a majority of the board of directors. Perhaps that is not legal, but with us it has always stood that way, and we have always seen to it that if a farmer wanted to sell his stock some other farmer took it.

Mr. Gannon—We had a creamery started in our village; we had to sell some shares to business men in order to raise funds and it has been a great success. The business men helped us all they could, they have worked hand in hand with us, but no business man ever holds an office and there has never been a business man at one of our meetings. When they took the stock they said they wanted to take the stock or give us the money, as we wanted. It certainly helped to start us in good shape and I cannot see any reason why there should be any objection to letting them have it.

A Member—We are in a milk shipping community right here. We ship cream to Chicago, but we farmers have slipped our heads through a slip-noose and are getting it pretty tolerably tight around the neck. Chicago is using several hundred thousand more cans of milk now than formerly. We have been selling our milk this winter at an average price of $1.28 net for 68 pounds of milk, and a great deal of the milk is sold at $1.28 less 17 cents freight, making our summer average run $1.08 net. We furnish the cans, and it costs the man that ships from five to seven cans of milk about $50.00 a year for cans. He has to have all the way from five to six sets of cans in order to ship his milk. We furnish the money for the dealer in Chicago to do his business upon. He pays once a month, or every two months, when he gets ready, sometimes not at all.

Now, there is a surplus of milk in Chicago at the present time. We have had creameries and we have had them die for want of support from the farmers. Some of the organizers were the first men to pull out and go to shipping. Now, where we are getting $1.28 a can

for our whole product, shipping the fertility off our farms in the form of skim milk, and our cows are selling for from eighty to one hundred and twenty-five dollars apiece, which is eight, ten and twelve cents a pound, where our pork is selling for six to eight cents a pound, and our local stock buyers don't find enough stock to do business with, the question is: Will it pay us here in this community to put up creameries, and can we find support for them?

In our own local town we had a meeting last week. One of the best of our local men said: "Gentlemen, if you will go to work and put up a creamery and will run it on business principles, I will take stock to the amount of $500.00 to help out the enterprise." In a few minutes we had $1,000.00 promised to organize a creamery, but one thing that was brought up was to make sure of the support of that creamery. If they had a chance to sell their milk at an advanced price, could we be sure our people would bring their cream to these central points when milk is scarce in Chicago and high in price? Will we be able to count on the product when there is so much temptation to ship when a better price is offered in Chicago?

Mr. Imrie—That is a pretty hard question to answer; too much for me. Local conditions have a great deal to do with that, also the character of the people. I know how it is. We are thirty miles from St. Paul. Just as soon as milk gets scarce in St. Paul, men are sent out through the country to hunt up milk and cream, and they will pay more than the creamery—for a little while. The creamery still keeps running, but we cannot compete with anything above the market price for milk. The creamery puts its butter on the market at the market price, and if these men, for their own purposes, will offer more than the market price, the farmers will sell, and that always hurts the creamery. It is certainly a problem. You will have to figure that out yourselves. I couldn't tell whether you could organize in a certain place and make any money by doing so.

Mr. Parrish—Up in Sheboygan county, when the pressure comes from the city some of our cheese factories cease making cheese and ship their milk direct to the city until the stress is over, then they return to cheese making, and it is quite satisfactory. They will frequently receive as high as $1.80 for their milk.

Mr. Aderhold—You understand it is all delivered to the cheese factory just the same and then shipped out.

Mr. Imrie—There's a little difference between a cheese factory and a butter factory. The man who is feeding his calves on skim milk doesn't like to have it cut off.

A Member—How about the over-run? Do you pay for that every six months?

Mr. Imrie—No, sir. It is operated in this way: From every pound of cream that is delivered a certain amount is set aside for a sinking fund, and out of that fund are paid the taxes, insurance and permanent improvements, then when the returns are all in, the expense is taken out, including this sinking fund, and the balance divided among the patrons, according to the amount of butter fat they have delivered. No account is made of the over-run, except as it is reported each time on your statement.

Dr. Porter—The great creamery I spoke of, which is just completed for $18,000 or $20,000, has been erected out of the over-run. They have heretofore paid the over-run or the dividend, which ever you call it, every six months. They have come down onto us for $290.00 income tax, and hereafter we have to have two and a half cents a

pound added to the price of the butter so we won't have to pay that income tax.

Mr. Imrie—Oh, you are talking about dividends. I am talking about the over-run in the number of pounds of butter over the number of pounds of butter fat. You are talking about the sinking fund that they have taken out. I think the reason they have had so much that they could build a creamery out of it is that they have had too large a sinking fund. It means that they must pay less per pound for butter fat.

Mr. Parrish—I think in many places the tax men have had a misconception of the facts in calling the over-run profit instead of a legitimate gain.

CO-OPERATIVE MANUFACTURE AND SALE OF CHEESE.

J. O. Parrish, Plymouth.

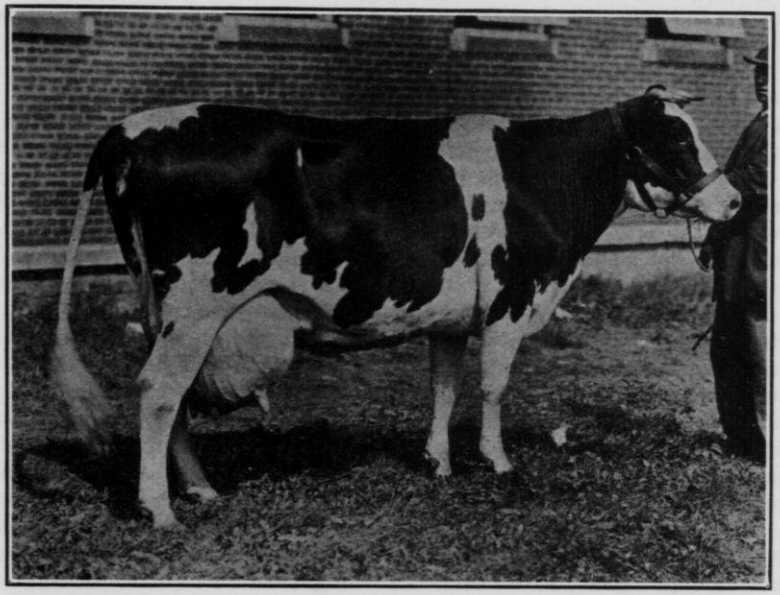
In the strife for better things, two elements, wrong conditions and the patriot, are always to be found, and naturally, always opposing each other. Wrong conditions invariably inspire or produce the patriot. When wrong conditions invade a State or its leading industry, the patriot is, in this day, soon in evidence. As our county of Sheboygan is known to be the banner dairy county of Wisconsin, you will easily understand that when wrong and unjust conditions invaded the cheese industry of our county that the patriot was soon in evidence in great numbers and the strife for better things soon began.

In the year 1911 the cheese of the county was sold, or supposed to be sold on a call Board, which is a very fair way to sell cheese if honest methods prevail, but we were aware that all was not right and the patriot began to develop. By evident agreement between the buyers, the price to be paid on the Board was agreed upon before the Board met, with the result that competition was shut out and a price below the actual market price was paid. In May of 1911 by this process buyers outside the county were kept off the Board and the price of cheese dropped from three to five cents per pound, which meant approximately twenty-five to forty-five cents per hundred of milk, which brought the price of milk to about eighty-five cents per hundred. This market condition prevailed until the storage houses in our town were full, when the price slowly, very slowly, came back to normal until January 1st, when by the same abuse of power the price was arbitrarily raised, when the farmers had practically no milk to sell, and this storage cheese, the choicest of the year's make, was shipped out by the car and trainload at prices ranging from 16 to 22 cents per pound, the original cost, including storage, being about 11⅜ cents, a very pretty margin. The patriot began to think! The plan had worked so well in 1911 that it was again attempted in 1912, though less cautiously, the price was arbitrarily dropped about May 15th three cents per pound, at a time when the supply was far below the demand for our cheese.

The patriot arose!

How These Methods Were Combated

At this juncture, Ex-Senator Henry Krumrey, himself the owner and operator of a two hundred-acre farm, who had been investigating the Board methods, came forward and exposed the methods employed to rob the farmer of his hard-earned profits, and called on the farmers to put down this monopoly.



First Prize Three-year old Holstein Cow, Wisconsin State Fair, 1915, owned by Chas. Van der Schaaf, Sparta.

The response was immediate and under his courageous leading a movement for the good of every dairy farmer began, for you can readily guess how widespread the effect would be when you know that the Plymouth Dairy Board price sets the price of cheese practically everywhere, more cheese being handled here than at any other point.

Our first attempt was to get the Board out of buyers' hands, when we found that unconsciously, or otherwise, the cheese makers, who were also the salesmen and factory owners, were with the buyers, and this plan seemed at that time impractical. Finally, with the help of the men from the Legislative Reference Library and State University, a plan of organization was devised that seems effective.

Each local factory on joining is organized into an association, known as, for instance, our own factory is known as the Dye Road Cheese Producers' Association, each having a Board of five directors, who elect from among themselves a president, vice-president, secretary and treasurer, who hold their office for one year. Stock, one dollar per share. Capital stock to suit number of patrons. These local associations are joined in the Sheboygan Co. Cheese Producers' Federation, each local having

one vote in the parent organization, to be voted by such person as they may designate, usually their president, which costs them $10.00 per share. In this way we have an organized interested membership, a thing of great value in co-operation.

One thing the officers of the Federation have tried for harder than any other is to keep the membership interested, to which end we have occasional meetings with good speakers in attendance, and try always to impress the fact that it is their organization, and we have a loyal lot, I tell you. We were opposed by the enemy at every turn, but still kept on.

We were organized and ready for business Sept. 1, 1913, but found that there was not a foot of available warehouse room in town. The enemy had beaten us to it, and gave us the laugh.

The thing that made the work of the opposition hardest to meet was that they fought us secretly. They would not come out in the open, chiefly, I think, because representative buyers and makers had been taken before the State Board of Public Affairs and had there admitted practically all the charges made against them, and we had the goods on them. They, however, did us a great kindness—mean it as they might—for it put us on our mettle. We couldn't quit there, so we formed what is known as the Federated Farmers' Warehouse Co., capital stock, $25,000.00, shares $10.00 per share, making it possible for every man to own at least one share, and no man could own more than ten shares. We sent the stock lists to the presidents of the locals for circulation, and by this means sold over half the stock in two weeks to interested farmers in and out of the Federation. Capital stock raised to $35,000.00 at annual meeting, one man may own 25 shares. A concrete example of what organization can accomplish. We did not have to pay a stock promotion company 25 per cent and one-half the premium; we did the work ourselves.

It seemed a kind providence was with us, for when we were truly ready for a forward move the way was provided. We met the enemy again in securing a building site, but the same kind providence provided again and work on the new Federation Warehouse and Cold Storage began about November 1, 1913, and again the kind providence, the weather was fine until February 1st, and the building was turned over to us before March 1st, and no man can explain to you, ladies and gentlemen, just all that went into that building besides the material of which it is constructed. What earnest effort, what persistent boosting, what careful thought, the fruit of sleepless nights, and soul-wearing days on the part of Mr. Krumrey and the men who stood with him and are still standing at his right and left and behind him in this great battle for better conditions.

But we were only ready to begin! At a meeting of representatives of 44 factories, a unanimous vote was taken to begin shipping cheese to the warehouse April 1st. They began shipping, and in spite of all opposition we began selling. We found difficulties on every hand, but these were in time all overcome by favoring conditions, and the work of our efficient and honest manager. We make a charge of one-fourth of a cent per pound for handling and paraffining. This pays all charges against the cheese, including freight on cheese, which cannot be hauled to the warehouse, and by careful management we find that cheese can be handled co-operatively for less than one-half what it costs the regular dealer, and by our methods of operation have saved money for not only our Federation farmers,

but have put money in the pockets of those who do not yet belong, for we have put the fellows outside the Federation on their mettle to beat us and they have gone some.

Some of the Results Accomplished

But what has this accomplished for betterment?

1. The work of standardizing our product is under way.

2. Cheese makers are finding that we are giving a square deal in return for a square deal.

3. We have established a trade, and are recognized as being on the map in the cheese business.

4. By fair methods we have made arbitrary manipulation of the market much harder to accomplish, for, owing to the presence of the Federation in the market, there was not the usual drop in price in May and June of last year.

During the flurry on account of the European war, the price though low did not approach what I feel sure it would have done had the old conditions obtained on the Board, so all farmers hauling milk to the cheese factories were benefited by our work.

Not much of our cheese is manufactured co-operatively, as yet. I think only six of our factories are co-operative, but they are likely to have company, as the results obtained by them are very satisfactory.

Cheese is shipped to the warehouse, which has a cold storage capacity of 40 cars of cheese and warehouse room for 35 cars, once or twice a week, as to the weather, is weighed, paraffined and placed in cooler until sold, or, as is frequently the case, immediately reshipped, for we cater to the whole market.

The first nine months, easily the hardest time of our probable existence, showed very satisfactory results. Boxes cheese sold, 156,631; weight, 6,125,480 pounds; receiving, $887,501.69; our earning at one-fourth cents, $15,290.71; paid to patrons, $850,534.58; also a fund of $4,653.25 had accumulated from small odd sales that brought slightly higher prices and by action of the Board of direction, the over-run has been set aside. This was by unanimous consent left as an emergency fund at the annual meeting.

Our plan contemplates the return of all moneys to the local treasurer as soon as money for sales is received and their bill is made out. In spite of this, we found that our weekly cash balance for May was $25,000.00, and we began to realize to what extent we were in business. On this cash balance we received $316.38 in six months as interest from the bank.

Now, I have not recited these facts to show iniquity on the part of the dealers, or to show any special sagacity on the part of our Sheboygan county farmers, but had I time I could give you a pretty good word picture of the results that obtain when men are trusted overmuch, and I have tried to tell you what has been done under good leadership by an average lot of farmers in our county.

We do not feel that we have as yet attained, but we have accomplished this much, and one thing more that I have left unmentioned, we have led our farmers to have more confidence in themselves and shown them that they can attend to their own marketing, or to some extent control it, so that the profit shall not all rest with the man who has least to do with its production or final disposal, and we are still on the way. This is not perhaps ideal co-operation from all view points, but simply a means used co-operatively to correct an evil which was very plainly the outgrowth of

an overtrustful attitude on the part of the farmers themselves. Theirs was the fault and it was theirs to apply the remedy. When ideal co-operation attains, I believe it will be when the farmer has risen as an average to a higher level as a business man, but they are coming, my friends, the voice ot Wisdom is being lifted announcing the benefits that attend eating at her board. The benefits are seen on every hand and her banquets are attended as never before, and we feel in Sheboygan county that we have made a contribution toward that desirable end. But something must come from the business man also, he must come to know more reasonably that his prosperity hinges upon the prosperity of the farmer and, ceasing attemps to farm him, join with him that ideal conditions may prevail.

DISCUSSION

Mr. Hanchett—What is the attitude of your local business men toward the working out of this proposition?

Mr. Parrish—They were not helpful; that is about as much as I care to say about it.

Mr. Hanchett—Very often that is the attitude of the local business man toward any move on the part of the farmers.

Mr. Parrish—Yes, you may call it hostile.

Mr. Hanchett—They are afraid if the farmer gets into business on business lines they are going to lose something. I know it was that way in our movement in Sparta in forming the Fruit Growers' Association. The business men got into the habit of whispering aspersions against the Association. We had to go to them and give them to understand that we were committed to it and when they thoroughly understood that, there was a right-about-face of every groceryman in town the next morning.

Mr. Parrish—We haven't threatened our business men. We have shown them. One cheese maker made false statements, got abusive and had to be sued. He came in and paid his fine.

Mr. Hanchett—Every business man ought to realize that his business depends upon the prosperity of the farming community. In going up and down the State in this Institute work, we have found a marked difference in this matter of co-operation between the local business man and the farmers in different places and where we have found the business man and the farmer working hand in hand, we have always found a prosperous community.

Mr. Parrish—That is what I consider ideal co-operation; trade and spade cannot quarrel profitably.

CO-OPERATIVE MARKETING OF LIVE STOCK.

E. W. Campbell, Ellsworth.

For the last twenty-five years or more, the State of Wisconsin, through its College of Agriculture, Farmers' Institutes and other agencies, has done much to increase the production of hay, grains, milk and its by-products, beef, pork, mutton, etc., and has met with remarkable success along these lines;

in fact, can be congratulated upon the results obtained, but until recently very little has been done under the supervision of the State with the market end for these products whereby the producer would be in a position to receive the best possible returns for his products.

Co-operation seems to be the only available remedy at this time and where it is being tried out along sane lines has been a great factor in obtaining encouraging results. The spirit of co-operation is abroad in the land and agitation along this line not only tends to discover new possibilities and develop resources, but brings to the front men capable of leadership, who, without the co-operation of their fellowmen, have been compelled to submit to the ancient order of things by letting the other fellow share in the profits of their labor justly due them.

It is only with one class of these farm products that my discussion deals today, namely, the marketing of live stock, and there is perhaps no better way to bring the subject before you than to tell you how we, as the largest shippers of live stock from any station in the State of Wisconsin conduct our business.

How One Community Organized

In the first instance, all those who were interested enough to try the marketing of our own stock met in mass meeting and elected a president, secretary and shipping clerk. The management of the association is vested in the president and a board of directors whom the president appoints, choosing them from the different localities, so as to have a director in each section covered by the association.

Among the duties of the board of directors are the auditing of all accounts every three months, fixing the salary of the shipping clerk, receiving and adjusting all claims of dissatisfied shippers and looking after the business in general.

The duties of the secretary are to keep the records of the association and collect the dues from the members, which are four dollars for the first year and two dollars per year afterwards. The sales sheets of shippers are also filed with the secretary for future reference, where anyone interested may see them at any time.

The shipping clerk receives as his compensation ten dollars for the first car and five dollars for each additional car up to five cars. If there are more than five carloads in any one shipment, he receives five dollars straight per carload. The shipping clerk pays his helpers in receiving and loading the stock out of his own salary. He does not go out to solicit shipments, as those wishing to ship either telephone their order in or see the clerk personally when in town. When all the cars are filled that had been ordered for a day's shipment, the remaining orders are booked for the next shipping day. We aften ship eight to ten, and in the rush of the season as many as eighteen carloads in one week.

The cattle are marked by clipping on the hip in Roman numerals with shears made for this purpose. The animal then sells on its own merits. Where one shipper brings in many head for one shipment, we mark each with a daub of paint of bright color—different colors may be used for different shippers. Sheep are always marked with paint. We do not mark hogs unless there are some that will not top the market, which are marked so as to sell on their merits.

All stock that goes over the scale is paid for in full. Stock that is injured while being brought in to be shipped is either taken back home or shipped at owner's risk. All loss on stock that is

damaged in the stock yards or on the train at the fault of the Shipping Association, so that it does not bring the price it would have brought in an uninjured condition, is made good to the shipper out of a sinking fund created for this purpose, made up of a charge of one-fourth of one per cent on each shipment and credited to the association in the local bank subject to check by the shipping clerk.

within six months we had our money back from the railroad company.

Our shipping clerk goes along with the stock to market. The commission companies with whom we deal furnish us with an account of sales, showing home weight, shrinkage or gain, net weight, price, total expenses and net proceeds. We have our stock pro-rated at a cost of one dollar for the whole shipment, where it used to cost us from three and

First Prize Shorthorn Calf Herd, Wisconsin State Fair, 1915, owned by Anoka Farms, Waukesha, Wis.

In the matter of shrinkage, the cattle stand their own shrinkage, but on hogs shrinkage is figured by the hundred weight and not per head. Never overfeed stock when shipping, for if you do they will not take a good fill in the yards and you will have a heavy shrinkage.

We have never had many heavy losses. Had one loss of $125.00, due to a wreck on the train, which was promptly paid out of the sinking fund and

a half to four dollars per carload. The account sales sheet, together with a check for the entire shipment, is sent to our bank. The commission company also furnished blank forms for statements for the individual shipper. These statements are made out by the banker, which, with a check, are handed to the shippers. This individual statement shows the whole transaction, the same as a sales sheet from the commission

house and in addition contains the names and addresses of the directors of the association with a request to have any error or dissatisfaction reported at once to one of the directors.

The first car of stock shipped by the association was sold at South St. Paul by a commission firm with the instruction not to tell anybody who sold their stock for fear the buyers would boycott them.

We are shipping about two hundred carloads a year and have shipped over one thousand carloads since we started, which will average about twelve hundred dollars per car, at the saving of about twenty per cent over the old way of shipping.

Before we formed our shipping association we had six regular buyers driving through the country with their six teams and three other buyers were on the road part of the time. We have cut out all of this expense and the buyer's profit. As a whole, our business has been prosperous and naturally encourages those engaged in it, and this is the main reason for this write-up. What I have attempted to say is no guess-work, but I have been dealing with actual facts. What we have done, others can do.

First Prize Oxford Flock, Wisconsin State Fair, 1915, owned by Geo. McKerrow & Sons' Co., Pewaukee, Wis.

Some of the Benefits of Co-operation

There has been a great change in a few years, which shows the strength of co-operation. At our annual there were five different commission firms represented who wished to handle our stock for us. Our association receives about a dozen letters a week from commission firms desiring our business. They are also advertising in farm papers for the co-operative business. It is easy to start a shipping association now. We have five hundred members in our local association. This shipping association was started by the American Society of Equity.

Benefits of Co-operation Far-Reaching

The beneficial results of co-operation amongst the farmers, like all other movements for the betterment of

financial and social conditions, are not confined to its members alone, but have a wholesome influence and effect upon the local cities and villages, and especially shipping points, for the reason that where the farming community is prosperous the village is also prosperous, while if the country surrounding the village is a failure, the village soon fails with it. In all organizations affecting commercial life, it is well to keep in mind that the interests and business relations of the city, village and the farmer are so closely knitted together that the one cannot get along without the other, but the two go hand in hand. If you knock your local village, you knock your farming community, and vice versa.

In our little village of Ellsworth the farmers own a co-operative creamery and a co-operative elevator and there is hardly a business or professional man in town but has one or more shares of stock in each of these organizations and everybody is boosting for Ellsworth and co-operation.

DISCUSSION

Mr. Imrie—Suppose that an animal that was thus marketed dies on the train; does the man that owned the animal lose the whole value of it?

Mr. Campbell—No, sir; everything that goes over our scales is paid for in full out of the sinking fund.

A Member—What became of your old buyers that bought around here?

Mr. Campbell—Some of them have gone to the four winds; some of them are farming yet.

A Member—It was pretty tough on them.

Mr. Campbell—Oh, no. We must learn in this world to adjust ourselves to the growing demands of business. If we didn't, we would be cutting our wheat today with the old sickle instead of the reaper. If any of our townspeople have a cow or a pig to sell once a year, we don't ask them to join our society and pay $2.00 a year. We ship for all those people at one per cent, and that is very reasonable.

A Member—What means have you of identifying your stock that is shipped collectively like that?

Mr. Campbell—We have a stock shipper's book. His name is taken down on the marketing place, and when we go to the commission firm the list is copied and given to the sorters down at the scales. Of course, hogs are generally sold in carload lots, unless there is something that won't top the market, and they are marked the same as cattle.

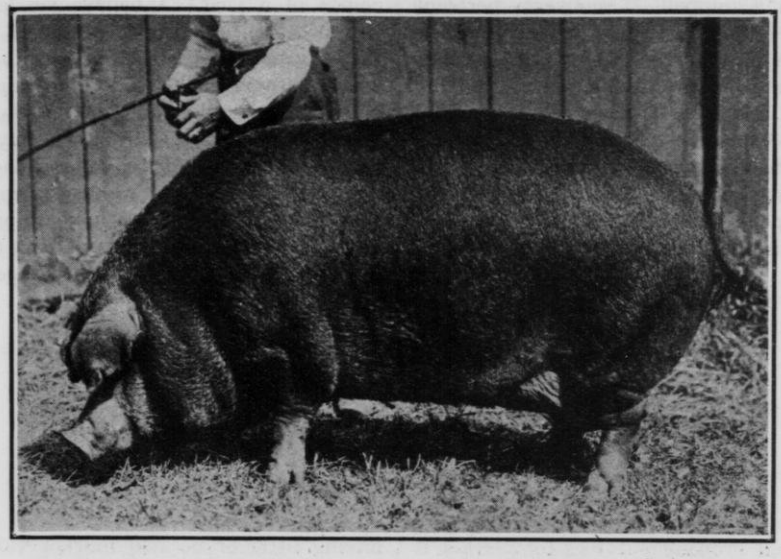
A Member—Many buyers are now furnished a book in which will be entered his stock and something to identify his stock, and a carbon copy of that is given to the man who ships the stock and the returns are made to him on a corresponding sheet.

Mr. Campbell—Yes; he gets the weight off the scales, he has that on his books. Lots of times a man won't get his home weight, but if he has that he knows just what he is doing.

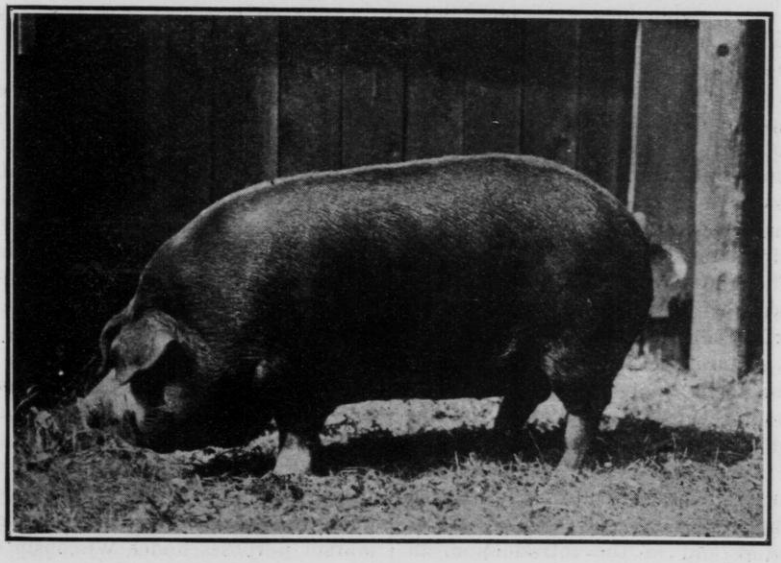
The Member—We are using that system now. Before that the record was made in a little book. A man shipped so many hogs or animals. If that book happened to be lost, the whole record of the sale was lost.

Mr. Campbell—The professor was speaking about their buying stock in Iowa within thirty-five cents of the market. We have known our buyers to pay up to within fifteen cents of the market, but they must do the weighing.

A Member—Have you any figures to show the price as compared with the old system?



Grand Champion Duroc Jersey Boar, Wisconsin State Fair, 1915, owned by L. L. Atwater, Bangor, Wis.



Champion Poland China Gilt, Wisconsin State Fair, 1915.

Mr. Campbell—Yes, twenty per cent more—that is, twenty per cent of the value of the stock shipped. It looks like a good profit, but we are getting that.

A Member—No wonder you buyers are chasing the country so hard.

Mr. Campbell—Well, the buyer does not get all of that. You understand where one man is doing the shipping, that cuts out a lot of expense in the course of a year. I believe we have honest stock buyers, lots of them, but they are taking eight or ten men to do what one man ought to do, and that is out of place in this stage of the world. However, we have some stock buyers that I think would be more honest. They used to tell us we had a great shrinkage. The hogs we have shipped in the last year have averaged about two pounds and a half per head shrinkage.

POTATOES: COMMUNITY GROWING AND MARKETING.

J. W. Hicks, Prentice.

That growing potatoes for market is one of the big branches of agriculture in Wisconsin needs no other proof than the mere statement that the crop last year was about thirty-eight million bushels. This immense crop of one of our most stable food products having developed along improper lines for so many years, every grower following his own haphazard ideas as to varieties and cultural methods, in time brought about a condition that will require years of earnest, intelligent effort along right lines to overcome and to place the potato crop of Wisconsin once more in the front rank as to quality.

The ignorance and indifference of the grower as to variety, characteristics, selection and care of seed and of the best cultural methods, coupled with his desire for a more productive potato without regard to quality, on the one hand and with the unscrupulous avarice of a number of persons or companies selling seed potatoes, ultimately resulted in a hopeless mixture of the good market varieties and in the introduction, in many parts of the State, of varieties having little or no real market value. To put the potato industry on a profit-paying, business basis, the grower must learn and apply the fundamental principles of the business.

Standard Varieties for Wisconsin

In growing, manufacturing or preparing any commercial article or commodity for market, the successful man must first ascertain the requirements of his prospective market, second, he must grow, prepare and furnish to that market a commodity in every way measuring up to the required standards, third, he must so pack, label and advertise his product that his prospective customer may be advised of facts.

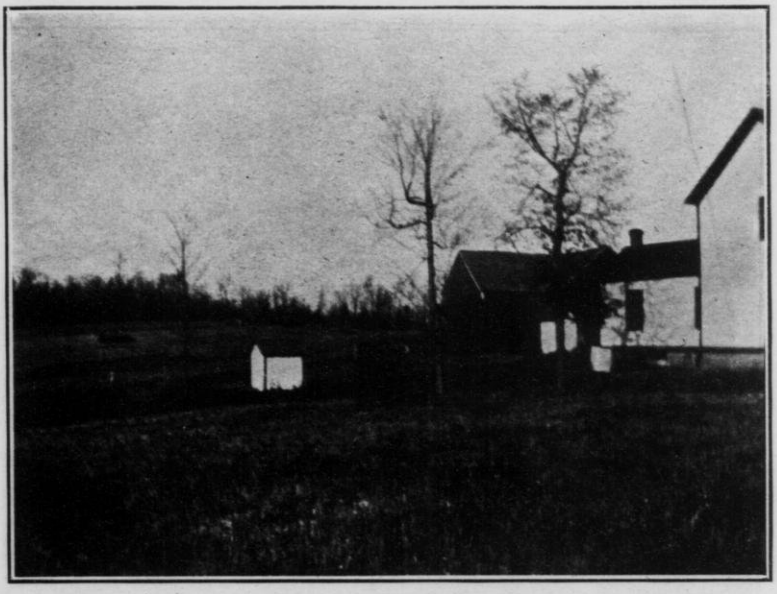
It has been demonstrated over and over again, by variety tests extending over several years, conducted by agricultural colleges in this and other states and further verified by field results, that there are but very few varieties of potatoes that are really worth while for market purposes under Wisconsin conditions. Just about as many as there

are separate breeds of cattle and about as easily recognized by any one who cares to learn the business. The farmer must be able to tell a Rural New Yorker or a Green Mountain as readily as a Holstein or a Guernsey, no matter what other name may have been applied to either of them.

In Wisconsin, the only varieties of potatoes in which the grower should be interested are the Rural New Yorker, the Green Mountain, the Peerless and the Burbank for the late ones, and the Early Ohio, the Early Rose, the Irish Cobbler, and the Bliss' Triumph for the early varieties.

For the general market crop, the Rural New Yorker and the Green Mountain will probably include ninety per cent or more of the Wisconsin crop and a very large proportion of the crop in Minnesota and Michigan, although grown everywhere under many different names.

The first step in the potato problem in Wisconsin, then, is to select and grow the varieties approved by the masses of the consumers in this great middle west, and the Wisconsin grower will not go amiss if he selects for his main crop the Rural New Yorker or the Green Mountain—the one best adapted to his locality.



View on Farm of J. W. Hicks, Prentice, Showing Part of Buildings and Clearings.

Community Producing and Handling

And here we come up to the same problem that the fruit growers, the stock breeders, the cranberry producers have all met and finally solved or attempted to solve by organization, co-

operation and the community plan of production and handling.

Growing and furnishing for the market a standard, uniform supply of potatoes, is, in principle, no different than are the problems involved in the fruit, butter or cheese business. In all of these and in many other lines of agricultural activity organized co-operative effort, having for its basic idea the community plan of production, has last few years developed into one of the greatest seed states and will, in the near future, if the community plan is intelligently taken up and followed out, become the greatest seed potato state in the union. Our soil and climate are unsurpassed for the production of good potatoes, our growers are, with few exceptions, men growing a limited number of acres of potatoes in rotation with other crops and fed to some sort of live

Green Mt. Potatoes that went 400 bushels per acre last season.

proven the solution of the problem of production and preparing the commodity for market. In every case it has also greatly simplified the marketing problem and often added much to the profits of the producer.

All of the reasons for community breeding of cattle, horses, hogs and sheep, or in the production of butter, cheese or eggs, apply with double force to the potato crop. Wisconsin has in the stock; we have no powdery scab and are relatively free from other potato diseases; in fact, having less potato disease, I believe, than any of the other great potato growing states.

Well directed community effort, by reducing the varieties to two or three of those above mentioned, keeping them free from mixture and preventing the introduction and spread of disease will enable us to maintain the high standard

demanded for good seed. It then follows without argument that the stock so grown and not required for seed will become the best possible market stock for table consumption. The higher price paid for the seed stock and the better table stock so produced will annually add hundreds of thousands of dollars to the profits of the Wisconsin growers.

country to correlate and harmonize the community efforts, it but remains for the individual to do his part in the great plan.

The Wisconsin System of Inspection

The State Association has during the last year, in conjunction with the College of Agriculture, worked out and

The Field in Blossom.

The foundation of this plan of potato production has been well laid in Wisconsin and today there are more than one hundred communities started upon this great progressive plan, and those communities first organized are already producing potatoes of a quality seldom found and never excelled and bringing corresponding higher prices for seed and table stock.

With the most efficient State potato growers' association in this or any other

put into operation in Wisconsin a system of inspection and certification of seed stock that is open to all growers whose field and stock measure up to the high standards demanded.

The inspection is made under the direction of the College of Agriculture and involves both field and bin inspection by experts, and the certificate, being issued by the College of Agriculture, carries with it a guarantee entirely removed from all commercial influences, which

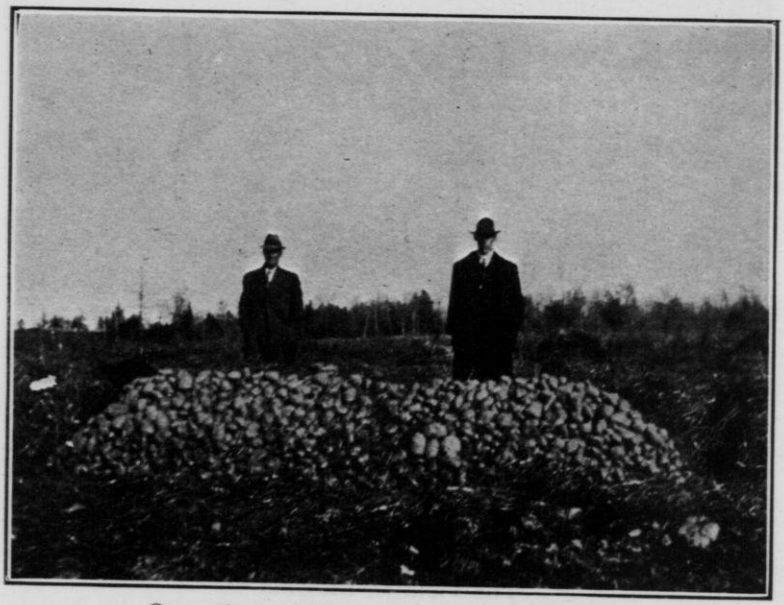
makes it of special value to the purchaser of seed stock.

Standardization the Next Step

The basis of all continuous, legitimate, successful marketing or dealing, is founded on quality, quantity, uniformity and honesty, and while Wisconsin today has the quantity of potatoes, she has not the quality and uniformity, except in the organized communities, and possibly, in some instances the element of honesty is lacking.

Community production and standardization, I believe, must precede any considerable amount of successful community marketing of potatoes. A sufficient quantity to supply the market and having the standard of quality must be available in order that any large degree of success may be attained.

The officers of the Wisconsin Potato Growers' Association are now at work upon the problem of establishing a practical system of market sorting and grading to definite market standards and, while the requirements of the grade have not all been worked out, it is safe to say that at least one of the requirements will be that each variety must be marketed free from mixture with other varieties and under its true name. It therefore becomes important that the growers of potatoes in Wisconsin should at once organize their business along community lines and in harmony with the other communities already organized. They should weed out, and standardize their seed as to variety this spring and then study the chosen variety or varieties through the entire season, so they may know the vine and tuber characteristics under all



One of the Piles of Green Mt. Potatoes.

conditions. If in doubt about the seed, purchase at least enough certified seed to plant a seed plot and, by intelligent hill selection and seed plot methods, instead of letting the seed "run out," build up an ever better strain, producing better quality and a larger quantity.

Every grower should study and learn to recognize what, if any, disease is upon his field and the most effective methods of control and eradication. He should make continual use of the local association, the State Association and the University to the end that he may better understand soil conditions and the cultural methods and all other problems involved necessary to produce the largest and best crops.

He must plant in season, so that the crop may fully mature and in the fall his splendid crop of the one standard variety, well grown and matured, free from mixture, free from disease and properly graded to the market standard at the community warehouse, will amply repay him in the satisfaction of a thing well done, the larger yield of good potatoes and the increased size of the bank account.

One of the greatest assets of any agricultural community is the reputation of habitually producing a more than ordinary quality of some one particular product and this reputation can be built up only by well organized, intelligent, honest community effort.

DISCUSSION

A Member—What do you find to be the best preventive of scab?

Mr. Hicks—There are two treatments for it, one is the formalin treatment, the other is the corrosive sublimate. Either will destroy the disease upon your potatoes, but if you plant again in soil that is infected with scab, you will have a scabby crop just the same. The only way to clean up your soil is to keep potatoes off of it for seven years. If you do that and then go back upon the soil following clover, the chances are, if your seed is clean, that you will have no scab on your crop. The formalin treatment is the simplest, probably not as effective as the corrosive sublimate. For this treatment, put a pound of formalin in thirty gallons of water and soak your seed in that solution for two hours. For the other treatment, you had better get a bulletin from Madison, for it must be very accurately done.

A Member—What is the average yield of potatoes per acre?

Mr. Hicks—One hundred and fifteen bushels.

A Member—To what might it be increased?

Mr. Hicks—To from 250 to 400 bushels.

A Member—What would we get then for our potatoes if we all did that?

Mr. Hicks—It depends entirely on how many acres are planted. One of the greatest troubles in Wisconsin is that there are thousands and thousands of acres planted to potatoes that ought to be in corn and clover. Many a farm that has only one or two old scrub cows ought to have from twenty-five to forty head of cattle. That is what is making the trouble with our Wisconsin potatoes today. If you go into Chicago and study the market conditions, you will be almost ashamed that you live in Wisconsin.

A Member—What causes the black core in the potatoes lately? I have had a great deal of it this year.

Mr. Hicks—I do not know, without seeing the potato, just what you have in mind. It is quite likely that the dark hollow centers come from weather conditions. You remember last fall we had very warm, wet weather, and

the potatoes grew very rapidly and got very large. Hollow heart is liable to follow that kind of weather, especially in some of the larger, late varieties. There is a dark center that is entirely different which comes from storage conditions. It was found a few years ago that in shipping when the cars are very much heated, there would be a lot when they got to Chicago that would have black centers. That same condition was reproduced in the laboratory by subjecting sound potatoes to a given temperature a little above blood heat for a day or more.

A Member—Is it not true that in a good many potato centers all the large tubers are shipped out and those left for seed are rather small?

Mr. Hicks—I think so. I will warrant that some years there will be plenty of small potatoes planted. When potatoes are high, there are lots of small ones planted. I want to tell you of an interesting incident in connection with our Wisconsin seed potatoes. A year ago in January, Prof. Stuart, of Washington, was to have a little potato exhibit at Cornell University during their Farmers' Course. He wrote to Prof. Milward and asked us to send some show samples from Wisconsin. We sent down some Rural New Yorkers and a few Green Mountains. We didn't hear much from the exhibit until in the spring, when we got inquiries asking, "where can we get some of those Rural New Yorkers we saw at the Cornell exhibit?" Prof. Milward informed the parties and the man who furnished the sample sold all he had at a dollar a bushel and might have sold many more. A man at Tomahawk, who furnished the Green Mountains, sold his two cars at the same price to parties in Michigan. Remember, Wisconsin has the best seed potatoes in the world and you are in position to get them with the certification of the Agricultural College that they are free from disease.

A Member—Will soil conditions in southern Wisconsin make any difference in the variety of Green Mountain potatoes from northern grown seed?

Mr. Hicks—The Green Mountain, we find, as a whole, do not prove as satisfactory on the heavier types of soil. Take it down here where your soils are well handled and liable to be on the heavy side, the Green Mountains are liable to grow very large and get out of shape.

A Member—What time should we plant late potatoes?

Mr. Hicks—I think late potatoes should be planted about the first of June. The bulk of the late crop is planted from the 10th to the 25th of June, goes on the market in an unripe condition and is discriminated against for that reason.

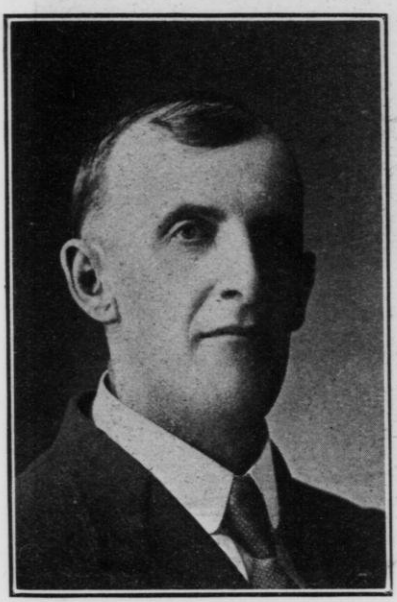
Adjourned to 1:30 P. M.

AFTERNOON SESSION, 1:30 O'CLOCK.

Mr. H. D. Griswold in the chair.

STANDARDIZING FARM PRODUCTS.

W. H. Hanchett, Sparta.



W. H. Hanchett.

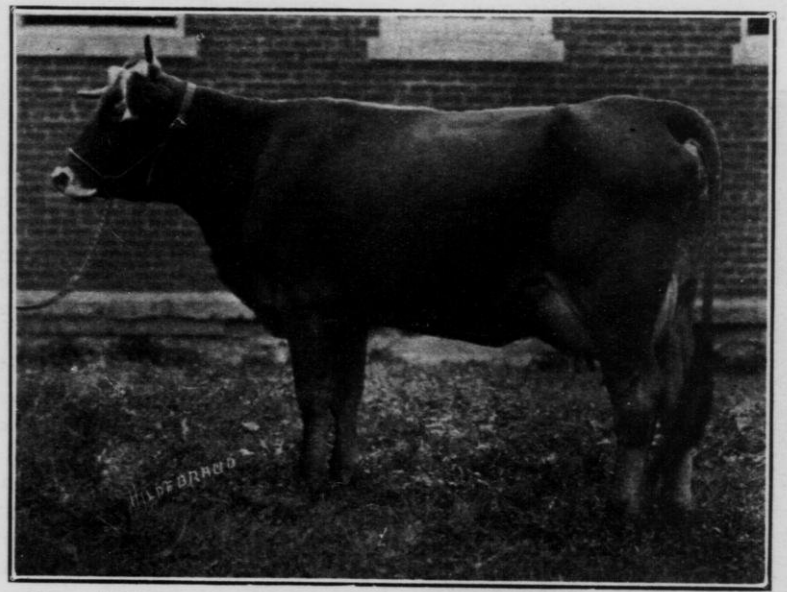
The location of Wisconsin in relation to good markets has been such that the matter of standardizing her farm products has not been such an imperative one as it has been with many of her sister states, the matter of freight rates on many products being such that the Wisconsin farmer has been enabled to realize a net return on products of comparatively low equality equal to those received for a higher grade product of communities not so favorably located as to markets. This has allowed the Wisconsin farmer to be somewhat careless as to the quality of his product and has resulted in the case of many commodities of having the brand "WISCONSIN'S" become synonomous to low quality, and it is frequently the case that the higher grade products of Wisconsin are placed on the market as coming from other sources by way of avoiding this stigma.

To substantiate this statement, I refer to Prof. Lee, of the Wisconsin University, as authority for the statement that Wisconsin butter is looked upon as a low grade product in our eastern markets, and also to the results of an investigation of one of our leading western Wisconsin creameries, that had succeeded in gaining a reputation of producing a high grade product. This investigation showed that the product of this creamery was being placed before the consumer as a special "HOLLAND" brand. Can any doubt the effect of this transaction in creating a demand for "Holland" butter to the detriment of Wisconsin, who should have had the credit?

Financial Returns Not Only Side of Problem

This appeals to me as a serious situation and one that should command our immediate attention. As farmers we are inclined toward measuring benefits by the immediate cash returns and lose sight of future results. The most serious part of this situation, as it appears to me, is not that we may not be getting within a cent or two of what we should for a high grade product, but that the better grades of our product are being used to advertise foreign goods to the detriment of our home product.

We certainly owe it to our dear old Badger State to make the name WISCONSIN stand for the best there is in every line and to guard that name with jealous care against the unjust impositions of unscrupulous dealers. We already stand at the head in many lines of agricultural production so far as quantity is concerned and we have also been making material gains, thanks to the educational forces of our State, as to quality as well. Our community breeders' associations have been doing much to standardize the live stock interests of our State; our experimental associations have been doing a great work in standardizing our grains; the work of our Agricultural College, in organizing potato growers' associations and preaching the doctrine of seed selection, is beginning to bear fruit in the way of standardizing our potato crop; the work of our fruit growers' associations has done much to add to the reputation of our fruits, and the efficient work of our Dairy and Food Commission, co-operating with other educational forces of the State, has done much

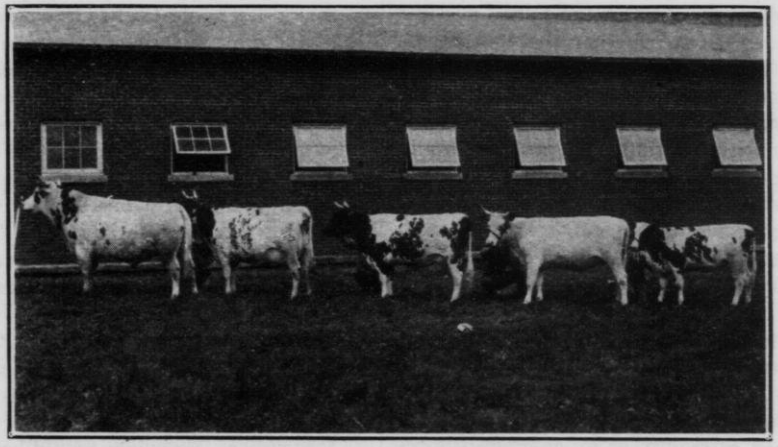


Grand Champion Brown Swiss Cow, Wisconsin State Fair, 1915, owned by H. W. Ayers, Honey Creek, Wis.

to raise the standard of our dairy products. We have, in fact, arrived at a point whether further progress will be slow without the hearty co-operation of farmers generally, so let us "give a long pull and a strong pull and a pull altogether" to the end that our products may take front rank for quality in all markets of the world.

Advertising the Superior Product.

Having once attained the desired goal, the matter of advertising the source of supply of high class products and protecting the reputation of the producer, be it individual or a community, against the impositions of the unscrupulous becomes a public duty of great importance. Just how this is to be done I do not feel qualified to say, but believe that we may get some valuable suggestions from the use of registered trademarks or brands, which have become quite common in the marketing of agricultural products in many European countries. These trademarks or brands are protected by law and are so designed as to point out to the ultimate consumer the source of supply and their use is so regulated as to be a guarantee of the quality of the product on which they are placed.



First Prize Aged Ayrshire Herd, Wisconsin State Fair, 1915, owned by Adam Seitz, Waukesha, Wis.

DISCUSSION.

A Member—What authority in Minnesota is handling the State brand?

Mr. Hanchett—They have passed a law, I think, permitting the use of a brand on butter which is produced at creameries which have been able to raise the standard of their goods to a certain standard, and which have been inspected as to the sanitary conditions surrounding that creamery. I do not know just what has been accomplished in that line.

Dr. Porter—I think it is through the Pure Food Department of the State that they have granted that privilege to all creameries making an article scoring about 92 points. There are five cream-

eries running under that brand at the present time.

Mr. Hanchett—Assemblyman McGowan is drafting at the present time a bill authorizing the use of brands under certain control. I think it would be a good thing for the farmers generally in this State to inquire into this subject and if they are convinced that that is a proper step to take they ought to throw all the support they can toward the passing of Assemblyman McGowan's bill. I have a rough draft of the bill here with me, but Mr. McGowan assured me that the bill would be changed materially in some respects. I know it is an open question in the minds of some farmers as to whether there would be any benefit derived from the use of the brand, and it is probably true that the immediate results in the use of the brand to guarantee a product would hardly reach our expectations, and there is where we often fall down as farmers because we do not get immediate cash returns we do not follow a matter up sufficiently long and with sufficient ability to get the results which we would ultimately by sticking to it more persistently.

Mr. Parrish—Do you think these results could be obtained by individual action as readily as by co-operative action, say, in our cheese business?

Mr. Hanchett—In the matter of our dairy products, it would be almost impossible to get results immediately. We could get them only through co-operative movement. We all understand that in the producing of butter and cheese under factory conditions, we need the very best efforts under supervision.

Dr. Porter—Two years ago I went up through the west coast of Ireland and stayed eight days, and everywhere I went I got the loveliest June butter. Then I went up to North Ireland and there I asked a constabulary officer how it was I found such lovely butter everywhere, and he said, "I suppose the reason is we constabulary police inspect every dairy which sends cream to the four hundred creameries in Ireland." It seems to me if you have the government back of you, and all of those governments over there exert an important influence over their people, it is as important and helpful as to have co-operation.

Mr. Hanchett—I will agree with you; in fact, I do not believe we would get very far in raising the standard of our dairy products without some label and government supervision and control. Farmers are liable to be too careless. We have a lot of farmers who won't do anything unless they are compelled to. We know we need policemen to compel some people to keep their product as they ought to. Of course that has been met in our dairy products during the past few years and it has been brought about through the work of our State Dairy and Food Commission prosecuting those who insisted upon running dairies under very unsanitary conditions. One criticism of their work is I hardly think they have been strict enough. A farmer who is called up often thinks he has been imposed upon.

A Member—Your idea would be that a label would be of value only when the quality of the goods was equal to the standard?

Mr. Hanchett—Yes, it would be of no value whatever unless the quality of the goods was maintained.

Mr. Aderhold—And if the brand was put on inferior goods, it would be a case of damage to somebody.

Mr. Hanchett—It would not be long until the people stopped buying stuff that had that brand on.

A Member—Could brands be used on eggs?

Mr. Hanchett—I believe the Danish Association demands that every egg be stamped with the date upon which the egg was laid and the name of the man who owns the hen that laid the egg, and then the State watches out to see that he is not careless, not to say dishonest. The first time he fibs about an egg he is fined and the fine increases, and if he persists on doing it he is blackballed, or black-listed and he cannot get into one of the egg circles in Denmark. About the only thing for him to do is to come over here to Wisconsin where he can market bad eggs with good ones and get the same price. Perhaps that is one reason why in our egg business sixty per cent poor ones are mixed with the good ones.

A Member—Ought not milk to be branded as to the amount of solids it contains?

Mr. Hanchett—I do not know.

Mr. Aderhold—No.

Mr. Hanchett—Put those questions up to Mr. Aderhold when he gets up here.

Dr. Porter—What effect has that branding had in Denmark and Ireland?

Mr. Hanchett—There is no question but what it has been of very material help in building up the demand for their product, and when you do that you are doing something that will aid you in getting better prices for it.

Mr. Jacobs—I would like to say a word for the farmer who furnishes those eggs. I noticed in our local store about a year ago this time a large amount of eegs in different receptacles. They were around the stove to keep them from freezing and they were kept there a long time before the accumulation was large enough to ship away. I asked the storekeeper if he wasn't commencing to accumulate his eggs pretty early in the season, and afterwards I found he had met with several large losses in his shipment. By that time there was no excuse for the farmer to send eggs to the store that were not all right. They had deteriorated in the hands of the dealer.

Mr. Hanchett—In that one item of marketing eggs, we can hardly conceive of the effect that the breaking of one bad egg may have upon the general consumption of eggs. When the good housekeeper breaks one and finds it bad she doesn't want any more.

A Member—It is now unlawful to ship No. 3 eggs in interstate commerce. That is one step in advance anyway.

Mr. Hanchett—But that means out of the State. We can ship our bad eggs to Milwaukee.

Mr. David Imrie—Then you would have this guarantee by the State, that simply means supervision by the State?

Mr. Hanchett—Yes, more commissions. I am afraid that Assemblyman McGowan's bill is going to have a rough time just on that account. I believe the expense of inspection in the old country is quite largely borne by the co-operative organizations.

Mr. Aderhold—It is probably much cheaper there than it is here. Labor is cheaper.

Mr. Imrie—Perhaps labor is not so much cheaper, but they look upon a government position in a different way. A representative of the Swedish Commission walked out to my farm when he was in this country. He was sent over to study farm machinery. I said I was sorry our horses were all out in the field, busy. He said, "I have got a good pair of legs and I can walk." If a representative of our government had been there he would not have walked, he would have wanted the best automobile that could be hired.

Dr. Porter—It seems to me that in those northern European countries the inspection is very cheaply done. It is

done largely by local officials, by the police and men who have other occupations. The inspection in Norway is very rigid and I found it so in Sweden. Everything is clean and up-to-date. And that is true in Holland, as we all know.

Mr. Parrish—It seems to me that we are not taking this egg situation seriously enough. It means thousands and thousands of dollars in this State. It seems to me that we should take some action, pass some resolution affecting this matter.

Mr. Hanchett—Prof. Halpin, with whom I conversed on this subject, seemed to have arrived at rather a discouraged point in the matter of improving the eggs of Wisconsin. He has been working on that proposition. He excused the farmer on his part by saying that the gathering of the eggs was largely left to the children and that no doubt resulted in a good many old eggs being found and a good many bad eggs being delivered. Now, the children of this State have taken hold of the corn contests with such interest that it seems to me that this is a matter that might be taken up by the children, and thus we might increase their interest in agricultural work. They could quickly learn the importance of gathering the eggs before they are spoiled.

FARM CREDITS

Prof. B. H. Hibbard, Madison.

The question is often asked why farmers are more in need of credit than are other business men. No doubt merchants need credit; in fact, a large part of the mercantile business is done on credit as the basis. The fact is credit is more readily available to the merchant than to the farmer, and for causes beyond the control of either. To begin with, a farmer gets into the business early in life. That is to say he takes charge of the farm earlier than a man going into banking takes charge of a bank. A vast amount of business is so organized that young men enter as junior partners or as subordinates and work up to more responsible positions during a period of years. On a farm there is ordinarily but one man in charge; there are no junior partners except where a boy works at home with his father and in a very few cases is there any opportunity to buy shares in a farm without taking over the whole unit at once. The case of the young man working with his father is a fairly frequent one, but it is not so usual as to be taken as a solution of the question of farm credit. The majority of young men who undertake to acquire farms have the task of earning the money with which to make the payments. In an old settled section of the country this is no small undertaking. For example, in southern Wisconsin the average size of farms is about 120 acres. The farms are worth say $120.00 per acre, or $14,400.00. To this sum should be added another amount not less than 25 per cent as great with which to provide equipment. Thus it takes around $18,000.00 to buy and equip a typical farm in southern Wisconsin. There are many small farms which cost less and the beginner makes his start in owner-

ship as a rule on one of these. The mortgaged farms of Dane county are smaller by 14 acres than are the farms free from mortgage. Of course the young farmer in most instances makes his start as a tenant.

Another reason why the present system of credit does not fit well the farmers' needs is the slow turnover in farming operations. Without a doubt our present system of banking is adapted to the needs of the manufacturing and merchant class much more exactly than to the wants of farmers. Banking is done with the idea always in mind that the lender may want his money returned at no distant date. Thirty, sixty, or one hundred and twenty days is the regular and usual length of time for which notes to the banks are drawn. These periods of credit correspond very nicely with the length of time elapsing between the purchase and payment for store goods, between sale and collection of manufactured goods, even between the purchase of raw material and the sale of the finished product in connection with many factories.

Compare the above with the needs of the farmer. Should he buy grain seed it is for use in April with the propsect of return six to ten months later. Should he buy cows it is with the hope of return through a few years. The same is true where money is wanted for any kind of permanent improvement, as in building barns, milk houses or fences. But with rare exception the banker will lend for but a small part of a year.

As to the rate of interest paid, the Wisconsin farmer is somewhat favored as compared with surrounding states, paying less than is paid in Iowa, Minnesota or Michigan, and about the same as in Illinois. The prevailing notion that farmers pay a higher rate of interest than is paid by other classes of borrowers is hardly borne out by the facts. The bankers of the State report very uniformly that farmers are given the same treatment as other customers of equal standing with respect to security.

The farmer is, of course, not dependent upon the banker as his sole creditor. In fact, the greater share of money borrowed is obtained elsewhere. The real credit, that is the credit on real estate as security, is obtained in most instances from loan and trust companies, from insurance companies or from private individuals. The last named class of lenders do not so frequently advance the actual money to a borrower as to leave it with him on the occasion of the sale of land. The loans growing out of a sale of land are among the most favorable of all, since the attractive conditions of the loan are made for the sake of promoting the sale. In Dane county three-fifths of the farm loans are at 5 per cent interest, yet it is all but impossible to find any five per cent money seeking investment in farm mortgages. The inference is that the majority of the five per cent mortgages were the result of sales of farms, and the lower rate was a condition offered to promote the transfer.

Real estate loans are called long time loans, but just as it was found that the short time loans are so short as to fail to conform to the needs of the farmer, likewise, the so-called long time loan is too short. It is too short because it runs on an average less than five years, whereas no farmer can hope to make money rapidly enough to pay off a mortgage covering a third or half of his investment in land and buildings. In many parts of the world there are special banks, co-operative or private, organized for the purpose of loaning money on land security for long periods of time. Such loans run for twenty years, fifty years, and some even for seventy years.

These loans are paid off not on the usual lump sum or partial payment plan, but by amortization. This means by small regularly recurring payments so computed that the total amount, some of it interest and some of it principal, paid on each pay day is the same throughout the entire period from the first payment until the loan is satisfied.

According to the last census reports, there was in 1910 about $147,000,000.00 outstanding in mortgages against Wisconsin farms, but the reports cover only farms operated by their owners, hence by adding a proportional amount for rented farms the total would not be far from $167,000,000.00. This sum is borrowed at about 6 per cent interest, hence the amount paid annually in interest by the farmers is around $9,000,000.00. Since about 50 per cent of the farms are mortgaged, and the number of farms is about 177,000, it follows that the average size of mortgage is around $1,670.00, and the average annual interest payment $100.00. These amounts seem small, but it must be remembered that in the total number of mortgages for the State are included a very great many of but a few hundred dollars each and that these give the low average. In Dane county the average size of the farm mortgage is almost $46,000.00, the rate is 5.13 per cent, hence the interest paid annually is about $236.00.

At the bank the Dane county farmer, who owes anything at the bank, owes about $500.00, on which he pays 6 per cent, or $30.00. He owes $200.00 to merchants and pays indirectly about $30.00 in interest on this. All told, then, the Dane county farmers, excluding a possible quarter of the total number as not in debt, owe about $5,300.00, and pay in interest approximately $300.00.

The percentage of mortgaged farms is higher in Wisconsin than in almost any other state; moreover, the ratio of the mortgage to the value of the land is high. It must not however be inferred that this condition denotes poverty or lack of prosperity. There are other facts characteristic of Wisconsin farms which are of equal or more significance. The percentage of tenancy is lower in this State than in any other north central state, from which it may be inferred that the Wisconsin farmer is making use of the farm loan and owning his land rather than renting of some one else able to own it without so much use of borrowed money.

A recent law passed by the Wisconsin legislature provides for long time mortgage loans to be repaid on the amortization plan. A group of men, not less than fifteen in number, may incorporate a land mortgage association. The capital stock must be at least $10,000.00. Loans are made on farms up to 65 per cent of the value of land improved, or not over 40 per cent on land unimproved. The mortgages thus secured may be used as collateral against which bonds are issued and thus the money recovered by the association. It is a method by which the surplus funds of one community may be carried to sections where money is scarce. The bonds thus far have sold at par on a 5 per cent basis. The money is furnished to farmers at one per cent, or possibly more, above this rate, and they have twenty years in which to repay the loan.

What is needed in Wisconsin, as in other states, is a credit system by which the farmers may be enabled to use the money which now is available among their own members without the loss which now obtains in getting it from lender to borrower.

The farmers of Dane county deposit more money in the banks than they borrow from them on short time notes, yet they receive hardly over 3 per cent

on the deposits and pay 6 per cent on the sums borrowed. Some means should be devised whereby the farmer lender could meet the farmer borrower and do business with him without such a wide margin being necessary.

DISCUSSION

Mr. Houser—What is the total interest paid on farm mortgages in Wisconsin and the rate?

Prof. Hibbard—Over $10,000,000.00. The rate is about 6 per cent.

Mr. Houser—If a system could be devised that would reduce the interest rate to 4 per cent, would it not be an economical gain to the farmer and at the same time would it not permit the use of the unused capital; that is, the capital that is represented largely by the certificates of deposits in the banks of the State.

Prof. Hibbard—It would undoubtedly be an immediate economic gain to those who could take advantage of it. It would not bring into use a great deal of unused capital from the amounts of money deposited in banks, since such money is used for making loans anyhow. The lower rate of interest on farm loans would result in a rise in the price of land. Should, however, the lower rates be made available to farmers actually on the land and to no other land owners, the rise in the price of land would be less apparent.

Mr. Houser—The point I wish to make as clearly as my muddled brain can present it is that if by exercise of our intelligence we could devise a clearing-house that would bring together the man who had the money to loan and the man who wished to borrow at the least possible cost, to bring about this desired condition, would it not be an economic proposition that would be well worth our time?

Prof. Hibbard—Absolutely so.

Mr. Houser—In other words, the banks are simply clearing-houses between the man who wants to lend and the man who wants to borrow, and the economic problem for both parties is to reduce the expense between these two forces. So that, as a business proposition on the part of the farmers and there being fifty-one per cent in this State who are in the position of those who are interested in this proposition, it seems to me that they should bring to bear the best of their judgment to create this agency that would minimize the cost of bringing the borrower and the lender together.

Prof. Hibbard—Over in Germany when there is money to loan it is turned into a central bank and distributed through other banks, thus reaching persons who are short at the time.

Mr. Imrie—A banker told me he had loaned millions of dollars of the farmers of southern Wisconsin to the farmers of the north. He said the bankers would not let him have the money to loan in the north, but he was raised in southern Wisconsin, he came down and talked to the farmers, he got them started and they drew their money and loaned it out and he just charged a commission.

Prof. Hibbard—That man pays six per cent net to the farmer and takes one per cent for doing the business, so that he charges the man who gets the money seven per cent.

Mr. Scott—It seems to me that this is a live question. Mr. Geo. B. Bartlett, who is secretary of the Wisconsin Bankers' Association, knows a good deal of the conditions and the needs of the northern Wisconsin farmer. He was cashier of a bank in the north and last summer he got the banks and the railroads to co-operate and a company of

bankers made a trip throughout the State. The primary purpose of that trip was that the bankers might learn the needs of the new settlers in the north as Mr. Bartlett had known them. What will result from that I do not know. But I have in mind a young man working for wages, thirty or thirty-five dollars a month, and he looks upon the proposition of buying a farm in southern Wisconsin at $150.00 an acre and stocking it and paying for it as a pretty big proposition, and it is. It is a life-long proposition and it is a risky proposition. There are millions of acres in the north, of lands that are just as rich as the lands of Kenosha county, which are producing nothing today, absolutely nothing, nothing but brush. They can be cleared at a nominal cost and this young man can buy them for from ten to thirty dollars per acre. It means work, it means expense for dynamite, it means certainly to make improvements, to build buildings and to start that land, but if he could get the money at a nominal rate, I won't say as low as four per cent, but at five per cent, or even six per cent, it wouldn't be as large a proposition to him as paying for a farm in southern Wisconsin at $150.00 an acre, and every acre of that land that is cleared and brought under the plow is an asset to the State of Wisconsin.

A Member—Would it not have been better for the Government to have loaned us $500,000.00 that is now going out to the Reserve Banks? Would it not have been better to have loaned that money to the farmers at a good per cent of interest than to loan it to the bankers at no interest?

Prof. Hibbard—That is a hard question to answer. We must remember that the Government was not getting itself into the land business merely by depositing the money which it already had at no interest into another bank at no interest. I do not wish to pass judgment on that, but they are not even comparable. The Government can withdraw this money at any time, whereas if they loaned on land they must loan on long time.

A Member—This action of the Government was made by an emergency law to meet certain conditions. Perhaps land contracts could not be made by the Government under existing laws.

Supt. Norgord—If these banks were established locally, to look up the valuation of the property on which mortgages are placed and bonds issued on those mortgages, would it not be safe for the Government then to loan such money as they have to these local banks when the mortgages are inspected by the State Government, or where the banks are looking after the application of the mortage money?

Prof. Hibbard—It would undoubtedly be safe. We have a law in this State which permits certain farm loans to be made, but the State doesn't have enough money to make it worth while. It would be a very great change in Government affairs for us to go into the farm loan business, notwithstanding the fact that the Government has millions of dollars on hand that can sometimes be deposited in Chicago and sometimes in New York, because it is likely to happen that the Government will want all that money in the next six months and will withdraw it. If we are going to loan money on farms, the Government must create a great debt in order to get funds to loan out in that way, and why should it be necessary, when as a matter of fact the farmers in Wisconsin have money themselves to loan at three per cent while their neighbors are paying six for the same money?

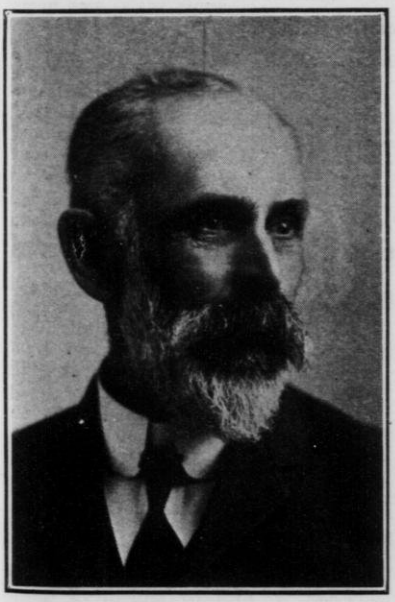
A Member—Wouldn't this be a practical proposition right along that line? If the farmers in Wisconsin had money which is drawing three per cent on certificates of deposit to be loaned in a very large proportion by the bankers at six, whereby they get a three per cent profit, wouldn't it be a practical proposition for the Government to constitute itself as agent to receive from the farmers or other men who have money which they wish to loan upon certificates of deposit, or something similar, and then through the Government agency re-loan this money to the farmers at four per cent and be safe?

Prof. Hibbard—We have a law in Wisconsin providing for the receipt of money in a way quite similar to that, in order that farm loans may be made out of the fund, and no money has been forthcoming. In other words, the State is pretty large and the relationship of the citizens to the State is not very close, and it would take a good deal of machinery and a good deal of expense to work out a system of loaning such as that. I do not know how much we may hope for. State loans are not necessarily objectionable, but if the same result can be obtained through private means and through co-operative companies, there is reason to believe these means more desirable than through the State.

The Member—I think it is entirely practicable and I think it ought to be done.

FARM ACCOUNTS.

H. D. Griswold, West Salem.



H. D. Griswold.

Farming today is being recognized as a business, and justly so, as there is no business that requires more general knowledge, more skill and more study than farming. In all other business which is carried on with any degree of success, a system of bookkeeping and accounting is carefully kept from which the business is studied. The things which bring the most profit are given first place, while those which bring little or no profit are dropped out and the general expenses are cut down wherever possible.

Competition today is very keen, which makes business men take account of these things as they never have before. The farmer has not been brought up to keep books, he does not do it naturally and his education has not taught him to do it. He works hard and when his day's work is done he has no appetite for accounts, but once he gets started

FIG. 1.

CASH ACCOUNT FOR JUNE, 1909.

			Received	Paid
June	1	Cash on hand	$41 82	
"	1	Interest on Mortgage	37 50	
"	1	Cream to La Crosse Co	78 61	
"	1	R. R. Fare, 44c.; Dry Goods, $3.75		$4 19
"	1	John, for School		24 00
"	1	Harry, Wages for May		26 50
"	2	100 Lbs. Bran, $1.30; Beef bill to date, $6.05		7 35
"	2	Postum, 25c; Salmon, 15c; Spices, 50c		90
"	3	Beef, 18c; Medicine, 40c; Fruit, 40c		98
"	4	Suit for John		23 00
"	4	Dry Goods, $2.70; Postage, 13c		2 83
"	4	Hotel for Cream	8 33	
"	4	Cereal, 25c; Cheese, 47c; Beef, 45c		1 17
"	5	Dry Goods, $1.50; Stamps, 50c		2 00
"	7	Dry Goods, $1.37; Shoes for C., $3.75		5 12
"	7	Yeast, 5c; Soap, 1pc; Crackers, 25c; Hominy, 14c		54
"	7	3 Registrys and 2 Transfers		8 00
"	8	Kerosene, 50c; Fruit, 20c; Hair Cut, 10c		80
"	8	Cement, $2.90; Pail, 25c; Pitcher, 45c		3 60
"	8	Cream to La Crosse Co	60 42	
"	8	1 Registry returned	2 00	
"	8	Bull Calf	75 00	
"	9	Honey, 20c; Cheese, 43c; Fruit, 20c		83
"	9	Over Pay on Cow		10 00
"	10	Premium on Bull	10 00	
"	10	2 Cows, Oakaton and Gypsie	195 00	
"	10	Deposited in Bank		150 00
"	11	Hotel for Cream	10 15	
"	11	Hired Girl (Anna)		25 00
"	11	Dry Goods, $1.00; Shoes, $1.75		2 75
"	12	Fruit, 50c; Salmon, 25c; Cream of Wheat, 40c		1 15
"	14	Salt, $1.15; Bran, $1.35; Beef, 75c		3 25
"	14	R. R. Fare, 60c; Fruit, 50c; Salmon, 50c		1 60
"	15	Claim for School		10 00
"	15	Cream to La Crosse Co	54 80	
"	16	Stamps, 75c; Fruit, 25c; Soap, 15c		1 15
"	16	Beef, 90c; 1 Transfer, $1.03		1 93
"	17	5 Pigs at $3.00 each	15 00	
"	17	James Ashburn for bull, part pay	25 00	
"	17	Cong. Ladies Aid		25 00
"	18	Hotel for Cream	7 56	
"	18	Anton in full for work		86 00
"	19	Lock, 25c; Beef, 78c; Fruit, 90c; Sugar, 50c		2 43
"	21	Cream to La Salle Co	51 70	
"	21	Bran, $1.30; Express, $1.50; Printing, $2.75		5 55
"	23	3 Hogs, 950 Lbs., at $7.10	67 45	
"	23	Dry Goods, $3.15; Stamps, 50c		3 65
"	24	Beef, 25c; Herring, 26c; Corn Starch, 20c		71
"	24	Gave Mrs. G		7 00
"	26	Beef, 35c; Postage, 13c; Coffee, 20c		68
"	26	Bak. Powder, 35c; Cr. of Wheat, 30c; Crackers, 40c		1 05
"	27	Church and Sunday School		45
"	28	Creamery Butter		9 62
"	28	Lard, $1.35; Oil, 45c; Fork, 40c		2 20
"	28	Trip East		58 62
"	28	Screen, 45c; Box Rent, 20c		65
"	28	Keeping Brown's Calves	19 40	
"	29	Stamps, 55c; Dry Goods, 50c; Vinegar, 25c		1 30
"	29	Phelps, for Work		13 05
"	29	Jo Supon, for Work		15 00
			$759 74	$551 60
		Cash on hand, July 1	$208 14	

FIG. 2.

RECEIPTS—SUMMARY OF ACCOUNTS FOR YEAR 1909.

	Received	Paid
Cream sold	$2,425 48	
Cattle sold	2,370 00	
Hogs sold	127 96	
Corn sold	112 85	
Sundries sold	62 58	
	$5,098 87	
FARM PRODUCTS CONSUMED IN FAMILY OF 8 PERSONS		
Milk and cream	$70 00	
Eggs and chickens	50 00	
3 hogs	60 00	
Vegetables, $25.00; fruit, $15.00	40 00	
	220 00	
Total	$5,318 87	
EXPENSES		
Hired help on the farm		$618 20
Hired help in the house		193 80
Fuel bought		350 00
Taxes		217 44
2 boys in University		723 50
Registrys, transfers and testing		145 71
Rent of pasture		130 00
New machinery		200 00
Repairs and improvements		397 94
Dry goods and shoes		270 82
Furniture		100 00
Fuel, $53.00; church, $58.00		111 00
Gifts and traveling expenses		158 62
Investments		1,100 00
Sundries		63 85
Food supplies		
Farm products		220 00
Flour $35.90; sugar $39.30		75 20
Beef, $17.00; Butter, $96.29		113 29
Fruit, $27.66; tea and coffee, $5.90		33 56
Sundries for the table		95 94
Total		$5,318 87

and becomes interested he sees the value of it in so many ways that instead of its being a burden to him, it becomes a source of interest and even of pleasure.

In everything that is well done, there must be a time and place, system and regularity. The time naturally comes at the close of the day's work. The

materials for keeping his accounts must be convenient. A desk of some sort should be located where it will be handy, have good light and be used exclusively for the farm business. Here the farmer keeps his books, letters, stationery, pens, pencils, ink and stamps where he can put his hand on them. The children must be taught to keep out.

Many systems and books for farm accounts have been advocated by men not on the farm, but the farmer that works hard will not accept any but the most simple and concise that is possible.

I believe there is a growing tendency among farmers to run accounts, to put off the payment of bills, in short never to pay today what can be put off till tomorrow. This is wrong. Every farmer should pay his bills promptly; it will win him a reputation and a name that is worth much in his business and will greatly simplify his bookkeeping.

A Simple Accounting System

In our own system, covering a period of forty years, I have found a double-lined ledger, as shown in Figure 1, to be the most convenient book. The amount of cash on hand at the beginning of the month is put down at the top of the page. The dates are put down on the left-hand side, then a brief note of the article in question. If it is a receipt, it is put down in the first, if an article of expense, in the second column. At the end of the month, the sum of each column is computed and the difference between should be the cash on hand which begins the next month.

If different members of the family are using money, the bills should all be carefully kept and handed in at the desk.

At the end of the year any items of income or expense can be singled out by going over the books for the year, and its sum computed, as put down in Figure 2.

If you pay some or all of your bills with checks, that is just the same as money and it is put down in the same way in your book.

You can see on your book just what lines of income are paying you best and by comparing one year with another can see what income has been most uniform and is most dependable. You can also discover the chief lines of expense and whether or not they can be lessened. You will also find that small items which occur frequently foot up more in a year than you expect. For instance: if you are buying meat at the shop in small quantities, it will amount to a surprising sum at the end of the year, and if you have it charged for any length of time, the bill will invariably be more than you expected.

A second book should also be kept, in which are all running accounts with others, especially farmers, bills receivable, bills payable, and all other accounts should be carefully kept, with the dates of each transaction.

These accounts if regularly put down and dates are just as good in law as any other accounts. Do not depend on your memory; it is a treacherous thing, never to be trusted. Your neighbor does not keep the account and if you do not some day there will be trouble and perhaps hard feeling that a brief account properly dated and itemized would have made clear and satisfactory.

Habits are easily formed and the habit once formed of sitting down at the desk after the day's work is done and writing down the day's accounts soon becomes a part of the regular routine and is done as a matter of course.

DISCUSSION

A Member—What benefits have you derived from your bookkeeping?

Mr. Griswold—First, a knowledge of the business, what pays best on my farm, and a working toward the best things. Second, a lessening of expenses wherever possible. Many times it has saved me from paying bills twice. It has given me a chance to compare one year with another, so that I am able by the items recorded and their dates to trace out many items of useful information.

A Member—If you could live your life over again, would you follow the same plan?

Mr. Griswold—I certainly should so far as bookkeeping is concerned (not in all things). I have found no other method so simple and at the same time so satisfactory.

A Member—Do you ever sign your neighbor's notes?

Mr. Griswold—No, sir. I have never signed another man's note, and I never intend to. It is a foolish custom and often the cause of serious loss. Never sign your name for a stranger, no matter what his pretext may be.

A Member—Should the man handle all the money?

Mr. Griswold—There must be a head, a manager, one person who does the business. That person should be the one best able to do it. It is not always the man, sometimes the wife is the manager. Whoever the manager is, he must handle the money and keep the accounts. Children that are old enough to know how to use and take care of money, I believe are best placed on an allowance, it makes them learn to know the value of money and what can be done with it. The wife should also have an allowance for her needs. None of them like to ask for money and a regular allowance that they can call their own gives them more independence and satisfaction, besides the wife, as a rule, is more economical than her husband.

BOOK-KEEPING ON THE FARM

W. J. Dougan, Beloit

It has come to be recognized by all that records of the varied operations on the farm are essential. Comprehensive records of the income and expenditures and the herd are of especial importance.

Most farmers try to keep some sort of accounts. The methods vary from a complete set of books to a diary or a line in a note book. Whatever the method, the majority of farmers are failing to keep a comprehensive account, one that will sum up at the end of the year and tell just where the farm stands.

Requirements of a Satisfactory Farm Account System

These are the requirements of a satisfactory farm account system: First, it must be simple; the average farmer has not the training or the time to keep, post and balance a full set of books. Second, it must analyze the varied operations so that the farmer may know from whence his profits come. Third, it must give a comprehensive summary at the end of the year showing the financial standing of

the farm. A daily or monthly balance is not desirable and is almost impossible. The farming business is in harmony with the cycle of the seasons and not until we have finished can we get a balance that means much.

For two years I have been using the index system, which seems to meet the above requirements in a large degree. It is a system by which all of the items of the month are placed on two opposing pages of the book, the

SUMMARY OF INVENTORY

Line No.	Description	Reference	Amount Jan. 1, 19	Amount Jan. 1, 19	In-crease	De-crease
1	Real estate	Page 4, total A	$153.00	$153.00		
2	Livestock	" 4, " B	42.12	50.32	$8.20	
3	Equipment	" 5, " C	1,993.00	1,915.75		$77.25
4	Purchased feed, supplies, and misc	" 5, " D	1,144.80	1,349.00	204.20	
5	Farm crops	" 5, " F				
6	Total investment		22,649.80	23,596.75	1,024.20	77.25
7	Add accounts and notes receivable	" 32 Balance				
8	Sub-total		22,649.80	23,596.75	1,024.20	77.25
9	Deduct accounts and notes payable	" 33, Balance				
10	Total Net Assets		$22,649.80	$23,596.75	$946.95	

FARM SUMMARY

Description	Reference	Value	Total value
INCOME:			
Receipts, grant total for year	Page 6, Col. H.	$4,584.46	
Increased inventory of total investment	" 34, Line 10	946.95	$5,531.41
EXPENDITURES:			
Disbursements, grand total for year	" 7, Col. Q	2,614.46	
Decreased Inventory of total investment	" 34, Line 10		
Unpaid family labor except manager (hired man rate)		120.00	
Board (Hired man and portion of family working on farm)		135.00	2,869.46
Net income with deducting interest			2,661.95
Interest on total investment at % $			1,132.49
Less interest paid on mortgage debt at % $			
Managerial income or net profits (labor income)			$1,529.46

income on one side and the expenditures on the other. In this way all the items of the month are before the eye at once. These items are classified under appropriate headings. Each item thus has its index number. Instead of writing the item, its index number is put into the book in its proper place. The loose indicator or index corresponds in its headings and divisions with those of the book. This indicator assists in lining the date across the page and by its index system classifies the item we wish to enter.

Pages 146 and 147 are samples from the book showing the entries of a month and pages 148 and 149 are the indicator showing its classification of the items. Each column is footed for the monthly summary. The monthly summaries are so arranged that there is no posting to get the annual summary of income and expenditures.

The index method of recording the items is unique in that it saves space, saves time and helps to classify items and get them in their proper column. It fixes them where they are easily accessible for the summary; however, the comprehensive summary is the most valuable feature of the system. A summary of an actual farm is shown herewith.

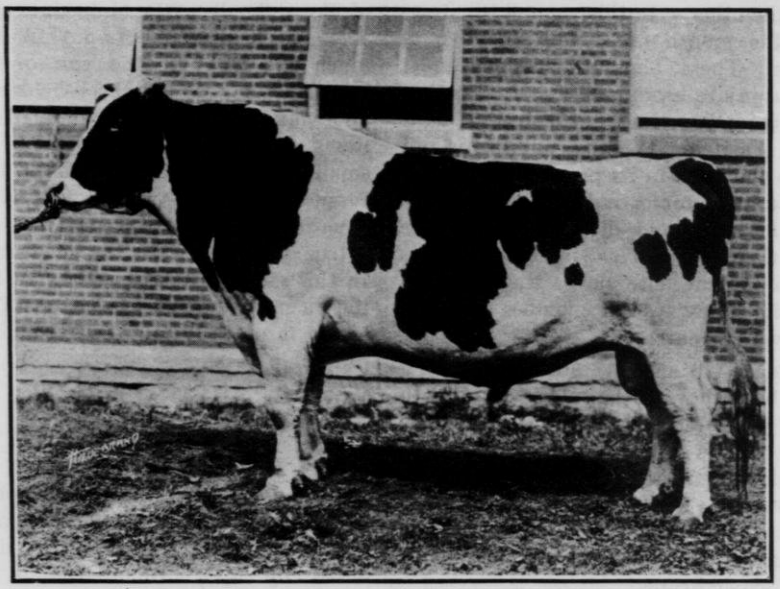
This page is self-explanatory. Note that each item to be placed in the summary is traced back to its place in the back by the directions in the reference column. If one gets the items down at the proper time during the year, it is only a few hours' work to carry the accounts through to completion and make them "talk". With this system and its complete summary, one cannot fail to come to a true understanding of his finances. Note, however, that everything depends upon getting the items down at the right time. To most farmers this is one of the difficult parts of book-keeping. The check system of paying helps much in this. At the end of each month I run over my check-book stubs and put into the account book the items in their proper places. All small items not paid by check I try to place at once. I find the income records easy to keep accurately. This is true on all the farms I have observed. In this index system it is easy to trace the income from the various operations of the farm and thus to determine the profitable lines.

The Herd Record

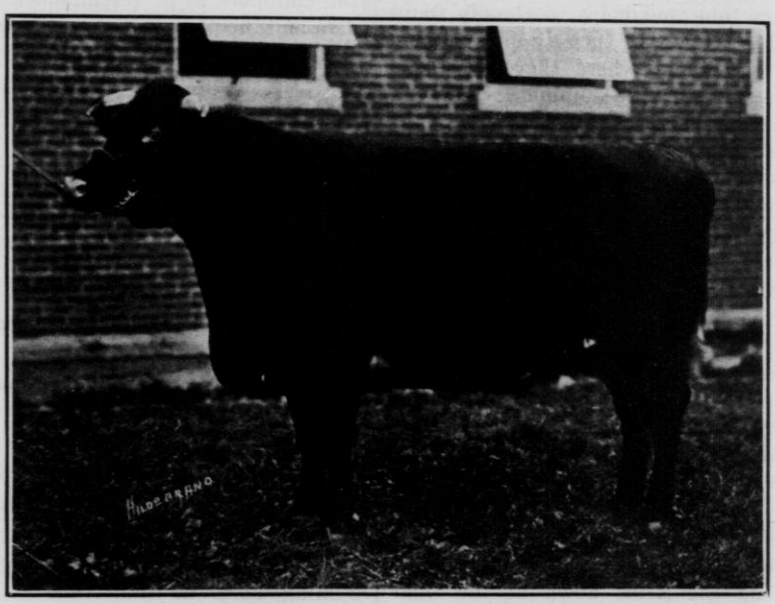
The herd record is another important line of farm book-keeping. When the few cows in the herd could be designated by Spot, Roan, Reddie and Brindle it was easy to find a distinguishing name for each cow. Usually the calf bore some resemblance to its dam and the pedigree was easily traced. With the grading up of our herds so that the animals all look alike, and with the increase in numbers, the dairyman often finds himself at a loss to get suitable names for his cows, and these names usually mean little. It is still more difficult to keep in mind the record of a cow during her life on the farm.

I have worked out a system of naming and recording by which I can trace each cow in all the essentials of cowhood for her entire life on the farm.

The system is this: Each year all the cows coming into the producing herd receive the serial letter for that year and a numeral. I began my record in 1914. All the cows in the milking barn at that time received



Champion Holstein Bull, Wisconsin State Fair, 1915, owned by Rust Bros., West Allis, Wis.



Senior Champion Shorthorn Cow, Wisconsin State Fair, 1915, owned by Herr Bros., Lodi, Wis.

the letter A. All cows that were brought in during that year, either by purchase or from my own breeding herd, were also given the serial letter A. and the numeral according to their time of entry into the producing herd. Thus, the original forty cows in the barn were recorded as A1, A2, A3 up to A40. The next one to come into the dairy herd was a cow I purchased. She took the name A41. The next was a heifer of my own raising to freshen. She took the name A42. These significant name numbers remain with the cow during her life, on her stall, the milk sheet and in the record book. The next year I use the letter B to designate the year in which the cow comes into the producing herd and the numerals 1, 2, 3, etc., to place her in her order of entrance and fix her name. This name is her very own for all time. These are what I call the stable name or given name.

The family or pedigree name is fixed in this way: The heifer that came into the dairy herd as A53 was a daughter of A1 and my herd sire Roger of Fern Ravine. I have given this bull the index name (,1), therefore the pedigree name of A53 is (.A1,1). Thus by these six letters and figures I have a name that means all this: That this heifer came into the producing herd as No. 53 late in the year 1914; that her dam was A1 whose record of production and regularity of service I have recorded in permanent form. The name also shows that this heifer is a daughter of (,1), that is, according to my index, my former herd bull Roger. Is not this a long story to be told in six letters?

SAMPLE PAGE FROM RECORD A2

	1914	1915	1916	1917	1918	1919	1920	1921
Inventory								
Value	85	90						
Calf Record								
Date	4:9	5:25						
Sex	Heifer	Heifer						
Ear Mark	12	57						
Pedigree Name	A2,1	A2,1						
Disposed of	Kept	Kept						
Service Record								
	By, 1	By,						
	7:21	8:8						
	8:11							
When Due		5:19	5:17					
Produce Record								
Milk	8088							
Per cent fat	4.8							
Remarks								

RECEIPTS

Month	A Field crops	B Fruits and vegetables	C Cattle	D Other live-stock	E Dairy products	F Poultry and eggs	G Miscellaneous	H
Jan., 1915								
1								
2							2 $1 00	
3								
4								
5								
6								
7			7 $10 50					
8								
9								
10								
11								
12							7c 150 00	
13								
14								
15	4 $37 00							
16								
17								
18								
19					2$118 36			
20								
21								
22								
23								
24			4 25 00					
25								
26			4 45 00					
27								
28			4 25 00					
29								
30								
31								
Jan.	37 00		105 50		118 36		151 00	
Feb.			70 00		129 62			
Mar.					91 24	$4 32	154 50	
Apr.				$39 70		13 26	16	
May	3 00				137 83	15 51	1 65	
June	37 00			12 00	95 04			
July					101 36		36	
Aug.				344 56	100 05	4 43		
Sept.				50 00	107 58			
Oct.					110 38		13 00	
Nov.	100 00				101 85		1 00	
Dec.	182 85		4 50	219 50	85 01	34 98	22 00	
Year totals	$359 90		$180 00	$665 76	$1,178 32	$72 50	$344 50	
Grand total for year								$2,800 98

DISBURSEMENTS

I	J	K	L	M	N	O	P	Q	
Perm. imprv'ts, mach., equip.	Live-stock pur.	Labor	Feed, bedding, etc.	Seeds and supplies	Re-pairs	Assess-ments and office ex.	Miscel-laneous		Month
									Jan. 1915
							2		1
							2 $36 20		2
									3
		9 $21 00					4 93		4
									5
									6
									7
									8
									9
									10
							8 15		11
									12
			9 $63 70						13
									14
			1 32 00				7 20		15
									16
									17
6 $56 00									18
	2 $50 00			9 $1 25			7 2 72		19
							7 2 36		20
									21
									22
						1 $200 29			23
									24
									25
							7 1 50		26
									27
									28
									29
							7 2 15		30
							8 35		31
56 00	50 00	21 00	95 70	1 25		200 29	37 13		Jan.
	76 00	72 00			37 85	7 85			Feb.
113 75	3 84	64 20	21 00		13 85	1 00			Mar.
		58 00	52 32	8 69	6 50		1 30		April
		56 00	1 00	150 00	1 10		2 87		May
	2 10	53 50		49 13	90	35	4 75		June
		50 30		75	75				July
		27 00		7 15	3 95		40		Aug.
355 67		43 90		90					Sept.
	100 00	87 40							Oct.
74 92			56 70	1 35	20 20				Nov.
132 47		165 15							Dec.
$732 81	$231 94	$698 45	$226 72	$219 22	$85 10	$209 49	$46 45		
								$2,450 18	Year totals

INDICATOR

Ind. No.	Quan. Value	Ind. No.	Quan. Value	Ind. No.	Quan. Value	Ind. No.	Quan. Value	Ind. No.	Quan. Value	Ind. No.	Quan. Value	Ind. No.	Quan. Value	Ind. No.	Value	Ind. No.	Value
	A		B		C		D		E		F		G		H		
	Field crops		Fruits and vegetables		Cattle		Other live-stock		Dairy products		Poultry and eggs		Miscellaneous				
1	Barley	1	Apples	1	Bulls	1	Horses	1	Milk	1	Chi'k'ns	1	Lumber	1	.....		
2	Corn	2	Black-ber'ies	2	Cows	2	.....	2	Cream	2	Ducks	2	Posts	2	.....		
3	Cotton	3	Cab-bage	3	Heifers	3	Sheep	3	Skim-milk	3	Geese	3	Wood	3	.....		
4	Oats	4	Onions	4	Calves	4	Hogs	4	Butter-milk	4	Turk-eys	4	Rent of land	4	.....		
5	Rye	5	Pota-toes	5	Steers	5	.....	5	Butter	5	Dressed poult'y	5	Labor	5	.....		
6	Wheat	6	Rasp-ber'es	6	Veal	6	Bees	6	.....	6	Eggs	6	Hides	6	.....		
7	Grass seed	7	Straw-berries	7	Dressed beef	7	.....	7	.....	7	.....	7	Wool	7	.....		
8	Hay	8	.....	8	Breed-ing fees	8	Breed-ing fees	8	.....	8	.....	8	Honey	8	.....		
9	Tobac-co	9	.....	9	.....	9	.....	9	.....	9	.....	9	.....	9	.....		
10	Prem-iums	10	Prem-iums	10	Prem-iums	10	Prem-iums	10	Prem-iums	10	Prem-iums	10	.....	10	.....		

This heifer, A53, dropped a heifer calf. She will probably come into the dairy herd in about two years. Her pedigree name will be (.53,2). The ,2 signifies that she was sired by Adam, another sire on the farm.

Through this pedigree system I can trace an animal back through any number of generations.

Below is a sample page giving the

INDICATOR

Ind. No	Value	Ind. No.	Quan. Value	Ind. No.	Value	Ind. No.	Quan. Value	Ind. No.	Quan. Value	Ind. No.	Value	Ind. No.	Value	Ind No	Value	Ind. No.	Value
	I		J		K		L		M		N		O		P		Q
	Permanent improvements, machinery equipment		Live-stock purchased		Labor		Feed, bedding, etc.		Seeds and supplies		Repairs		Assessments and office expenses		Miscellaneous		
1	Land	1	Horses	1	Regular	1	Bran	1	Field	1	Carpentry	1	Rent, taxes	1	Traveling	1	.....
2	House	2	Cattle	2	Harvesting	2	Corn	2	Grass	2	Blacksmith	2	Insurance	2	Fairs	2	.....
3	Barns	3	Sheep	3	Silo	3	Middlings	3	Garden	3	Machinery	3	Telephone telgraph	3	Veterinary	3	.....
4	New fences	4	Hogs	4	Threshing	4	Oil meal	4	Fertilizer	4	Harness	4	Registration	4	Frght & express	4	.....
5	Orchard, etc.	5	Poultry	5	Shredding	5	Salt	5	Fuel, oil, etc.	5	Lighting system	5	Cow-testing	5	Legal	5	.....
6	Machinery	6	Eggs	6	Baling	6	.....	6	Drugs, etc.	6	Painting	6	Stationery postage	6	Iuterest	6	.....
7	Wagons, etc	7	.....	7	Sawing	7	Alfalfa	7	Dairy	7	.....	7	Farm papers	7	.....	7	.....
8	Harness	8	Breeding service	8	Grinding	8	Clover	8	Twine	8	.....	8	Advertising	8	.....	8	.....
9	Dairy	9	.....	9	.....	9	.....	9	Hardware	9	.....	9	Dues	9	.....	9	.....
10	.....	10	.....	10	Board	10	Bedding	10	Miscellaneous	10	Auto	10	Miscellaneous	10	.....	10	.....

actual record of one cow since I started this system.

This page provides further record of this cow for eight years.

While this herd record system has been worked out for a grade herd, it could be easily adapted to a pure bred herd and save some of the nervous strain of the long fictitious names and complicated records.

THE WISCONSIN FARM CONTEST

D. H. Otis, Madison.

The farmer is or should be a business man. As such he must study the factors that make for success in his business.

Fortunately farmers are not serious competitors. The more good farmers in a community, the better it is for every farmer in the community. The larger the number and the better the quality of the cattle in the community, the more prosperity it brings to every breeder in the community. If the cattle are all of the same breed, so much the better.

This makes it possible for one farmer to help another farmer without giving away any business secrets or in any way injuring his own business. As would naturally be expected, there are large differences in the net results obtained on different farms. Studying the reasons for this difference makes it possible to point out to one farmer how he may improve his conditions by studying the methods of another. As no farmer is perfect in all his methods, so every farmer may learn from other farmers.

The Growth of the Wisconsin Farm Contest

The Wisconsin Farm Contest was started to encourage farmers to study the business management of their farms. It is to the credit of the farmers enlisting in the movement that they come in, not because they expected to win a prize, but because they want to learn all they can about their business and compare their results with the average of their county and with the best in the state.

During the first year (1913) there were 150 farmers connected with the work. The following year this was increased to 440 farmers and for the ensuing year (1915) there are over 650 farmers who have signed statements that they will keep records of their business transactions and hand them in to study for demonstration purposes.

During the past year the work has been conducted in 21 counties distributed over the entire State. Local meetings were held in these counties and at these meetings each farmer was given a factor sheet showing the results obtained on his farm and alongside of these were placed the results of the average of the county, the average of the State and the average of the best ten. The factors that make for success in farming were discussed at these meetings.

The Farm Contest an Incentive to Keep Farm Accounts

The Wisconsin Farm Contest has emphasized the necessity of some simple yet accurate method of keeping accounts. Farmer after farmer has asked for assistance along this line. The work of keeping financial records has been greatly reduced by utilizing the machinery offered by the banks.

The Bank Book. All receipts can be recorded in the bank book by the banker, if the farmer will make out a suitable deposit slip indicating the

source of income. Cash as well as checks can be handled in this way.

Deposit Slip

Deposited by A. B. Farmer
in the
Bank of.....
Post Office.....August 17, 1915.

Cash	A. J. Anderson—calf.....	$ 10.00
Cash	Enterprise Grocery—eggs.....	1.18
Check	B. S. Royce—hay.....	45.32
Check	Model Cr'y Co.—cream.....	115.83
	Total.....	$172.33

By depositing all income in this manner, the farmer will have a record of all his receipts in his bank book.

The Check Book. As far as possible, expenses should be paid with check. The check will serve as a receipt and the stub as a record of the transaction. When it is desired to have a little change for incidental expenses, a check can be drawn for $5.00 and charged to miscellaneous, incidental or personal expenses. If desired, a separate check book can be kept for family expenses.

The Farm Account Book. This should contain the farm inventory, the credit accounts and space for distributing the receipts and expenses. This book should be as simple as possible and so arranged as to require the minimum of labor in adding, posting and summarizing. We are pleased to state that such books are in existence, and farmers are using them.

The Farm Contest Enlisting Local Co-operation

Local co-operation is playing a large factor in the farm management demonstration work. Business men, bankers, county representatives, county agricultural schools and high schools are lending material assistance in the collection of the data and assisting farmers in the keeping of records. For the year 1915 these various parties have paid the cost price for a simplified account book which has been given free to the farmers who have entered this movement and have promised in writing that they would keep their accounts. At the end of the year, these books are to be turned over to the College of Agriculture long enough for the latter to obtain the necessary figures for conducting the Farm Management Demonstration and Contest work in the State. The books will then be returned to the farmers with a factor sheet showing the rank of the farm relative to the factors making for success in farming. Over 650 farmers in the State have promised to keep their records for this purpose. To encourage the keeping of records, the Wisconsin Condensed Milk Company of Racine County has offered the ensuing year $75.00 cash prizes to be distributed in the sums of $25.00, $20.00, $15.00, $10.00 and $5.00 amounts to the farmers of the county who will present the best kept set of books for the year. This is a feature of the county work that needs encouragement. The business men of Janesville have offered prizes for the farmers of Rock County who are engaged in this work.

Prizes for the State Contest

The Hoard's "Dairyman" prizes have been increased from $300 to $500, with the understanding that considerable emphasis will be placed upon the home life of the farm, or the part played by the farmer's wife. It was deemed unwise to separate the farm home from the farm and offer separate prizes. The prizes are awarded therefore to the farmer and his wife.

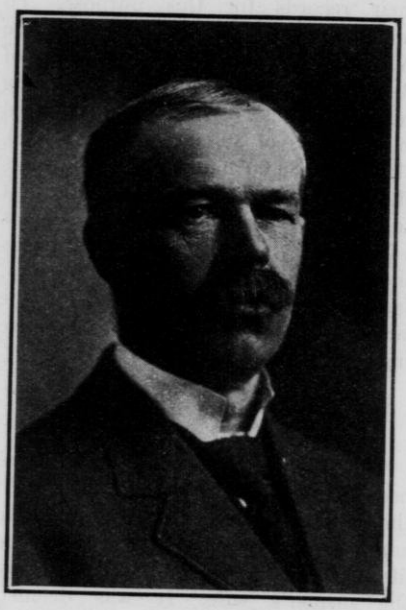
The Wisconsin "Agriculturist" has materially encouraged the movement by

offering prizes for the best work in each county. The farmer and his wife whose farm ranks first in the county are given a cash prize of $10.00, to be awarded at the State meeting. Twenty-one prizes for 21 counties were awarded at this State meeting.

The Wisconsin Farm Contest has been made possible through the hearty co-operation and good will of the farmers entering it. The work has given us a clearer conception of the farmers' needs and the difficulties that he has in organizing his farm activities so as to make everything work out satisfactorily. In like manner we believe that the contest has been beneficial to the farmers in opening their eyes to some of the problems they have upon their own farms. They have been led to see the need of applying business principles to management of their farms and many of them have requested advice upon the problems that this work has emphasized. It is the spirit of co-operation that makes us feel encouraged in taking hold of this work and pushing it. We believe it has a great future.

PROFITABLE PRACTICES IN FEEDING DAIRY CATTLE.

E. C. Jacobs, Elk Mound.



E. C. Jacobs.

Profit can result from feeding dairy cattle only when we have dairy cattle to feed, namely, young stock of good dairy breeding, or cows which when properly fed and cared for will return a profit in milk production. As intelligent feeding can result only when we know the individual butter production of each cow, it follows that the individual record of the production of the herd must be kept. As our efficiency is affected by the conditions under which we live, so the efficiency of the cow is influenced by comfortable and sanitary surroundings, and especially by being able to "live in peace with all men."

Factors that Contribute to Good Feeding

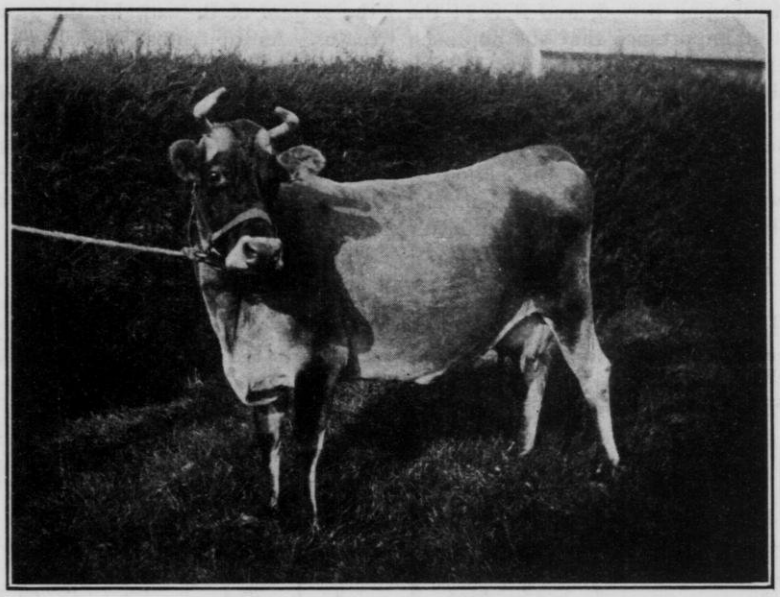
Let us consider the subject of feeding under two heads:

1. What are the needs of the individual animal?
2. What amount and what variety of food must we supply in order to meet the requirements of the animal most effectively and economically?

Self preservation is a law of life which applies to cows as well as men. The first demand upon the ration given any

animal will be that of furnishing the materials to repair the wastes caused by the normal functions of the body. This part of the ration is known as "the food of support." The requirements of the cow, as well as those of other animals for the food of support, will vary with the live weight of the animal.

As the food requirements for production are based upon the individual requirements of each cow, we must possess this record in order to feed intelligently and profitably.



Jersey Cow, Michie S., 183,794, Register of Merit Record 508.34 pounds of Butter Fat, owned by E. C. Jacobs, Elk Mound, Wis.

A Practical Rule for Feeding

A rule which we have found helpful and of quite general application is: In addition to what corn silage and clover hay a cow will eat, feed one pound of concentrated feed per day for every pound of butter fat produced in a week. This rule, like other rules of feeding, is of value only when subject to the good judgment of the feeder; however, one rule that may be invariably followed is to provide the cow with an abundance of food at all times. We sometimes fail to appreciate the loss occasioned by a restricted or improper ration, even for a short time, for when the milk flow is once reduced, it is difficult or impossible to regain it during that milking period.

In winter, when all the ration of the cow is furnished by the feeder, it is easier to supply the proper amount and variety of feed than when she gets a part of her ration from the pasture. For this reason it is especially necessary to watch the milk sheet and note the con-

dition of the cow when depending upon the pasture for all or part of her ration. By so doing, any deficiency in her ration may be supplied before a permanent reduction in her milk flow takes place.

Fitting the Cow for the Freshening Period

The value of a cow as a milk producer depends largely upon her condition at the freshening period, and it is of the greatest importance that she approach this period properly fitted for it. She should also receive special consideration for the first thirty days after freshening.

To bring the cow to the period of freshening in the best condition, she should be well fed during the latter part of her lactation period and also during the time she is dry. In fact, a year is none too short a time to prepare for her best work, and usually it will be found that her capacity will be increased by generous feeding for a longer time.

While I would not advise heavy feeding unless the production of milk justifies it, yet I think we often fail to appreciate the added demands made on the system of the cow by the growing foetus. As the foetus is nearly all protein, additional care must be used to supply this deficiency and to build up and strengthen the animal and fit her for the approaching freshening period.

Her ration should be the same in quality as a balanced ration for milk production and the amount must be de-

Composition of Feeds

This chart is useful as a guide to the feeder and the purchase of feed. Where high protein feeds are needed the purchaser should bear in mind the percentage of protein and the cost of protein in various feeds as affected by the market price. The same fact should also be borne in mind in purchasing carbohydrate feeds.

	Digestible Matter			Nutritive Ratio	Dry Matter
	Total	Protein	Carbohydrate and Fat		
Concentrates—					
Corn	84.3	7.9	76.4	1:9.7	89.4
Barley	77.9	8.7	69.2	1:8.0	89.2
Oats	66.0	9.2	56.8	1:6.2	89.6
Rye	80.0	9.9	70.1	1:7.1	91.3
Soy Beans	84.3	29.6	54.7	1:1.9	88.3
Malt Sprouts	61.3	21.2	40.1	1:1.9	90.5
Wheat Bran	59.4	11.7	47.7	1:4.1	88.1
Cottonseed Meal	78.2	35.6	42.6	1:1.2	93.0
Oil Meal	78.7	29.6	45.5	1:1.7	91.0
Dry Brewers' Grains	65 3	21.5	43.8	1:2.0	91.3
Wet Brewers' Grains	16.4	3.9	12.5	1:3.2	23.0
Cured Feeds—					
Alfalfa	53.3	11.0	42.3	1:3.9	91.9
Clover M	46.4	6.8	39.6	1:5.8	78.8
Alsike	57.3	8.4	48.9	1:5.8	90.3
Timothy	48.1	2.8	45.3	1:16.2	86.8
Corn Stover	34.2	1.4	32.8	1:23.4	59.5
Oat Straw	41.6	1.2	40.4	1:33.7	90.8
Silage—					
Corn	19.3	1.2	18.1	1:15.0	26.4
Clover	17.8	2.0	15.8	1:17.9	28.0
Pea Refuse	17.0	2.1	14.9	1:8.1	23.2

termined by the judgment of the feeder, having clearly in mind the present need of the cow.

For a day or two before calving, and for two or three days after, the cow should receive only a light and laxative diet, after which the feed should gradually be increased for thirty days, when we should have her on full feed and giving a full flow of milk. During this time, if she is a true dairy cow and has been fed before calving as suggested, she will be giving more milk than the ration which she is able to eat and digest justifies. We could not at this time give her one pound of concentrated food per day for every pound of butter fat given in a week, as stated in a previous rule. It is at this time that the wisdom of generous feeding before calving will be shown, for the cow will now draw on the reserve which we allowed her to accumulate when dry.

The foregojng data, which has been gathered from a large number of experiments and from the experience of many successful dairymen, the feeder will find helpful as a guide, but no rule can be laid down that can be followed in all cases with success.

DISCUSSION

Mr. McKerrow—I notice that where you have a thousand-pound cow, it takes seven-tenths protein for the food of support. Then you go along the column and that shows the cost of butter fat 2.11. There is no increase in the cost of the butter fat in that case.

Mr. Jacobs—We have no cost of butter fat here. There is the cost of the protein.

Mr. McKerrow—Do you think that is true, that when an animal increases fifty per cent in weight that it makes butter fat at just the same price?

Mr. Jacobs—It takes 2.11 pounds of protein for a thousand-pound cow and it takes 2.46 pounds of protein for a fifteen-hundred-pound cow to produce the same amount of butter fat.

A Member—But if you will subtract your .71 and your 1.5, you will find that the butter fat costs just the same amount of protein as the small cow.

Mr. Jacobs—That seems to be the assumption from the figures, that the difference in cost is in the cost of the food of support.

Mr. Scott—Should not that cost of the food of support be added into the cost of the production of the butter fat?

Mr. Jacobs—It is added in.

Mr. Scott—That makes the cost of butter fat then greater with the fifteen hundred-pound cow than with the thousand-pound cow.

Mr. Jacobs—Producing the same amount, I think that holds true.

Mr. David Imrie—I wonder why it is that those having all of these small breeds are trying to get larger cows?

Mr. Jacobs—Perhaps we are making a mistake. I know in my herd at the present time the smallest cow I ever had is making the most butter.

Mr. Scott—I think the idea is to get a cow that will beat some of the larger breeds, and we have done it.

A Member—It looks as if the proposition was to feed your machinery up to capacity and run all you can through her.

Mr. Jacobs—Oh, yes, the best dairymen are doing that.

Mr. Cheesman—In the so-called butter breeds, we have cows varying from 700 to 1,100 pounds or more, that is a relatively moderate-sized cow. The big cows that have been referred to, the fifteen hundred-pound cows, belong to another breed entirely. I want to know whether it is true that relatively the smaller cows have decreased in number.

Here, for instance, the cows furnishing the bottling plants, I think the larger ones have decreased in number.

Supt. Norgord—It seems to me that a careful census is of much more value on such a proposition than an opinion here and there. It seems to me that the experiments made by Prof. Woll are much more reliable than most of these opinions we hear, and those figures are in favor of the larger cow. I have met breeders around the State, many of them, and it seems to me that I have found a good many of the Jersey men, who used to be in favor of the little cow, desiring a pretty large cow.

Mr. Jacobs—I would advise, whether she be large or small, that she be fed to her capacity and according to her needs.

Mr. Scott—Were those figures of Prof. Woll on gross production or on net cost?

Supt. Norgord—I think it was the gross production.

A Member—What sort of a ration do you advocate feeding a cow before she freshens?

Mr. Jacobs—I think I stated that I would feed her about the same kind of a ration that I would for milk production; that is, as to its protein and carbohydrate content. I would not feed her the amount that would be necessary to feed her afterwards, but sufficient to keep her in a strong and healthy condition and carrying good flesh at freshening time. I would just for a few days before make that ration somewhat laxative.

Dr. Porter—Why would not bran be one of the best feeds to feed just before calving?

Mr. Jacobs—It would, certainly.

Dr. Porter—A good deal of phosphate and lime is good. I remember that used to be true in my practice in the human subject, and I believe it is true in the bovine, that the ration shall contain a large proportion of phosphates.

Mr. Jacobs—Yes, we make bran a portion of our grain ration at all times, and a large portion a few days before calving, and then we take away nearly everything else and continue on that light diet for two or three days after calving, being very careful not to increase to a heavy feed for quite a little time. We do not care to have any increase in the milk flow for a few days. We want to treat her as a sick cow and keep her on a light diet.

A Member—How long a period do you think a cow should be dry before she freshens?

Mr. Jacobs—Oh, six to eight weeks.

A Member—Well, you know there are cows that are milked right up to the time of calving and if they are given a milk ration won't that stimulate the keeping up of their milk flow?

Mr. Jacobs—With a cow of that kind, it may be necessary to deprive her of some of her ration at the time. It may be necessary to take away even her silage until she becomes dry, and then she can be brought up gradually to the old ration.

A Member—Wouldn't it be well to advise a wider ration at that time?

Mr. Jacobs—I do not think so. I think that is a sufficiently wide ration.

Mr. Cheesman—What amount of silage do you feed?

Mr. Jacobs—We leave that to the cow. Thirty-five to forty pounds is the most we feed usually. Our cows won't eat quite as much as that very often. We give them all the clover hay they want in addition.

A Member—Do you practice feeding roots a month before and a month after calving?

Mr. Jacobs—No, we do not practice feeding roots at all. We believe it

would be an advantage to have them to feed, however.

Mr. Clark—Would you advise feeding a cow in such a manner as to keep her in good physical condition all the time, rather than to feed her a wide ration to put her in condition when she is dry?

Mr. Jacobs—I certainly would. I intended, and I think I did, cover that point, perhaps in rather a vague way, in my paper. As she increases in lactation and during the latter part of her lactation period, while she is carrying the calf, she needs to have a good strong ration if she is a good dairy cow. She needs that ration, not only for the milk given and for the growing of the calf, but she needs something to build up herself.

Mr. McKerrow—And you expect to get that feed all back in her milk?

Mr. Jacobs—Yes. The good dairy cow after freshening is able to give more milk than her digestive organs are able to furnish the material, and will draw on her system for the balance if we have been thoughtful enough to provide her with a balance to draw from.

Mr. John Imrie—I think that is where a great many dairymen fail, in getting a good foundation, a good development for freshening, and, as Mr. Jacobs says, that feed is the most profitable feed fed to the dairy cow in getting her ready for her year's work.

Dr. Porter—That cow must be fed enough phosphates to make the bony skeleton of the calf, and I believe that is very important, not only for the human mother, but for the cow, to give them both plenty of bone-making material.

Mr. Jacobs—The Doctor is right. That bears especially on this question of feeding the cow a wide ration. A wide ration does not contain sufficient bone-making material and protein to supply the needs of the cow at this time.

Mr. Cheesman—Will you tell us what your general scheme of feeding is during the first year of the life of a calf; how long you give whole milk; how long you give a mixture, etc?

Mr. Jacobs—Our practice in raising calves is to feed them the mother's new milk for a period of three or four weeks, depending upon the calf, or until it has become a good, strong, thrifty animal, and will eat some hay and grain. Then we gradually work in the skim milk. We have fed whole oats pretty nearly altogether for some time, occasionally putting a little ground corn with them and some bran, but whole oats is our main dependence. Feed this calf according to the amount that it will take care of with safety, always being careful not to overfeed it. We always know how much we are giving, because we weigh the milk that the calf gets every time, increasing the skim milk as we take the new milk away. After it has become accustomed to the skim milk, then gradually increase the amount up to about ten pounds, which will probably be the maximum amount we will feed the calf in a day. We believe a mistake is often made in feeding too much at a time. Calves born in the fall we turn out on the grass without any more milk. Calves born in the spring or the latter part of the winter, we feed skim milk up to the time they are a year old. We intend to keep them growing and thriving right along from the time they come. After the milk is taken away, yes, during this time when they are on milk, we feed them quite liberally with grain and the best clover hay and a little silage and keep them growing during their whole growing life. After they are a year old, we feed them the same as our dairy cow, keeping in mind the idea of having them in fine

condition at the time of freshening. We now have our heifer growing until about two and a half years old, as we want her to be in strong physical condition and carrying a good lot of flesh at the time of freshening. We might even call her fat, not fatted up with corn, but with good dairy feed. When she comes in, we usually have an animal that is profitable from the start.

A Member—You said you fed your calves ten pounds. Does that mean a feed or by the day?

Mr. Jacobs—That is for the day's feed. The larger breed of calves undoubtedly can use more to advantage from the start. We do not feed oil meal to our calves while they are getting skim milk. Skim milk itself is a high protein feed and we do not think it requires oil meal.

A Member—If you were feeding some mixed hay and good corn fodder and about ten pounds of ground corn, would you advise buying grain besides that?

Mr. Jacobs—Yes, I would have some bran. Bran would improve that ration enough to justify purchasing it, with most cows; of course, it depends a great deal on the cow. If you have the right kind and your cow will convert that high-priced feed into milk, it will pay.

A Member—Have you had any experience in feeding calves without skim milk?

Mr. Jacobs—No, sir, I haven't.

A Member—Most of the calves in Kenosha county, if they are raised at all, must be raised without skim milk, on account of shipping out our milk.

Chairman Griswold—You have to give fresh milk to calves until they are about four weeks old, and then you can commence to feed them with whole oats, at least that is the way I feed them. I let them have milk right from the cow until they are about four or six weeks old. If she is a good cow, we don't need to give them all the milk she gives. I have let my calves suck the cow.

A Member—I believe in that, I don't think it will hurt the cow either. We let a calf have all the milk it wants until it is about two weeks old, and we raise pretty good calves. I am a lazy sort of fellow and don't like to work when I can get out of it.

Mr. Jacobs—In some ways I am glad I am not within reach of the Chicago market. I have no incentive not to raise my calves and the price of cows is going up in such a way that I believe you people here will be wise to raise your calves.

Mr. Cheesman—Three or four years ago cows began to go up in value from fifty to seventy-five dollars, and they are now up to a hundred dollars, just in proportion to the advance in the value of milk, and it ought to be that way. If milk is worth enough, you can afford to feed your calves for at least two months, even if the milk is high, it doesn't make any difference whether milk is worth four or five cents a quart, it will pay you to feed that milk. If the milk is worth five cents a quart, then the calves, when they become cows, will be worth that much more. We don't want to worry and figure too closely whether it costs us seventy, eighty or ninety dollars to bring a calf up to a profitable age if we get the returns. Two years ago the people shipping milk to the largest plant in Racine were buying sixty per cent of their cows. Today they are not buying that proportion, for the best of all reasons—that they cannot find good cows, cows to suit their purposes, they have been forced into raising their cows and that practice is increasing all over the milk-shipping territory.

Mr. Jacobs—I see no reason why in this milk-shipping territory whole milk should be depended upon to feed the calf up to four or five months. I do not see why after four or five weeks you cannot take the cream off and feed the skim milk.

Adjourned to 7:30 in the evening.

EVENING SESSION, FRIDAY, MARCH 12.

Supt. C. P. Norgord presiding. Music, Orchestra.

HOME MARKETING VERSUS MAIL ORDER BUYING.

Miss Abby L. Marlatt, Madison.

The subject I am to bring to you tonight is the question of a fair deal to the man in the grocery shop on whom we depend for almost everything that we need by day and sometimes by night, but always on whom we depend when we have forgotten to give our order to the mail order house.

There is such a thing, you know, as patronizing home industries, and I feel that in the data I bring to you tonight that I am making a plea, not for the local groceryman, but for the community at large, and I hope to show you from some data which I have that in helping the community at large you will be helping yourselves in saving money.

In a talk that was given before a Woman's Civic Club the other day, one of the speakers said that "more and more women had ceased to be a producing agent". That kind of a statement, you know, makes some women froth at the mouth. They say, let the man who makes that kind of a statement manage the house, manage the family and keep the bills down on the amount of money that usually comes in, and I think he would change the status and say that the woman assisted. I notice that even in our Government reports it is said that the work on the farm done in the home in the State of Wisconsin should be counted as net $280.00 toward the support of the family. That means at least that in the eyes of the United States Government the woman is a producer in the sense that she saves so much money.

And now, in the sense of the woman as a producing agent, I think that most of us would say that she needs to be educated. I feel that in our education for the modern woman of today it is not so much that she shall make two blades of grass grow where one grew before, but she shall make two dollars cover the need of ten, and she can do that only by learning to buy sanely and sensibly. Also I believe she should in her buying know what she is securing for the small stipend that is given her, in other words, that the quality should be what it should be.

A Study in Mail Order Buying

In a study that was made in a local community in Wisconsin the following

data was secured: Quite a large number in this locality were using a mail order house for most of a certain type of supplies that came under the class of foods. Eighty per cent of those ordering from the mail order house thought it was cheaper, but when the study was carried down to the actual figures, only four per cent could show that there was any saving of any kind. Sixteen per cent thought that there was possibly no saving when the freight charges were paid from the nearest mail order center. About sixty per cent of the purchasers said that they did not know the standard of the material they secured, but that it was the highest priced in the catalogue. Ninety-two per cent placed large orders so as to secure a special price given for sugar, which at this time was 33⅓ pounds for a dollar providing that outside of that ten dollars was sent. The statement that was made by a few women was that the lower price on sugar would pay the freight. Quite a number of these women were persuaded to go to their local grocers with the order which they had made out for the mail order house and ask the grocer how much he would charge them for the same material. What they found I think is what you will find when you get concerted action in any town. The groceryman who met the price would also stand the freight; that is, the groceryman was willing to pay the freight and give the same price plus the same amount of sugar, providing the housewife would give her ten dollars *in advance*, as she must do in buying from a mail order house. In other words, when you buy from a mail order house, you pay cash before you get the goods. They always promise to refund if not satisfactory, but you know and I know that the average man or woman will accept what is given under these circumstances rather than exert the necessary energy to pack the goods and return them. Practically every woman said it was too much trouble to send goods back, and my observation is that it is not a matter of the inertia of the woman, but is a characteristic of all of us. On the other hand, when you buy food from a local groceryman, you always have the opportunity not only to send it back, but to make him come and take it back, which is quite a different proposition.

I want to list the kind of groceries that we found were bought in these large orders. They consisted almost entirely of sugar, raisins, prunes, dates, cereals, chocolate, cocoa, canned vegetables, canned fruits, macaroni and coffee. Every one of these products, you see, was of the kind that will keep indefinitely in anybody's storehouse without deterioration. Even looked at from that standpoint, these women did not know whether the product they received was of good quality or not.

One of the students in the Department carried through a series of experiments where she bought from her local groceryman and also bought from mail order houses, using the material to help run her small establishment. (You see that experiment was no expense to the State.)

Results of the Study

In this work she found that the quality of the goods that she bought from the mail order house was not up to the standard of the material she bought from the local grocery. The material in the canned goods was always higher in the amount of water in the can.

The Connecticut Experiment Station, in 1912, published a report that is of extreme interest to us even here, and in that report the measure of the water in the can was stated so that data like this is secured. Where a can cost seven and eight-tenths cents it was 71 per cent

water; where the can cost nine and one-half cents it was 47 per cent water, which means that if you count on the real food value, the higher priced material was cheaper in the end. That was the condition that was found in practically all of the material that was purchased in the way of canned goods in this experiment. Chocolate was found to be excessively sweet. It is a very easy method of making money to mix sugar at three and one-half cents with chocolate and sell them both in a mixture for 28 cents a pound. You would much better buy your chocolate in the bitter state and dilute it with sugar, a cheaper product, than pay 28 cents a pound for sugar, which is practically what would be done under those circomstances. I do not mean that the mail order house always undersells by the use of cheaper products, but in going through one catalogue to find what we call "standard brands," those brands that are known from one section of the country to the other, there were seven only—all the others were sold under the names that were given by the house which put out the mail order list.

In a study in connection with canned peas, this was found: Where a mail order house offered three cans of peas for 33 cents—that looks pretty good, doesn't it—you could get any local grocer to sell one can for 12 cents, or if you bought three cans from the local grocer, and you know that Wisconsin puts out, I think, forty per cent of all the peas in the United States—if you buy three cans from the local grocer you get the three cans for 25 cents, and they are in quality much better than those from the mail order house.

Here is a study that was made, for example, on pineapple, and all of us, I think, are aware that practically all the Hawaiian pineapple is put up at the same time, the same grade of fruit, but is sold under the label of the firm who puts it out. You get data occasionally like this brought in to you—one family will use only a certain brand of pineapple. Another one won't have that brand at all, they insist on another. Now, the wholesale house buys all of it from the same firm in Hawaii and puts a label on it to suit the local interest. It is all the same inside, all different outside. We get these cans at 21 cents each in the local grocery and in the mail order house the same thing is 22½ cents a can. Apricots are 17 cents at the local groceryman's, 19½ cents in the mail order house.

The mail order house has what is known as "leaders", and if you can pick out what are the leaders and have will power enough to refrain from buying any of the other goods of the mail order house, it might be worth your while, but few of us can pick out what is really being sold *below cost* by the mail order house to induce the average buyer to make the bill large enough. Now, sugar is a leader in all this mail order selling in this section of the country, but you cannot buy sugar without you also buy ten dollars' worth outside of the sugar order.

Another thing that I wish to emphasize is that the State of Wisconsin, under the pure Food and Drug Act, is listed "white". Illinois is very far from "white". The condition of the Pure Food and Drug Act in Illinois is rather pitiful; you cannot enforce the Pure Food Law ahead of public sentiment. In Wisconsin public sentiment has, up to now at least, been back of this pure food enforcement, and the result is that the mail order houses can send you personally, by mail or freight or express, what they could not sell in the open market in our State. They can give you material

that is preserved with chemicals that are not allowed to be sold in the grocery stores throughout our State.

Are we going to uphold our pure food laws, or are we going to let them slide because we can get sugar 33⅓ pounds for a dollar? It is a price, it seems to me, that will be entirely too cheap to measure our standards by.

The Local Side of the Question

If we look at it simply as a business proposition, we must remember your local firm has to pay rent or interest on the investment; it must provide equipment for the storing in the shop and on the counters so much material to be sold. There must be the item of delivery, which is a very large one. One firm that we studied made the record for every delivery for a certain length of time, and it cost them six or seven cents, so when you realize that sometimes the order is for a two-cent yeast cake, it means that somebody pays the bill. If the groceryman could insist on a ten-dollar order, cash down, you would get lower rates. The local firm must have clerks, must stand the loss that ranges from two to fifteen per cent, and in some articles I have known it to run as high as twenty per cent, they must pay the freight, they must pay for advertising, but that is usually a small item, and they must pay the middleman or commission man. It is very seldom that a big house will sell directly on wholesale rates to a local house. Occasionally you find the grocerymen organizing so that one man will buy a carload of one material and another of another, and divide up, but in most of our towns it is not possible to do that, and the commission merchant or the middleman is the medium through which the buying is done.

The mail order house has also rents or interest on the investment; it has also equipment, it must have storeroom space, it must have delivery wagons, but their delivery wagons are run full capacity, it is no two-cent yeast cake for them. They must have clerk hire, and that clerk hire is rather expensive. The calculation that is made by one firm on an eighty-million-dollar-a-year basis, last year, is that 15.6 per cent of their returns were spent on clerk hire. When you realize that in a local company the entire expenses range from sixteen to eighteen per cent of the gross returns on the sales, you can see that somebody must be paying the bills of the mail order house. Then the mail order house has very large freight bills, and in some localities they are paying the freight to certain local centers near to the main office. They pay an enormous advertising bill. They have agents going over the country, they have these enormously big advertising books. In one little town of less than the size of Kenosha three thousand of these big advertising books, these great big books that you have all seen, were left with patrons inside of one month. The printing of that material alone makes an item that is going to require the selling of a good many goods to pay for.

Now, who is paying that 15.6 per cent for clerk hire, which is almost the amount that it costs the local shops to keep running? Beyond the clerk hire, you have expensive delivery, freight, taxes,—all important items—and yet one big firm in Chicago declared a fifty per cent dividend in January. Somebody is paying a high price for moderate priced material.

I am perfectly willing to admit that the big mail order houses are buying the entire outfit from some manufacturing firms, and of course that means buying in such large wholesale ways

they can get infinitely better rates than the small firm can get, but when you consider that out of all this expenditure they can still pay fifty per cent dividends, as they did in January, you can understand that it is time to investigate and see what is the matter.

These are some of the things that come to us from the local firms in talking very frankly on the situation when they find out that we are honestly interested. They have to pay part of the local tax, they have to pay for city improvements, you never hestitate to go to the shop of your groceryman or merchant of any kind for his contribution toward any scheme for the town betterment. He pays on every church in town, he may not attend any, but he pays on every one. He is called upon for all sorts of other contributions, and yet when it comes to a cash down payment, the money goes out of the State. If you will talk to your groceryman you will find that he is willing to meet the prices and he is doubly willing to meet them if he can be assured in the spring that you will take a certain amount of certain goods in the fall. In other words, if the local merchant can put in his order at a certain time, say in the spring, then he can get special rates; but if he has to order in small amounts as needed, he pays the higher price, and so do you. The great trouble with the local shop in the small town is that there is not enough trading done in the shop to warrant putting such a large amount of ready money into a stock of goods. The result is you go and look at the shelves, and you say, "Those are the same things I have seen right along, I would rather buy from the mail order house,' 'and of course the condition keeps growing worse and worse.

Now on the other hand, the average farmer—I am a farmer's daughter—takes his butter and eggs into the grocery shop and trades them out, and the groceryman is left to sell those eggs and butter as best he can, and even where you deal with the big dairy companies, you still use very largely your egg production to pay for your groceries. There is a great deal of wastage on eggs sold in this way. Now, we must remember that in the local firm we are using his room, interest on his investment, etc., for our storage, and if we cannot afford to buy in large amounts, we must pay sufficiently more for the material from the mail order house, because they can store it, but we have to buy it in large enough quantities to get rates, and then we store our own. You must also remember, as I remember, that perishable goods are practically never bought from mail order houses; you depend on your local grocer to stand the loss on perishable goods, and that loss is very considerable. If you realize for a moment how much that loss may be, you can understand why the big firms that turn over their goods, or turn over their money many times in the course of a short period can afford to lose a little, but with the local house that turns over its money only occasionally the loss on perishable goods may wipe out almost all the profit.

There are some items that I think I want to emphasize. In any community the prosperity of that community depends on the business that is done in the immediate locality; it is the question of the interchange of commodities. It makes very little difference whether that exchange is large or small, but it does make a very great difference whether exchange is rapid or not. If you deal with your local groceryman and help in turning over his money many times in the course of a year, he can afford to give better rates, and he will give them if you give him an opportunity to co-operate. Remember that he pays

assessments all along the line, church assessments, club demands and expositions, all come out of the pocket of this groceryman, as well as others, and usually fairly willingly. It means that the financial standing in a community after all is the measure—rather a simple measure—but the measure of the progressive work in that community, and it is dependent on the upkeep of your local shops and banks. You must make a local center of mutual helpfulness if you expect to get profit out of community life. If there is a large outgo without return, the country is drained of its wealth. Absent landlordism is always to be deplored, and it looks to me in this mail order business as though we have deliberately put ourselves in the place of the tenant who is paying money out of the country all the time without any adequate return. What have the big firms in Chicago ever done for the State of Wisconsin, except to buy their products at the lowest figure possible to obtain and sell them under their own name for their own special brand? Can you find anywhere in any of these big mail order house books material that is advertising your local product? I have not been able to. We need to realize that if we are going to make our State stand for what it should, that even in the town of Kenosha we ought to patronize the big local industries and make them realize that to put upon everything they sell "Made in Wisconsin" is to further the good of the State, I believe very strongly that in the rise of one of the big countries that is now involved in war in Europe that mark, "Made in Germany," was the measure of their progress, and if we insist on the stamp, "Made in Wisconsin," being put upon every kind of goods made or raised in Wisconsin we will never have to send out of the State enough orders so that, as in the last year over their own signature, they said they were doing in one firm $80,000,000 worth of business, and that they were able upon the business that was done to declare a dividend of fifty per cent. Now, we ask ourselves, who pays the bills? What have they ever done unto Wisconsin that we should do unto them? It is time to begin at home.

MORE AND BETTER LIVE STOCK.

W. L. Houser, Mondovi.

It needs no argument to establish the fact that the live stock kept upon the farms of Wisconsin is, on the average, far below the standard of excellence that is well within our possibilities of attainment, and by the attainment of which farmers would substantially promote their material welfare and happiness and add to their comfort and possession of things essential to a well balanced life, to which all men are justly entitled.

Farmers demand the best, up-to-date equipment in the way of farm implements and machinery for the economical operation of their farms. They insist that the genius of the inventor shall be constantly on duty seeking out improvements in our plows, harrows, seeders, cultivators, harvesters and other equipment of the farm, and for these things they are willing to pay fair prices. But they must have the best of the things that add to the efficiency

of farm management. But, strangely enough, they are seemingly content with live stock equipment that is neither economical nor efficient as a complement—the most important complement of all—to farm operation.

The keeping of live stock upon our farms is essentially necessary to permanently successful cultivation of the soil. To restore, maintain and increase the fertility of the soil in the most economical way, we must keep on the farms the maximum in numbers, and to insure the greatest profits to the farmers, the best of horses, cattle, hogs and sheep in breeding and individual excellence possible to be had, either by purchase or home breeding. It is a lamentable fact that in Wisconsin, the leading dairy State in the Union, both as to the quality and quantity of its dairy products, the average production of the dairy cows is far below what the possibilities admit of, and considerably below a profitable basis. A comparatively few dairymen have broken away from commonplace methods and are away out in advance of their average compeers. To them great credit is due, both because they have succeeded in the business, have reached the 100 per cent standard of achievement, and for the additional and important reason that they have so plainly blazed the way through the wilderness of commonplace mediocrity that anyone who has an ambition to do so can easily improve his live stock by following the examples so beneficially set before him. But while the average production of butter fat per cow remains below 170 pounds in Wisconsin, notwithstanding the possibilities admit of a maximum average of 400 pounds, we cannot point with pride to our dairy stock. Not only is there a demand for more dairy cows in Wisconsin, but the demand for much better cows is insistent and imperative. The campaign must continue most vigorously until mediocrity shall be a rare exception in our dairy stock, while

Champion Open Shropshire Flock, Wisconsin State Fair, 1915, owned by A. Broughton and Son, Albany, Wis.

excellence and a high average shall be the thoroughly established rule.

The Live Stock Situation from the Dollar Standpoint

Let us consider this phase of the live stock situation in Wisconsin a little further. Let us look into it from the dollar standpoint. The annual income to the farmers of this State from dairy products is $100,000,000. Suppose the average yield per cow could be increased to 250 pounds, not a large amount by any means, much below what should satisfy any farmer. This would mean an increase in the incomes of the farmers of the State of more than $50,000,000, a snug sum. Supposing we should reach an average of 300 pounds a year, and this is not at all outside reasonable possibilities, and we should be satisfied with nothing less when we know that good dairymen are reaching the 400-pound average in their herds. This would mean another thirty or forty millions a year. To increase the income of the farmers of Wisconsin $80,000,000 to $100,000,000 a year on dairy products alone would make farming much more attractive to young people. It would put books in the home library and give the family time to read them, it would install heating and lighting plants, bathrooms and water systems in the farm homes, give the over-worked wife help in the kitchen and in a thousand ways brighten and widen life upon the farm. I am impelled to quote the words of the poet who says:

"What wouldn't I do, what couldn't I do,
If I had a hundred millions."

But that isn't all. To double their production would double the selling value of cows. It looks big and good, doesn't it?

What is true of dairy cattle is equally true of beef cattle. The same high standard in breeding and scientific feeding with respect to dairy cattle must be attained in beef production in Wisconsin if those who engage in that line of live stock husbandry gain the profits that prices of beef and conditions that surround its production certainly insure the farmer who produces high-class beef.

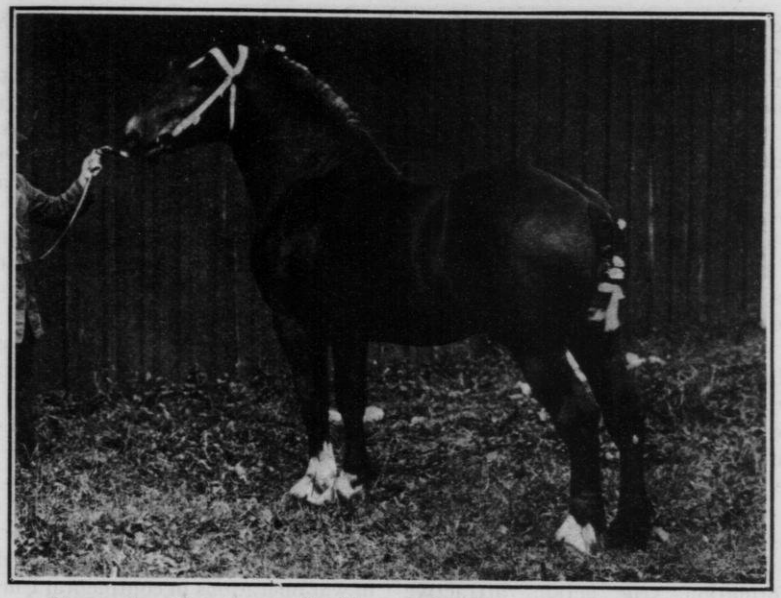
Addresses have been made in this meeting that especially relate to the dairy industry, the beef industry, the hog and sheep industry. Men have illuminated these subjects with narrations of their experiences that have led to maximum successes. They have laid down the laws and rules of breeding, feeding and care, that are as standard as the laws of gravitation. Only those who are blind or grossly indifferent can leave this meeting without gain in knowledge and inspiration. The way has been made so plain that no one need err or go astray fom the true path to success in these lines of farm activity.

I am expected to pay some particular attention to the horse industry, an industry in its relationship to the farm that at least is of equal importance to that of any other of these lines of live stock activities.

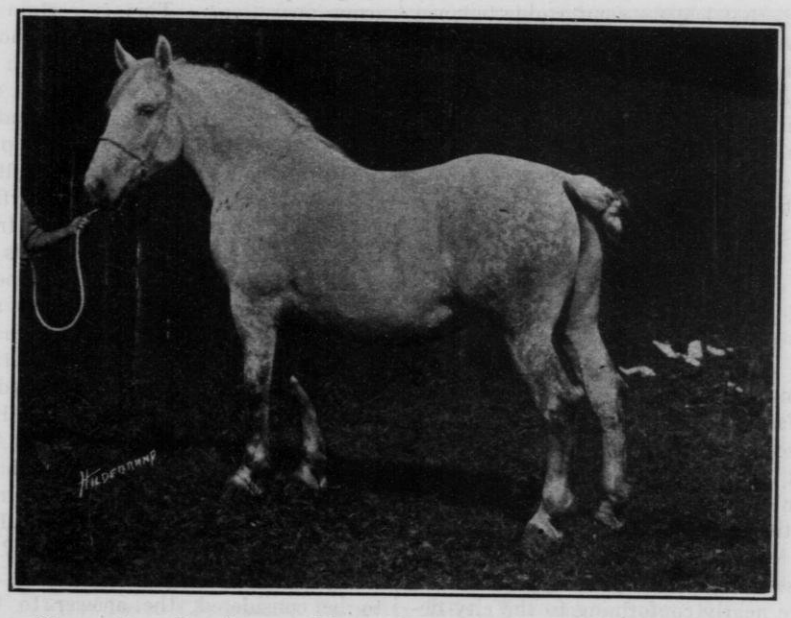
Approaching the discussion of the horse, types, market demands, etc., we should carefully consider existing conditions that relate to that industry, and also scrutinize the future as to probable conditions that may develop either favorable or unfavorable to the industry, in order that we may determine whether to enlarge or curtail our breeding activities.

Some Prospects for the Horse Industry

In the first place, are there grounds for a reasonable expectation of profits to



Champion Percheron Stallion, Wisconsin State Fair, 1915, owned by Harvest Farms, Mayville, Wis.



Champion Percheron Mare, Wisconsin State Fair, 1915, owned by Lewis Lewellin, Waterloo, Wis.

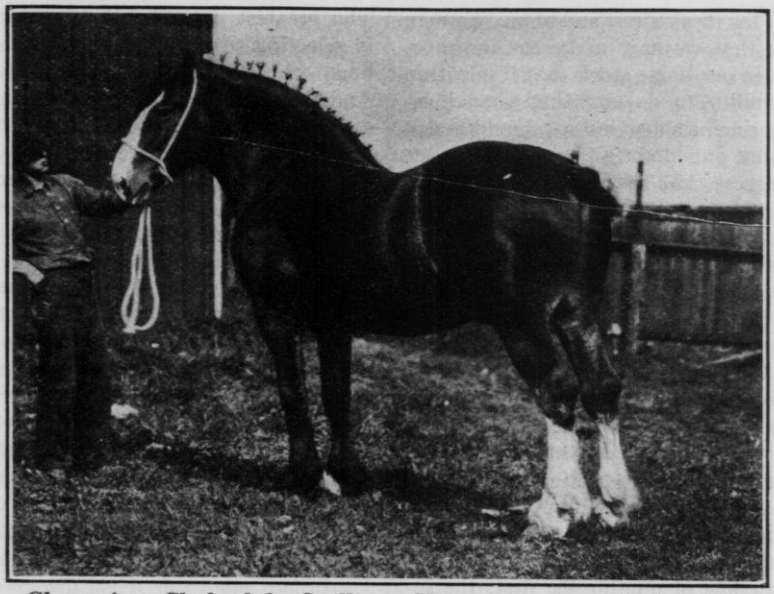
those who intelligently engage in horse raising, both to supply their own needs upon the farm and to supply the market demand for horses for use upon farms that do not produce horses and from the cities? Let us critically consider the situation.

In the first place, while it is a fact that the automobile business has more or less affected the horse market in the cities, still there exists a sharp demand there for high-class drafters at prices that insure a handsome profit for their production. Auto trucks are successfully used in some kinds of work, but there is much drayage work that can be more economically and efficiently done with horses. But the city demand can only be profitably met with really high-class drafters, horses weighing not less than 1600 pounds, of acceptable conformation, true action, attractive and commanding in appearance, and that are sound. These will sell at prices that leave a comfortable balance above the cost of their production. In whatever degree they fall short of the standard of excellence desired, the profits will be correspondingly reduced, even a loss sustained if they are mediocre or nondescripts.

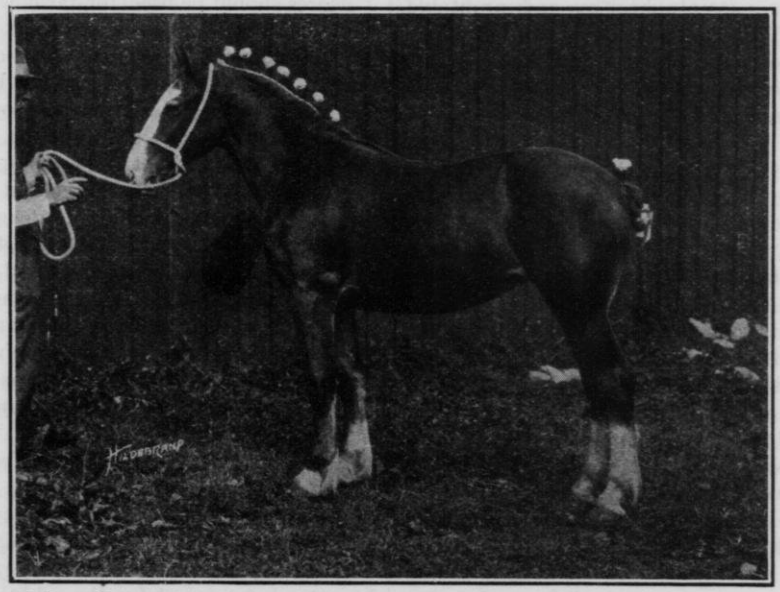
There is no market for road horses. Let us dismiss this class with our blessing. This is the least and the most we can do for them.

Horses are produced upon less than one-third of the farms of Wisconsin. The country at large produces horses upon less than twenty-five per cent of its farms. Farms that do not produce horses must be supplied by the farms that do produce them. The demand from the farms for horses, therefore, is relatively great and, too, as in the cities, the demand is for a better class of horses, more drafty in type; in fact, more nearly conforming to the city demand than formerly. Farm work requires more horse-power than in years gone by. More cultivation of the soil is necessary; it is more difficult to plow the meadows and pastures than it used to be to plow the stubble fields; noxious weeds are steadily menacing the farmer, and to keep them under control more and better cultivation is necessary. So, better, more drafty horses are demanded to promote economy and efficiency upon the farm. I live in a horse-producing community. We have sold thousands of horses from that district in recent years and ninety-five per cent of them have gone onto farms, and farmers are willing to pay for good ones all they are worth.

The war in Europe surrounds the horse industry with extraordinary conditions. It is estimated that fully five thousand horses are destroyed daily in war operations in continental Europe. Thousands of horses are being purchased in this country to supply their needs in army operations. This is certain to have a material effect upon the horse market when peace shall have been restored. In this connection we must not overlook the serious situation that is sure to develop with respect to the pure bred draft horse industry as a result of the war. During the past forty or fifty years this country has drawn from Europe thousands and thousands of pure bred horses for breeding operations. This supply is cut off now and will not be available again for many years. On the contrary, when the time arrives for re-establishing the breeding studs of Europe, our country will be drawn upon for foundation stock. And the demand will be for the best we have. Prices will be offered that will be tempting in the extreme. But can we afford to sell our best ones for exportation? If the future interests of the industry are to be considered, the answer to this question must be an emphatic *No*. We



Champion Clydesdale Stallion, Wisconsin State Fair, 1915, owned by McLay Bros., Janesville, Wis.



First Prize Clydesdale Futurity Filly, Wisconsin State Fair, 1915, owned by A. McLean, Avalon, Wis.

need the best sires and dams here in order that we may make the improvement in our horse stock that it is within our ability to do and that good business principles demand we should make. It is not outside of reasonable prudence to suggest that the government should carefully consider this aspect of the situation with a view of taking action necessary to protect and promote this great industry and to conserve whatever progress we have already made.

It would seem, in view of these facts, that the future of the horse industry is full of promise and encouragement to those inclined to produce good drafters. But it must not be concluded that anything less than the production of high-class horses will adequately reward the breeder for his efforts. Our campaign is laid along the lines of improvement of the quality of our horses, first, the increase in numbers; secondly, and not to overdo this. The industry can be kept more certainly healthy and profitable to Wisconsin farmers who produce horses if we insist on producing better horses. Let this receive our first consideration.

Community Breeding

To produce better horses we must, first of all, use better sires,—the best available. There is a scarcity of really high-class stallions. Wisconsin farmers, considering the natural advantages offered by our State for the production of good horses, should not discount these advantages by using inferior sires. Pure bred stallions of good breeding and individual excellence should be used. There is no place in a modern, scientific plan of breeding of any kind of live stock for a grade or scrub sire. There can never be a close approach to the highest type of the draft horse if we are content to use cheap, unsound sires. The greatest care should be exercised in selecting sires for use in a neighborhood where horse raising is pursued. And this leads to the suggestion that a community or co-operative plan of buying and keeping sires and of breeding and marketing horses presents many advantages. Using sires of one breed—breeding up—will result in steady, certain improvement. A community can gain measurably if it will co-operate in acquiring high-class sires, securing the assistance of experts in making selections and by continuously breeding one breed of horses so as to make that community noted for the production of high grade horses of the particular breed produced in that community. There is economy and efficiency combined in this plan of community co-operation.

Care of Brood Mare and Foal

Mares should be used for farm work. They can do the work in the fields and at the same time produce high-class foals if bred to such a sire as has been described, but to perform this double function, yes, three-fold function, because the mare is not only doing the farm work and feeding the colt at her side but is also nourishing and developing the colt in embryo, she must be generously fed and carefully cared for. She can do the tasks assigned to her if prudently worked and fed abundantly. As foaling time approaches, preparation should be made for the expected addition to the horse family. A roomy box stall should be provided, well lighted and cleansed and disinfected by the liberal use of whitewash and other disinfectants. When the event occurs, you should be present so that if any complications occur they may be attended to, and for the additional reason that the first and essential thing

to do after the colt's birth is to thoroughly disinfect the navel cord so as to avoid the dreaded navel or joint disease. Tincture of iodine is about as good for this purpose as any disinfectant known. Have it contained in a small vaseline bottle having a large neck or opening. Immediately after the cord is severed, slip the bottle over the end of the cord and thoroughly saturate it. Avoid touching the cord with the hands unless they are scrupulously clean. This process should be repeated frequently until the cord is healed. Probably twenty-five per cent of the colts born in Wisconsin die or are crippled by this disease, therefore, too much care cannot be taken to prevent it. If the colt and dam are normal let them alone. The little fellow will soon be on his feet looking for his first meal and will get it in proper quantity and at the proper time.

The mare may be moderately worked up to the time the colt is born, but should have a few days rest after this event, after which she may safely be put to work again. The colt should be left in the barn while the mother is in the field at work. For a week or so it is advisable to bring her in in the middle of the forenoon and afternoon to let the colt nurse. Provide the foal with some crushed oats at an early age, also some clean, fine clover hay. It will begin to nibble these when very young and will be eating considerable quantities by the time it is a month old. Feed it liberally and feed the mother liberally too, and the colt will make rapid and satisfactory gains. Let the mother and foal out to pasture at night as soon as the weather is suitable. Wean the foal when about four months old, feeding it with extra liberality on clean oats, a little bran and good clover hay. Continue this through the winter and do not make the mistake of taking the grain away from the colt when you turn it out to grass in the spring of its yearling form. This is the time to most profitably allow it a grain ration. Keep it growing and in smooth, thrifty condition until fall and it will have developed into a handsome fellow weighing 1200 to 1300 pounds, well on its way to a matured drafter of from 1700 to 1900 pounds weight that the market will take at a price that will be quite satisfactory to you.

These are the rules—this is the way—standard and proven, by which farmers in Wisconsin may engage in this profitable and satisfying business of horse production. It is a business that appeals to us from more standpoints than that of profit alone. Farmers admire good horses and in the production of good ones there comes a return in satisfaction to our ambition and gratification to our pride that may consistently be added to the money profit, which taken altogether contributes materially to the joy of living, and to add to the joy of living, both to ourselves and to others whom our lives touch, is well worth our consideration. We may not pass this way again.

There is some poetry, there is some sentiment in the horse business, in the production of good horses. Their beauty of form satisfies the eye, their production, care and development satisfies the natural demand for something that gratifies the sentimental side of our nature. The horse is the most heroic figure in history; he has been associated always as a partner with men whose names stand out on the eternal pages of history; he has carried men on long journeys; he has endured great tests of strength and in serving the needs of man he has served the needs of the world. There is a feeling, there is a sense of triumph in owning and driving a good horse.

I am not pleading for improvement in our live stock, and particularly in our horses, alone to increase our bank accounts, or to add acres to our farms, or to put bonds in the safe. No, indeed. I want to do it in order that the men and women of Wisconsin may have broader, better lives, may have more of the things that the Creator intended that all men should have. Creation is bountiful, there was no mistake made, there was no error in the plan, when the great Architect made the world. He provided for all a plenty. No man, no woman, no child, should want for the things that will make them happy and their lives blessed. And there is something about farming, and particularly something about stock raising, that tells to the farmer that his business is such, that his course is so charted, that all that he does is a blessing to the world. It is his work to till the soil and carry on his business in order to provide the world with the things they need, and from him flows out no injustice, no oppresion, no tyranny.

I saw the other day something which might present to you the other side of the story. It was a picture or cartoon printed in one of the leading periodicals of the day, and it was a pathetic picture, a picture that told a sad story. Over in Germany there is an Order called the Order of the Iron Cross. Men who do great deeds of bravery, who have served their country with distinction and who have achieved great things in the army, in the war, may be the recipients of the decoration of the Iron Cross. It is a very greatly desired privilege for which men give their lives and are willing to sacrifice everything. It is a great distinction, and this picture showed this cross adorning the breast of a proud soldier. But down below this was another picture. There was another cross made in imitation of this decorative one, and it was immensely, terribly heavy, and it rested on the shoulders of a woman, bent and struggling beneath this awful weight. Carrying the lighter end of it were two little children, at the side of this mother was a little child clinging to her skirts, while the mother struggled on with this weight upon her back. That was the cross of widowhood, the cross of orphanage, the cross of sorrow, the cross of cold and hunger, the cross of loneliness, misery, grief and despair. Then I looked at the other picture, and I said, "Is it worth it? Is it worth it?" And I thank God tonight that the lines of Wisconsin farmers are laid where their activities entail no suffering, no want, no injustice, no oppression upon any living human being, and I pray that it may never come to my lot, either by election or compulsion, or to your lot, to do that which will lay upon the shoulders of any person, especially innocent women and children, such burdens as are laid there as a result of the awful experience we call war. I care not whether it be the Iron Cross, the Victoria Cross, or the Cross of the Legion, the results are the same. What is done to earn them entails suffering and misery upon innocent persons. Let our course be taken along the way that will permit us to continue to do the things that will shed blessings rather than burdens upon all our people.

Adjourned to 9:30 next day.

MORNING SESSION, SATURDAY, MARCH 13.

Mr. E. C. Jacobs in the chair.

COMMERCIAL CABBAGE GROWING IN WISCONSIN.

W. E. Thompson, Kenosha.

Commercial cabbage growing has meant much to the farmers of southeastern Wisconsin. Through it rundown farms have been built up and men who before it came were just making a living have since become comparatively rich. The late Ben Bones may be said to have founded the industry and in his case necessity may have been the mother of invention. Some thirty years ago he set out between two and three acres of cabbage on his farm near Racine. The crop proved a partial loss, due to poor local markets. He tried again, however, and the next year, after much effort, the railroads were prevailed upon to allow a trial shipment to Kansas City in a refrigerator car. This venture proved successful. The building of a sauerkraut factory soon provided a local market and later the introduction of Hollander or Danish ball head seed furnished a type of cabbage well fitted to distant shipment. So rapidly did the industry develop that about ten years after the sending of the first car the Government estimated the part of the crop lost through an attack of black rot (40 to 50 per cent) was worth one hundred and fifty thousand dollars. Since then cabbage has been grown extensively, not only in the southeastern part of the State, but also in several of the central and western counties. Shipments are now made through a territory extending from Virginia to Florida and west into New Mexico.

Cabbage is said to be a very uncertain crop. It is indeed, both in regard to yield and price if any one season be taken alone; however, if a moderate acreage is grown each year under favorable conditions, the producer should find cabbage a very paying crop during a ten-year period.

The Soil Best Adapted for Cabbage

Some of the factors which tend to profitable yields might be given as follows: A well drained soil, free from disease and sufficiently fertile, good seed, strong, thrifty plants, thoroughly prepared land, careful planting and sufficient cultivation during the growing period.

With our present strains of seed it does not pay to keep on growing cabbage where the soil is diseased, neither does it do well where the drainage is poor. Almost any land will grow cabbage if it is heavily manured. Some soils, such as those recovered by draining ponds, will often given heavy yields with no added fertility. Reclaimed marshes often will do as well if the elements which they lack are supplied—usually phosphate and potash. The heavier clays often produce

the best shipping and storage cabbage. Several fertilizer manufacturers advise the use of stable manure for soils of this type; however, if manure is applied to some crop preceding cabbage in the rotation, excellent results are often secured on clay loams by applying half a ton per acre of a complete fertilizer, usually one carrying a high percentage of phosphates does best.

Use Only Good Seed

Good seed is another essential. As a pound of seed should raise enough plants for two or three acres, the cost per acre for even the best seed is slight. Cheap seed, or that from unknown seedsmen, often grows a high percentage of unmarketable heads. Some seed houses have for years sold cabbage seed which runs very true to the highest market type. It may cost a trifle more, but the grower can make no better investment.

Preparing the Seed Bed

Careful management and a seed bed of the right sort will almost always insure strong, thrifty plants. The best soil for this purpose is generally a fine early gravel or sandy loam. In wet seasons, heavy cold land often makes the plants too late, or else packs so that the seedlings cannot break through. Stable manures had better be applied a year before the seed bed is needed for cabbage. If applied directly, the manure should be well rotted. Generally a moderate application of commercial fertilizer will give the plants a good growth without making them too tender. In a late season, a light dressing of nitrate of soda will usually force the plants to the necessary size. Formerly insect pests often destroyed whole seed beds, but recent discoveries have made their control much less a problem.

In the past, when manure was easily obtained, very heavy applications were made and this was often plowed under just before planting. Now on places where manure is available from live stock on the farm, some are getting excellent results by fall plowing and then applying the manure with a spreader through the winter. Where spring plowing is necessary, it would seem best to disc the soil first. One mistake often noticed is to neglect immediate harrowing when plowing in the spring. When such a soil once gets hard, it is almost impossible to fit it for cabbage.

A heavy roller is a great help in preparing loose, dry soils. The firming of the surface brings up moisture for the newly set roots and allows the planter plow to run at a more even depth. With a well prepared soil and carefully managed transplanter, a good stand of cabbage can be secured under any but the most unfavorable conditions.

Where much outside help is employed, the grower cannot be too careful to see that the plants are properly pulled from the seed bed and well set in the machine. A careless or nervous and awkward hand working in a transplanter can very easily limit the chances for a profitable yield at the very outset.

Cultivating the Growing Crop

Cultivation of the growing crop is supposed to be mainly for the saving of moisture. Nevertheless the right kind of cultivation will kill practically all the weeds and save much expensive hand labor. One reason why so much hoeing is done is that while cabbage is being planted a large amount of other pressing farm work is neglected. This

is turned to as soon as the crop is in, with the result that cultivation of the cabbage is left until the weeds are too far advanced to be controlled with horse tools. If extra help could be secured at this critical time, it would often pay handsomely. One day's work at the start should save several later and the extra expense might easily be offset by a larger crop.

Marketing the Crop

But the effort to produce large crops without providing for their marketing is not always profitable. So far our system of selling through dealers has been quite satisfactory. This perhaps has been due to the fact that several of the large dealers are also growers, who naturally try to get as much as possible for the stock they raise themselves. Conditions are likely to come, however, which will severely test our present arrangements. The introduction of cabbage growing into neighboring states has had a tendency to shut off former markets, while a new strain of disease resistant seed promises to increase production in the old cabbage districts. Dealers now sustain many losses which in the end must hurt the industry. Owing to a lack of proper grading and inspection, quite a lot of unmarketable cabbage is sent out annually, which must mean a loss to the distant buyer who accepts it. To even up, some buyers make a practice of refusing to accept both good and bad orders when the market drops. This often results in a heavy loss to the shippers.

Other trucking districts in America have faced similar conditions. Some have met them successfully by co-operative systems of marketing. Those which have worked best have not only lessened many losses which we meet, but have also greatly extended former markets.

Our present system may be the best for our needs, but if conditions should come which might prove it inadequate, we should have plans ready to meet them.

DISCUSSION

A Member—How do you control the cabbage maggot?

Mr. Thompson—While some remedy for the cabbage maggot had been sought for over a hundred years, it was only very recently that what promises to be a successful control was discovered by Prof. Sanders, of the University. Believing that attempts to kill the maggott were useless, he worked out a poison bait to destroy the fly which lays the eggs from which the maggots hatch.

Prof. Sanders' method of control is as follows: Five grains of Sodium Arsenate are dissolved in one gallon of boiling water. To this is added one-half pint of strong New Orleans molasses. The mixture is scattered over the plants and neighboring vegetation as soon as there is enough leaf surface to catch the drops. A whisk broom or small hand syringe are the best means of applying this poison, as the drops should be large enough to attract the flies.

The seed bed should be gone over at least once a week until a short time before transplanting begins.

A Member—How about the flea beetle?

Mr. Thompson—The flea beetle is a small, brown-colored insect which often does great damage to the leaves of small cabbage plants, radishes, etc. Many cabbage seed beds in the older districts have been destroyed by them as soon as the plants come through the ground. Careful spraying with Arsenate of Soda

has proven a successful means of destroying the flea beetle.

There is a sucking insect, called by some a "leaf hopper," which is often mistaken for the flea beetle. The application of Bordeaux spray will many times drive them from a seed bed.

A Member—Can the worms which injure the growing heads be poisoned?

Mr. Thompson—Paris green with lime or Arsenate of Soda will generally kill the cabbage worms if the spray can be made to stick on the leaves. Resin or soap in the solution is very helpful in keeping the spray from running off.

Supt. Norgord—What are the factors that affect the hardening up of cabbage, the closing up of the leaves? You will sometimes find a cabbage that will not close up. Is that due to the variety, or the conditions of culture, or what?

Mr. Thompson—The hardening up of cabbage depends largely on the variety and the conditions under which the crop is grown. Some early types produce soft, loose heads under all conditions, while the late shipping varieties naturally are much firmer. A head of Hollander, for example, will often weigh twice as much as an Early Domestic head of the same size which was grown in an adjoining row.

In addition, the kind of soil and its fertility make a large difference. Cabbage grown on heavy clay generally weighs much more per load than the same kind raised on reclaimed marshes. A heavily manured soil usually produces heavier stock than a poor one of the same type. Now and then a cabbage is found where the leaves do not meet in the center. This is due to a tendency in the variety to break away from the market type. A careful selection of the seed heads would seem the only remedy.

A spell of hot, dry weather will sometimes cause cabbage to grow very solid and to ripen prematurely. When these conditions are followed by a spell of continued rains, the heads start growing again from the center and a high percentage often burst and become a loss. The maintenance of an even supply of moisture by continual cultivation will tend to reduce this loss. Careful selection of heads for seed helps some according to some old growers. Other cabbage men have lessened the bursting in very bad seasons by bending over each too solid head until the roots on one side were broken off. This shut off a large part of the surplus water and kept the head from noticeable growth till harvest.

A Member—Is there any way of preventing the high losses which often occur in cabbage store-houses?

Mr. Thomspon—It pays to fumigate or spray the houses with formaldehyde each year. This prevents the rot germs from being carried over in the storage buildings from season to season.

Great care should be taken to keep the heads from being bruised.

Several thermometers ought to be hung in different parts of the house so that the owner can try and keep all parts of it at an even temperature just above freezing. Good ventilation is necessary to keep the air from getting too moist.

There is a good bulletin on this subject by the Department of Agriculture at Washington. It will pay any one who stores cabbage to read it.

CABBAGE DISEASES AND THEIR CONTROL

Prof. L. R. Jones, Madison

Cabbage growing as a specialized industry has assumed considerable proportions in Wisconsin. This is especially true in certain areas centering about Racine and Kenosha in southeastern Wisconsin and in the Green Bay region, including Brown and Outagamie counties.

Cabbage is most profitable on rich low lands abundantly supplied with food and water. With the progressive reclamation of marsh lands in Wisconsin in years to come, this crop is bound to increase in importance. Wisconsin's crop is chiefly of the type known as Hollander or Danish Ball Head, valued for storage and winter use and which cannot be produced in like excellence southward. There is, however, an increasing acreage of kraut cabbage grown as a rule to supply local kraut factories. This too is destined to increase with further development of canning interests.

The cabbage is subject to a number of serious diseases and these have proved the limiting factor in continued success with this crop. Certain of these, notably black rot and black leg, are due to germs introduced with the seed. Fortunately, it is easy to avoid much of this danger by seed disinfection. For this purpose soak the seed for twenty minutes in a solution containing one part of standard formaldehyde (40 per cent solution, also known as formalin) in 250 parts of water (1 ounce formaldehyde to 2 gallons water). Then rinse well with clear water and promptly dry the seed. After such seed disinfection, it is of the utmost importance to choose clean soil for the location of the seed bed. This means that the seed bed should be made in a new place every year.

The most serious disease, however, known as yellows, can not be controlled by seed treatment. This yellows disease is caused by a fungus parasite (Fusarium), which lives in the soil and attacks the roots of the plants. Once introduced it will persist for years in the soil, so that even long crop rotations does not fully overcome the difficulty. Soil so infested is "cabbage sick" and cabbage culture has proved no longer profitable upon it. This condition exists most strikingly in certain sections of southeastern Wisconsin where cabbage growing was formerly most successful.

Trials with various remedial measures have continued over some five years in the Racine district. No scheme of fertilization, soil sterilization or cropping has proved practicable. Fortunately, however, by continued selection a strain of Hollander cabbage has been perfected which is highly resistant to the disease. This has been grown successfully on even the "sickest" old cabbage fields with almost perfect immunity from yellows, whereas the commercial strains along side were practical failures. Thus in 1914, when the disease was very bad, the following results were secured on the trial grounds near Kenosha.

Field I.

Commercial: 56% lived; 31.5% headed; 1.75 tons per A.

Resistant: 100% lived, 100% headed; 18.3 tons per A.

Fig. 1.—Cabbage Yellows Later Stages.

When the attack is not too severe, or the plant is somewhat resistant, the plants may continue a sickly existence through the season. Such plants are yellowish and the lower leaves keep dying and falling. The attack is often worse on one side, warping or curling the stems.

Fig. 2.—Resistant Plants on Uniformly Diseased Soil.

It is characteristic of a yellows sick cabbage field that its individual plants vary widely in susceptibility, some appearing quite immun eand maturing perfect heads.

Field II.

Commercial: 36% lived; 17% headed; 2.25 tons per A.

Resistant: 100% lived; 95.5% headed; 19.2 tons per A.

Some two thousand head of this strain known as "Wisconsin Hollander" were grown on the trial grounds in 1914. The best of these, perhaps 1,500, are to be planted for seed growing in the spring of 1915. The seed thus secured will be distributed for planting in 1916 chiefly on the lands known to be "cabbage-sick" in Racine and Kenosha counties. Thereafter there should be no difficulty in securing and maintaining an adequate supply of home-grown "Wisconsin Hollander" cabbage seed to meet all needs. Meanwhile, the College of Agriculture will continue its efforts not only to improve upon this strain, but also to perfect similar resistant strains of the kraut types and earlier varieties.

DISCUSSIONS.

Supt. Norgord—How much of this particular seed is available at the present time?

Fig. 3.—Selecting Disease Resistant Cabbages.

The selections were made in the field where the yellows was bad as could be found. The seed grown from these selected heads has, in every case, given plants relatively resistant to yellows even on the "sickest" soil.

Prof. Jones—At the present time we have barely enough seed to repeat the trials of last year. We shall come back into this neighborhood and plant trial plots the same as last year, but aside from this we have none that can be distributed for general growing this year.

A Member—When you have the seed, what plans are you going to follow in the distribution of it?

Prof. Jones—That is for the local cabbage growers' committee to get together with me next fall and decide. Fifteen hundred heads will grow quite a good deal of seed if handled carefully and the season favors, so every one in the neighborhood who has sick soil can get a start at least, thereafter each can grow his own seed.

Mr. David Imrie—How do you care for the heads saved for seed growing during the winter?

Prof. Jones—They are kept in a cold storage cellar or house.

Mr. Imrie—Do you take them up with the roots and then set the roots in soil in the storage cellar?

Prof. Jones—We pull them up by the roots and then they are laid in shallow layers two or three heads deep in a bin or on the cellar floors. We keep the seed heads in about the same way that the regular cabbage are stored.

A Member—Do you advocate raising cabbage year after year in the same soil?

Prof. Jones—No, sir.

The Member—Isn't that what made the soil sick?

Prof. Jones—That is what helped to give it a quicker start at first and has spread it faster, although the yellows parasite will gradually get into soils even if proper rotation is practiced. This fungus which causes yellows is so insidious that it may be introduced by drainage water, dust or seed, so that in the first year of cabbage cropping one may perhaps lose ten or fifteen per cent of the plants. Once started in that way it will stay in the soil for years, even if you rotate with clover and other things.

A Member—In riding over this country that you have been speaking about, I have noticed cabbage and onions planted on the same fields year

Fig. 4.—Cabbage Seed Plant.

For seed growing in this climate the plant is pulled up by the roots in late autumn, stored in a cool cellar or trench and set out again the following spring. Such a plant will in general produce from 1 to 6 ounces of seed. An ounce of seed carefully used will suffice for planting one-half acre.

after year and I have wondered why they didn't rotate as they did with other things.

Prof. Jones—With onions there are good reasons for continuing the crop year after year on the same land, although the danger of disease is so increased thereby that extra precautions must be used against this.

with proper rotation and culture the disease we hope will not be enough to spoil the crop commercially. It will not be "fool proof"—only good cabbage growers will succeed with this as with other crops. And remember also that we must not be over-confident. Our results are based on only three or four years' experience and there may

Fig. 5.—Field Trial of Selected Cabbages.

At the left is a row of one of the best strains of commercial cabbage showing the ravages of yellows. At the right a row of "Wisconsin Hollander" selected for disease resistance.

With cabbage, while it is often grown with success without much rotation, such practice is to be discouraged. We shall urge, of course, that this disease resistant strain be used only with reasonable rotation. In this way we believe that culture can be resumed on the old "cabbage sick" lands. This new strain is not absolutely disease proof and I do not believe it will ever be perfect, but yet be a set back in this. I am sure, however, that we are on the right track. We are going to keep after it by further trial and selection year after year to improve upon what we have. With your patient and continual co-operation, we are surely going to succeed.

Mr. Scott—Would pasturing old cabbage fields with flocks of sheep tend to reduce disease?

Prof. Jones—Yes, certain diseases I believe such practice would help much. I wish that this could be done more generally. If any of you can try it out, I would like to hear more of the results.

A Member—How far from a field will this disease carry?

Prof. Jones—Probably as far as the soil may be carried either on tools and vehicles, by wind-blown dust or by drainage water. In one case we saw where it was carried about a mile by the washing of surface water.

APPLES IN WISCONSIN.

Frederic Cranefield, Secretary State Horticultural Society, Madison.

Wisconsin will soon attract attention as an apple State. The annual yield in a good year is about three million bushels, the number of barrels packed about 150,000, the balance sold locally or consumed on the farm.

We cut no figure in the apple market after November 1st; cold storage is not a problem. Ninety per cent of Wisconsin apples are summer and fall varieties, all greedily absorbed by Chicago and the Twin Cities, and the money in the bank before New York apples are picked.

That is just the way we want it, and the State Horticultural Society and other departments engaged in the fruit uplift, are advocating fall apples, including in this Fameuse and McIntosh.

Varieties for Wisconsin

We have a field all our own here and a market all our own. We are perfectly willing to let New York, Illinois and Missouri raise the winter apples. The kinds to plant in Wisconsin for either local market or shipment will vary but little for the entire State. Duchess, McMahan, Wealthy and Wolf River is the great quartette for Wisconsin.

McMahan is a Wisconsin seedling, a large apple with a beautiful creamy yellow translucent skin usually blushed with bright red. A barrel of well-grown McMahan, well packed, will outsell anything else on the Chicago market.

The other varieties are too well known to need description. During the past five years, over one-half of the planting has been of McIntosh, Fameuse and Dudley, the last named a Maine seedling that does exceedingly well in Wisconsin. It makes a splendid tree, the fruit is large, well colored, of good quality and three or four weeks later than its parent, Duchess.

All of these varieties, except Fameuse, come into bearing very early and therein lies one of the great advantages of Wisconsin as an apple State, from a dollar and cents standpoint, over states east or south of us.

Baldwins, Spits and Greenings take twelve to fifteen years to get under way and are not yielding profitable crops much under twenty years. Wisconsin fall apples begin to bear as soon as set out and orchards well cared for will yield two bushels per tree six years after planting, while at ten years the orchard should yield eight to ten bushels per tree. At twenty years the early kinds, such as Duchess and McMahan, will reach the maximum of

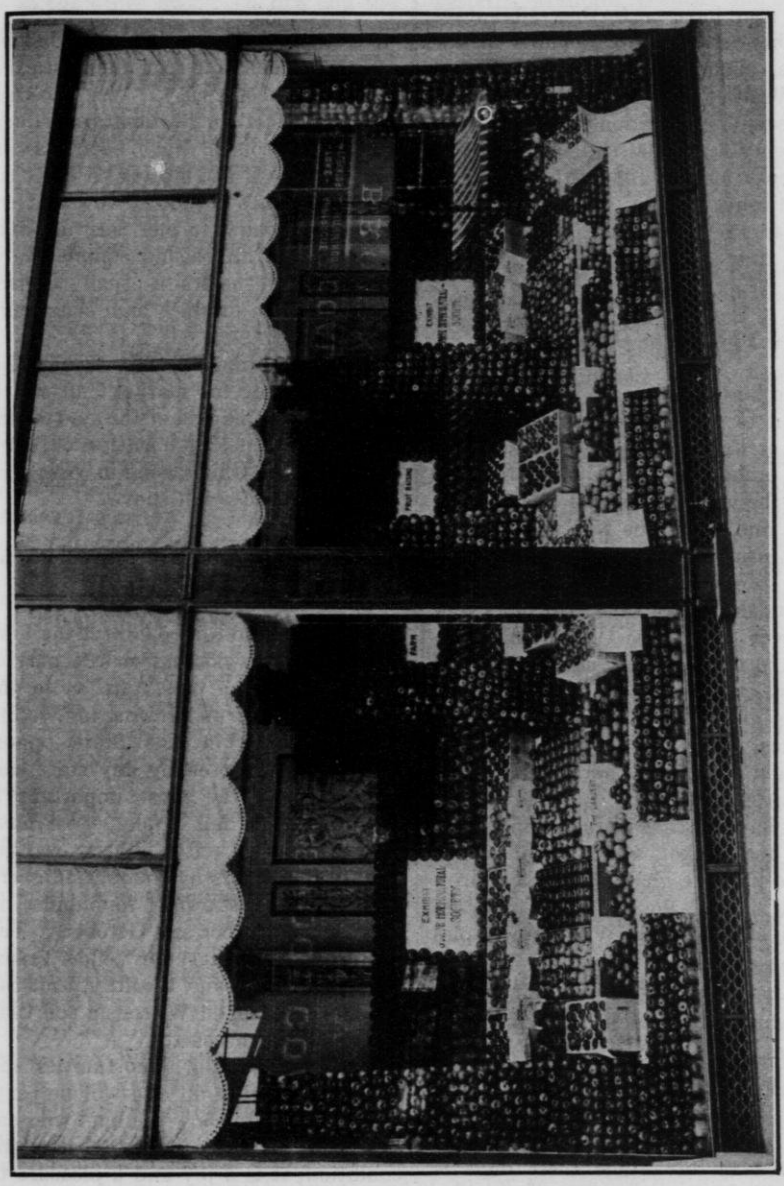


Exhibit of State Horticultural Society in a Grand Avenue Store Window, Milwaukee, Sept. 1915.

profit. This, of course, is not true of Fameuse and McIntosh.

We also have a further advantage with these short term orchards in size of tree. Duchess, McMahan, Dudley and Wealthy will not crowd enough to prevent cultivation and spraying for twenty-five years if planted twenty by twenty feet, or 108 to the acre, and if set twenty-four by twenty-four feet, or 75 to the acre, there will be room for all time.

The Farm Orchard

In orchard practice we have but little to point to in the past, for most of our older orchards are of the ordinary "farm orchard" type, planted in some out-of-the-way corner and wholly neglected, and every one who is interested in the future of commercial fruit growing in Wisconsin is fighting the farm orchard idea. We say: "rip out every tree over and above the number required to supply family needs and plant no more except to keep up the supply." This is meant for the average farmer who has plenty to do with corn and silos and milk and pork production. If he attends properly to these things, he will have no time to raise apples that are fit for market, and if he does take time to produce quality fruit the farming will suffer. We are trying to secure a high standard for Wisconsin apples and the only way it can be done is to keep the growing end in the hands of men who will make it their principal business.

It is not alone in the growing that the farmer falls down, but in marketing also. About the only way fruit can be marketed to advantage these days is through co-operative selling agencies, or some other form of co-operation.

The Orchardist Should be a Specialist

We want then, specialists. When we get these men and get them started, the rest will come easy. We, who have been interested in horticultural education in Wisconsin, have been wasting our energies in attempting to graft the apple tree onto the dairy cow and the hog. The dairy farmer has no right to attempt fruit raising commercially; it will take all the brains usually allotted to one man to produce high class dairy products.

We don't want the farmer dabbling in fruit raising for market, but we do want a few hundreds of the kind of men who are now making a success of dairying to go into fruit raising in Wisconsin and then things will move.

The Possibilities of Apple Growing in Wisconsin

Secondly, and a corollary of the first, we need an awakening on the part of all the people of our State as to the possibilities of fruit growing in Wisconsin. We have in this State opportunities unsurpassed by any state east or west, and the most important is the raising of fall apples. We have ten millions of city buyers within twenty-four hours by freight and every one of them starving for apples in August, September and October. Ten million people hungry for Yellow Transparent, Duchess and Wealthy, that can be grown better on Wisconsin soil than anywhere else on earth!

When we get the opportunities and the men together all else will be easy. It is only fun to show the man who has something at stake how to better his condition; it is a joy and a pleasure to guide the one who wants to be shown the way, but mighty up-hill work try-

ing to lead the contrary cuss who wants to go the other way. To this end the State Horticultural Society has established eleven demonstration orchards at as many different points, from three to seven acres each, of varieties best adapted commercially to the sections where located, where best methods of culture are practiced, including thorough cultivation, spraying, etc. A ledger account is opened with each orchard and at the end of ten or twelve years each orchard must have shown a profit or we will have failed. *We are confident* of results.

To return to my text: The best orchard practice does not differ in any important particular from that of other sections where it is rightly done. We, in Wisconsin, have learned some big lessons from the Pacific Coast apple men and we are applying some of them.

Cultivation is the big thing. No sod or grass or grain in the orchard either the first year or any year thereafter. Clean cultivation with inter-cropping of peas, beans or potatoes for the first four or five years, and clean cultivation and cover crops after that, but always clean cultivation until midsummer.

Pruning for open head and sunshine is not as important as in New York and the seaboard states, for our trees are smaller and we have plenty of sunshine. Spraying is just as important in Wisconsin as elsewhere and is the gospel of the successful grower. Lime sulphur for dormant spray to kill oyster-shell scale and perhaps check scab, and Bordeaux with arsenate of lead three times later.

This is a rough outline of apple raising in Wisconsin from a commercial standpoint. For the home orchard, the list of varieties may be lengthened, but the other remarks will stand. The varieties for home use may include Tetafsky for very early, Tolman, Northwesterns, Malinda, Windsor and Golden Russet for the cellar.

DISCUSSION

Supt. Norgord—What sections of the State do you consider best for commercial orchards?

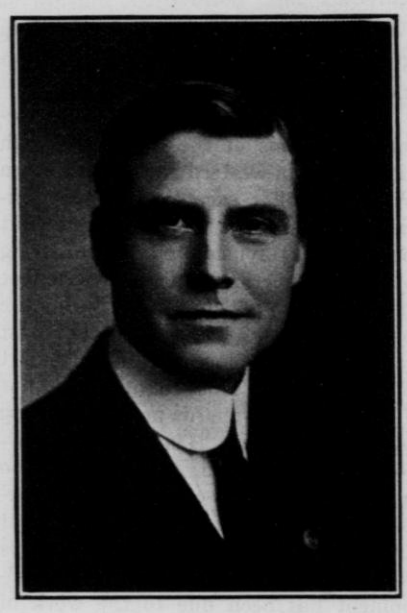
Mr. Cranefield—In general, the elevated portions of the State, the high ridge lands in western and southwestern Wisconsin offer exceptional opportunities for apple and cherry raising. That portion of Bayfield county bordering on Lake Superior is also an excellent fruit country. Door county, during the past ten years, has shown the most remarkable development of any part of the State. This county now has 7,500 acres of orchards and more being planted each year. That part of Crawford county known as the Kickapoo has also developed very rapidly. During the past six years over 45,000 fruit trees have been planted near Gays Mills. A very large part of this development has been due to the work of the State Horticultural Society in promoting fruit growing. What the people of Wisconsin lacked most ten years ago was confidence. We have aimed to inspire confidence in Wisconsin as a fruit growing State.

A Member—How about other fruits? Can't we grow anything but apples?

Mr. Cranefield—The best answer to that is the Co-operative Cherry Orchard at Sturgeon Bay, seven hundred acres of cherries in one solid block, the largest cherry orchard in the world. Also the fact that there are over five thousand acres of cherries in Door county. So far as strawberries and bush fruits are concerned, these can be grown successfully in any part of Wisconsin.

MARKETING FRUITS.

D. E. Bingham, Sturgeon Bay.



D. E. Bingham.

The marketing of fruits is one of the most complicated problems with which the fruit grower has to contend. It is not simply finding a place to sell the fruit, it is finding the best place and highest prices, and, having found them, to get the fruit on the market in the best possible condition as to packing and time in transit.

To get a fancy price, the grower must have fancy fruit, well packed. We will assume that the grower knows how to produce fancy fruit and has it ready to harvest. You may wonder why I start marketing with the harvest, so I will endeavor to explain.

There are hundreds of people who are just beginning the fruit business and who make their greatest mistake, the one that costs them most in dollars and cents, at harvest time. Enough has been written about the culture of fruit to enable most any one to grow good fruit if they study what has been written. The difficult part is to know just the right time to harvest fruit in order that it may reach market in good condition. It is also the most essential.

When to Pick the Fruit

It is always supposed that any fruit must be picked while still green. That is true, but green does not mean immature. It may be fully mature and only lacking slight color. By mature I mean full size and light color. The color will deepen somewhat while in transit and the quality of the fruit will not be impaired, while if the fruit is picked before it is mature, the color may be all right when it reaches market, but the quality will not be as good.

Particularly is this true of small fruits, strawberries, raspberries and cherries. Fruit harvested at this stage will be firmer and thereby reach market in better condition.

It is not so hard to know just when to harvest small fruits, as they do not fall as apples do. One does not expect to find the ground covered with raspberries or cherries before beginning to harvest, but in the case of apples some people seem to think that they must have the ground well covered with

A box of Wisconsin Apples, as opened on the market. If we expect to sell box apples it will be necessary to adopt better packing methods.

Fig. 1.

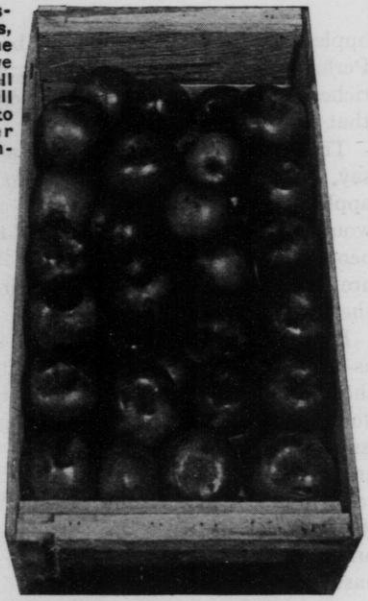
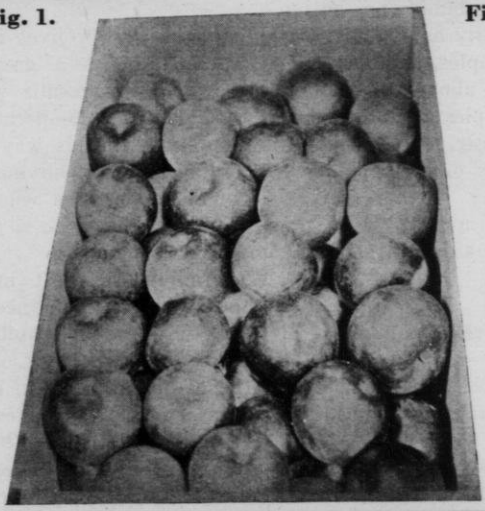
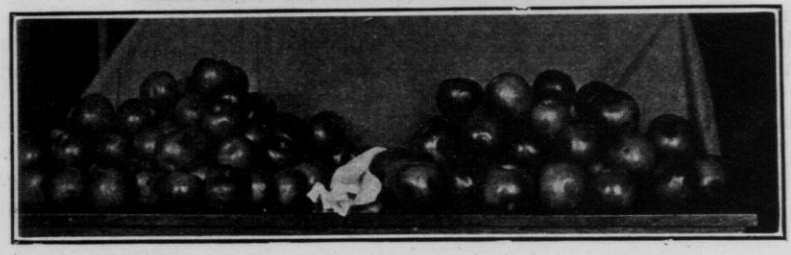


Fig. 2.



Another Sample of Poor Packing.



The Only Sound Apples in the Box Shown in Fig. 2.

apples first. Why should it be so? Perhaps they think that apples are a richer carpet than grass, or perhaps that is the family supply.

True, you will hear these same people say, why, I get a big price for my apples. Yes, true again, but what would the amount be in the end if these people could be convinced that they are losing a fourth, maybe a third of their crop?

Begin to harvest the apples as soon as the seeds turn brown. Don't let the wind or mother Nature do it for you. If the color of all the apples isn't what you wish, pick those that are well colored, leaving the others to color more. One can afford to go over the trees twice if they are getting good prices. Some varieties of apples are past their season in a very few days, consequently they should be gotten on the market as early as possible.

When picking apples, handle them very carefully and above all things avoid pulling the apples off and leaving a print of each finger. These bruises will injure the looks of an apple very materially, especially is this true of very light colored apples, while the bruises of tight packing will scarcely be noticed.

Packing the Crop

Now we will take up the packing. Usually the market selected determines the style of package to be used. Ordinarily, the pint case for raspberries, the quart case for blackberries, strawberries, cherries, etc., and the barrel for apples.

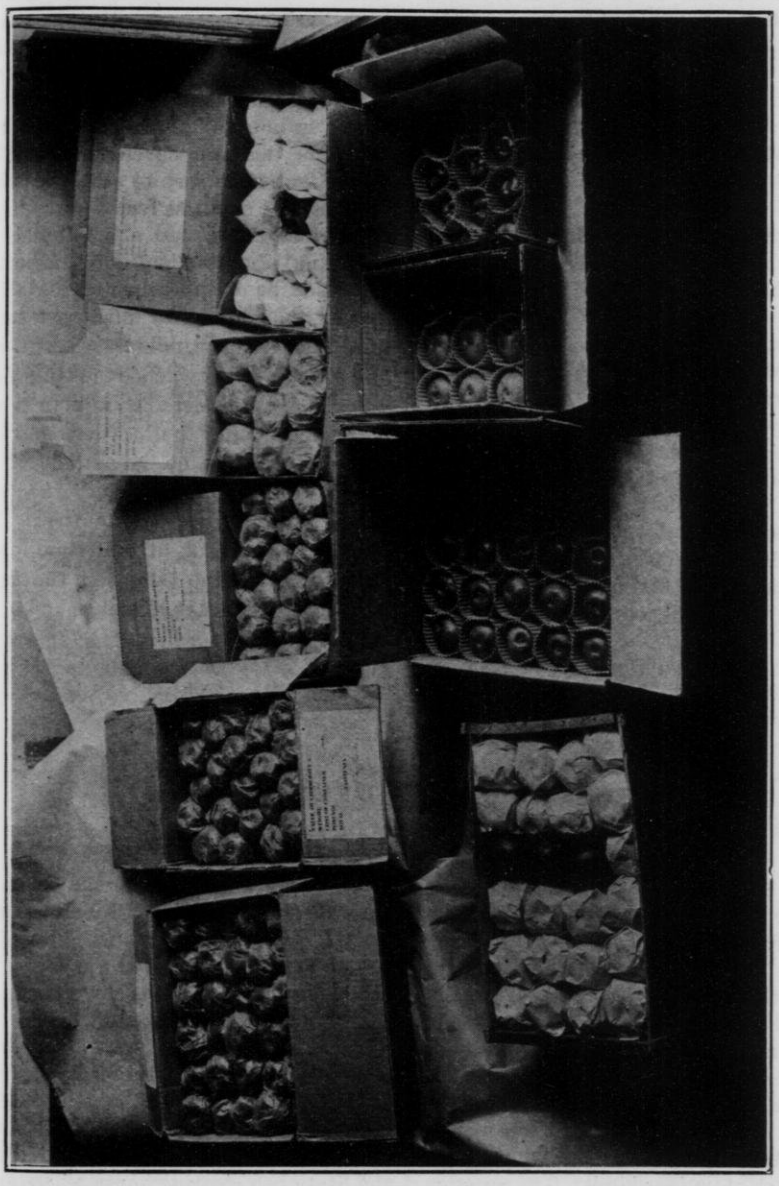
In packing any fruit, it is very essential to have the package well filled. A barrel of apples slack filled will rattle and reach market badly bruised and fail in getting the best price. Have the top of the barrel or package of any kind of the best fruit, well colored, and always let this be a fair and honest sample of the whole package.

Grade all fruit, no matter what kind. Never mix kinds if possible to avoid it. If necessary to do so, have the kinds resemble each other as much as possible. The grower never loses by grading. A barrel of apples with the first and second grades mixed will bring only the price of the inferior grade. Taking an ordinary sized apple, anything smaller than two and one-half inches, should go in the second grade. Do not be afraid of putting a large apple with a blemish on it in the second grade, as it will help to bring a better price for that grade.

Co-operative Shipping Brings Best Results

If the grower lives in a community where there is a great deal of fruit grown, better results will be obtained through the co-operative system of shipping. In this way the expense of finding markets, buying packages, etc., can be done on a wholesale plan and thereby reduced to a considerable extent.

Finding the best markets requires the most time and needs a man who has the time and ability to look for them and keep track of them. Under the co-operative plan, it is possible to have a man who makes it his business to do this and is hired by the organization. Then, too, under this plan the fruit can be shipped in car lots, thereby getting better freight rates and insuring quicker transit. If fruit is injured while in transit, a quicker adjustment can be made if shipped through the co-operative plan. Every grower's fruit sells for what it is worth and every grower has the advantage of the organization. Several of these co-operative



Parcel-Post Packages for Wisconsin Apples.

organizations in the State stand as proof of the benefits to be derived from co-operative marketing of fruits.

DISCUSSION

A Member—What varieties of apples would you recommend for southern Wisconsin?

Mr. Bingham—The commercial varieties that are of special value for Wisconsin growers are the Wealthy, the McIntosh, the Snow, and perhaps the McMahan.

A Member—How about the Northwestern Greening?

Mr. Bingham—The Northwestern Greening is not so good for southern Wisconsin. The farther north you get your Northwestern Greening, I think the better it does.

A Member—We sometimes notice along about the first of May, everything is like a beautiful prospect for fruit, then we have a northeaster for a day or two and we find it interferes a good deal with the blossoms and with the setting of the crops. Is there any way that you can make that tree blossom later?

Mr. Bingham—Not that I know of. There is no way of holding back the buds nor the fruit development. You might find some way to stop the wind blowing just about as easily.

A Member—Would a windbreak or some kind of protection from this northeast wind be of any help?

Mr. Bingham—You might get some advantage from a windbreak where there had already been evidence that the wind was doing considerable injury; very much depends on the location, and ordinarily there is no advantage in a windbreak, except at the time when the apples are ripening on the trees. Of course, a windbreak at that time often times prevents the falling of the fruit before you can get it picked.

SECURING EFFICIENT FARM LABOR.

H. J. Beckerle, State Industrial Commission, Milwaukee.

The securing of efficient farm labor is a problem which confronts the farmer at all times of the year, especially so with the coming of spring. Throughout the State there are thousands of farmers who need men to work their farms. In the city there are thousands of men who need jobs; in fact, during the year 1914 there were over 33,000 men in the city of Milwaukee alone who applied for work of various kinds. The question now arises, how can the man and the job be brought together?

The Method Employed by the State

The State has provided a medium to accomplish this purpose by operating four Free Employment Bureaus in the State, one at Oshkosh, one at Superior, one at La Crosse and the principal one at Milwaukee. I wish to state right here that the true definition of an Employment Office like those operated by the State is a clearing house where employer and employee can get together and bargain for labor. There are also

private employment offices in this State and the tactics used by some of these I dare say need investigation. These offices are operated by individuals for financial gain only. They do not care how often a man is sent out or what kind of a man is sent out; in fact, it is to their benefit to send out a poor man where they know he cannot hold the job and comes back to them applying for another. This means an extra fee. It is the aim and object of the State Free Employment Offices to send out men who are adapted for the work; in other words, the best man for the job that is open. It is the object of the State to place men in positions where they will make good, and I will say right here that the Milwaukee office in the year 1914 has placed 15,080 in positions. Of these men, 1,166 were placed on farms. The farm hands applying at this office are not only city men, but others who have been lured to the city by grand promises of big wages and bright lights and during the general industrial depression which has been hovering over this country during the past year, these men have become disgusted with city life and are anxious to get back on the farm. The majority of this class of men consists of foreigners who have been accustomed to farm labor in the old country, but do not know our ways and means and in many cases do not understand our language, and if the farmer will only give some of these men a chance and with a little patience teach him our principles, he will find that within a very short time he will have secured a good, reliable man. Many of these men have their families in the old country and after working a few years on the farm will save money enough to bring them over here, then possibly let the entire family work on the farm, or rent a farm for themselves. This you will see, gentlemen, makes a good citizen of him, an asset to the State and a financial return to the farmer. What more do you want? In many communities we find that from six to a dozen farm hands are wanted and by getting men of the same nationality they build up a little colony of their own.

Securing Information Regarding Applicants

Now, you may say, how do we know what experience a man has had? We are very particular as to getting all information we possibly can from the applicant. We use the card index system at the office and also a code; for instance: a man comes in and applies for farm work. We get his name and address, age and birthplace, married or single, how long in this country and how long in the city. We then ask where he had worked last, how long he worked at the place, how much he was earning, why he quit, and how long he has been out of employment. We ask him what experience he has had on the farm, whether old country or this country experience, what he knows about horses, cattle and machinery, dry or wet milker. If we are still in doubt as to his ability, we put a few simple questions to him; for instance: How many cows can you milk in an hour?, or, what side of the cow do you get at to milk her? How often do you milk your cows a day? From all this information received we can pretty near tell if the man is bluffing us or not.

Now, you may say, this man may be a good hand, but how do you know whether he is going to stick to the job? I will say that this is a matter of guess work to a certain extent, but will tell you right here that this can be remedied if the farmer will only co-operate with the

office. This is a simple matter and I will explain to you how easily it is done.

When a man is sent out to work on the farm, or any other job, we give him an introduction card. All that we ask of the employer is to sign this card if he has hired him and let us know if the man is any good or not. These remarks are noted on the applicant's card and the next time he comes in applying for a job we know exactly what kind of a man he is. Should the farmer come to the office and hire a man that we know from past experience will not stick to a job, we tell him so. On the other hand, if we know that a farmer has hired a number of men during a short time and from inquiries made has not lived up to his agreements, we also tell the farm hand. In other words, what is good for the goose is equally good for the gander, and let me tell you right here that I know of farmers in this State who are to blame for not being able to keep their help, some of them not feeding well and others where housing conditions are very poor and unsanitary. It is not always the farm help who is no good.

Getting the Employer and Employee Together

At the Milwaukee office we have two large rooms, one of which is used as a waiting room for the men looking for work and the other for an office room and also a private apartment where an employer can talk with his man and talk with him personally.

We regulate no rate of wage whatever, leaving that entirely to the discretion or agreement the employer can make with the man. This we find has proven very successful, for the farmer knows exactly what he is getting. In many cases, however, it is impossible for the farmer to call at the office and he sends in an order by mail, as has been the case within the past year. Many men seeking work on farms, being without work for quite a while, are naturally without funds. In cases of this kind, we ask the employer to advance the transportation. Now, to insure safe delivery of this man on advanced transportation, one of the office force will take him down to the depot, buy his ticket for him, check his baggage and mail the check right to the employer, and you can rest assured that his baggage must be worth considerable more than the transportation, as we do not take his word for what he has, but open up his baggage or grip and go through the contents, so if you do not get the man, you get the baggage.

There is also a Women's Department connected with this office, in charge of a lady assistant, where scrub women, domestics, house-keepers, etc., are furnished.

These offices, as I stated before, are conducted by the State, under the Industrial Commission, and the use of the same is absolutely free to both employer as well as employee.

In conclusion, will say that should you desire help of any kind, call personally or drop a line to the Wisconsin Free Employment Office, Milwaukee. Should you live in a location nearer to one of the other offices, the Milwaukee office will forward your wants to the one nearest.

As a closing request, I will ask that after a call for help is placed with either of the offices and you should secure same from any other source than this, kindly let us know immediately, thereby saving the men the expense of going to the place and not finding the job.

We want to again impress upon you that the only object we have in view in conducting this office is to help the employer and employee and bear in mind that the services are absolutely free.

DISCUSSION

Supt. Norgord—I want to say that Mr. Beckerle and his Commission have been represented in about ten-minute talks at all our Institutes. We feel that this is an important problem and the experience they have had has shown that they can give you good labor that will be suited to the kind of work that you have to do, many of the farmers who have gone to the city and want to get back to the country, old country farmers, and we feel that the little time we have been able to give to this good speech ought to be of a great deal of advantage throughout the State.

Mr. Jacobs—And I wish to testify that the message has been very well received throughout the State. We feel that we should commend this work.

Dr. Porter—How about wages this year, are they higher or lower than last year?

Mr. Beckerle—Well, we regulate no wage, that is left entirely to the men themselves, although I must say that wages for a good man seldom vary very much. A good man is always good for all he has got coming. On the other hand, I find that the wages make no difference to the farmer, providing he gets the right kind of help. Most of them have found out that cheap help isn't worth anything.

A Member—Do you inquire into a man's pedigree when he applies for help or for a position?

Mr. Beckerle—We get all the information we can. One thing is sure, as far as the farmer is concerned, the farm hand will always come back and make the first holler if they have had any trouble.

A Member—I know of a man that had forty in ten months.

Mr. Beckerle—He would have a fine chance getting any more from our office.

A Member—How do you do when a man hasn't got money to pay his railroad fare?

Mr. Beckerle—Some of these fellows, of course, are without funds, being out of work so long, and they would like to go on a farm but haven't got the money to get there, so we ask the farmer to advance his transportation to the office. We pick out a man that has some baggage, take him to the depot, buy his ticket and present this ticket to the conductor, check his baggage after looking it up carefully, he has got to open it up and no rags or paper or anything of that kind goes with us. We check his baggage directly to the farm, and the farmer is almost sure of getting value received, because if he doesn't get the man, he gets the baggage.

Dr. Porter—I want to bear testimony as to the value of that employment bureau to the farmer. I have had two young men that were sent to me from there last summer; the first one was one of the best plowmen I ever had. He broke three horses for me which my own son, I think, would have spoiled. He stayed three or four months, until the Russian war, when he had to go. Then you sent me another one, a young man who was an excellent man and a good carpenter, for $26.00 a month. The Russian last year I paid $30.00, and he was well worth it.

There is another bureau. I had a young man last year from a Jewish Aid Society in Chicago, who had about a year in the Baron de Hirsch Agricultural School, at Woodbine, N. J. The boy had lived ten years in London and New York, and he was one of the best men I ever had. He was one of the seventy boys in that Jewish school and had been working under the eye of those professors. That was the kind of an agricultural school that I believe in.

A Member—How will we reach you, what is your address?

Mr. Beckerle—Just address the Free Employment Office, Milwaukee, Wis. There are some cards and blanks in the rear of the hall that will show you something of our methods and the way in which we want to help you.

A Member—How many offices is the State conducting?

Mr. Beckerle—Four, one at Milwaukee, La Crosse, Superior and Oshkosh.

A Member—Should we send an order to the Milwaukee office and our farm is nearer to one of the others, how would our order be taken care of?

Mr. Beckerle—A copy of your order would be sent to the office nearest to you and if they should not be in position to take care of it, it would be returned to the Milwaukee office, but this is very seldom the case.

A Member—You say this service is free to all. How can you pay your expenses and where do you get your salary from?

Mr. Beckerle—This is all paid for by the State. You are paying for it indirectly when you pay taxes, but the amount is so small that if you were to take it out of your pocket, you would have to change a very small piece of coin; in fact, I do not believe there is a coin small enough to change.

WISCONSIN LIVE STOCK AT THE PANAMA-PACIFIC EXPOSITION.

George McKerrow, Pewaukee.

The time is limited, one of the rules of every good Scotchman is to feed regularly and we are pretty near to feeding time, so I am not going to give you many preliminaries; indeed, I do not need to do so with an intelligent audience like this, composed largely of stock men.

I do not need to stand up here to tell you that the Wisconsin breeders have been making progress. I do not even need to tell you that the story told last night on the Holstein cow has got to be a slander on many of the Holstein cows of Wisconsin, because now the Holstein breeder has his cow bred as to quality as well as quantity, and he is breeding cows that, when he drops a dollar into the bottom of the full pail of milk, he cannot read "In God We Trust" at the bottom.

I do not need to tell you that the Jersey fellows have so bred up their cattle that when they drop that same dollar to the bottom of the pail they cannot read "In God We Trust," because the Jersey cow now gives milk enough to cover it. This is an age of progress and Wisconsin has the spirit of progress.

Why Wisconsin Should Exhibit at This Exposition

At this present time it is pretty hard to talk to you in Wisconsin on what the Panama Exposition live stock show from Wisconsin is or is going to be. It would be very much like counting your chickens before they are hatched, and when I was in the poultry business and counted

my chickens before they were hatched I usually had a disappointment.

Why should Wisconsin make an exhibit of her live stock at the Panama Exposition, and why should the Wisconsin Live Stock Breeders' Association go to the World's Fair Commission and ask for a part of the State appropriation to be used in making such an exhibit? We did that; now, why did we?

We did it because we believe that the subject of live stock breeding in Wisconsin is one of the major factors in her prosperity. We believe, and we know from the figures, that the live stock of Wisconsin is the greatest dollar-producing element in the State. I will speak of just one phase of that, the Dairy Industry.

You have been told from this platform that the dairy industry now brings into the pockets of the farmers of the State one hundred millions of dollars annually. Other lines of live stock are also bringing in very large amounts. Wisconsin live stock is pretty well known all over the United States and in foreign countries, but we want to have it better known.

It is true that just now Wisconsin does not hold the world's record in cows. Murne Cowan and May Rilma are not Wisconsin cows, but only a few years back, you know, Wisconsin had the world's championship in Colantha 4th's Johanna. Just back of that Yeska Sunbeam; at the World's Fair at St. Louis she had the great producing cow, the greatest, Loretta D., came from Wisconsin, a Wisconsin Jersey, and still back of that, at the World's Fair at Chicago, she had that other great Jersey cow, Brown Bessie. We believe today that the test records, the official records of our great grades and pure breds in Wisconsin herds stand at the head of any other records of an equal number found in any State in the Union.

Pen of Four Oxford Lambs, bred and owned by Geo. McKerrow & Sons' Co. Undefeated get of sire 1914. Being fitted for exhibition at the Panama-Pacific World's Fair as Yearlings.

I said we did not have a new world's championship, but the blood of Murne Cowan had its source back here in Wisconsin. Her pedigree runs back to our Lilyella and Lilyita, two great cows, both bred in a neighboring county and developed and brought forward to the world up in Fond du Lac county, and you who are interested in dairy

cattle will remember that when their records were published to the world and the official test showed one at 710 pounds of butter fat and the other at 780, that the people threw up their hands and said, "it cannot be." Very few owned 700-pound cows in those days, and I very well remember as I stood beside the Guernsey show ring at our State Fair at Milwaukee and saw my old friend, C. P. Goodrich, of Ft. Atkinson, place the blue and red ribbon in the yearling heifer class on these two animals, that were not polished for show purposes, I heard some of the best breeders of this country say, "The old man has made a mistake, there are two or three better heifers in that ring than those he has placed at the top." There were heifers there whose tails were better groomed, whose horns were in better form, but when that expert old dairyman looked at the outline of those animals as an indication of production, he had not made a mistake, and back at the time when they made their record we were all ready to say that the old man at Ft. Atkinson could see as far into a cow as any other man.

Now, why should Wisconsin make a live stock exhibit at this World's Fair?

If you will go back to the records of the World's Fairs and Expositions and the great shows of this country for the last twenty years, you will find that Wisconsin herds and flocks have at all these great shows carried off more of the high honors in proportion to the numbers shown than have those from any other State or any province on the American continent, so we have that precedent to stand upon in considering this matter of making a show at the Panama Exposition.

Four Shropshire Lambs, bred and owned by Geo. McKerrow & Son's Co., Pewaukee. These Lambs are being fitted as Yearlings to show at the World's Fair.

Individual breeders went to the expense of making these shows until the time of the World's Fair at St. Louis. The organization that I represent here today, the Live Stock Breeders' Association of Wisconsin, felt that the live stock interests of Wisconsin were as much entitled to the State appropriation to make their exhibit as were the manufacturing or educational interests of the State, and so, through a committee, they appeared before the World's Fair Commission back in 1904 and asked that a part of that appropriation be

given for that purpose. At the first meeting they were turned down, because there was no precedent for it, no money had ever been appropriated and used along that line, but we got a second hearing and succeeded in convincing those men that the Live Stock Association was entitled as much as anything else to a part of that fund, and the exhibit was made at St. Louis, and if you will pick up the report of that Commission you will see that the live stock of Wisconsin made one of the best and most creditable shows in that exhibit, and if you will look up the record of the prizes you will see that Wisconsin was clear on top at that World's Fair, winning more prizes in proportion to animals shown than any other State or province.

So when an appropriation was made for the Panama Exposition, this same organization, the Wisconsin Live Stock Breeders' Association, decided to go before the present Commission and ask for a part of that appropriation for an exhibit, and they were granted $10,000.

Now, you may ask again, Why? Why is it needed? Why can't the breeders of live stock make their own exhibit? And many say at these great Fairs it is always a losing proposition.

Now, the live stock of Wisconsin must be pushed, must be advertised, just the same as any other line of our industries which are being pushed and advertised. At this Fair at San Francisco, it is going to cost somebody a great deal of money, a great deal more to make a live stock exhibit than they will ever get back. That is certainly true, as I know from an experience of over forty years. Other exhibits can be made a great deal more cheaply and with very much less risk. Live stock is perishable, the feeding of high-class

The McKerrow home on farm No. 1, Guernsey Cattle, Shropshire and Oxford Sheep in the foreground.

animals to get them in form to go to San Francisco to win honors for the State of Wisconsin is a big job, they must have the very best of care, both before they go and after they get there, and they must be of the very best character. It would be useless for Wisconsin to pick a lot of second or third class stock, such as a man would send to his County Fair, and send them to San Francisco to represent the good qualities of Wisconsin stock. That would simply advertise that our stock was very mediocre in quality, so it must be the best animals from our herds and flocks that shall be used for that purpose.

Then, too, we must remember that there is a long journey across the continent, a journey of from seven to ten days' duration, and you know what that means with high-class, well fitted animals, you know of the shrinkage, you know that some of your animals will deteriorate, or, as the stockman puts it, be "knocked out," so the live stock men, I believe, showed good sense in asking for, actually demanding, a part of this appropriation to insure against these heavy losses.

Wisconsin Has a Reputation to Sustain

Now, the question is, What are we going to do with it? Advertise Wisconsin live stock. And why advertise at the Panama Exposition? Well, one reason is that there will be there representatives from great live stock countries across the Pacific and to the south of us, Japan, New Zealand, Australia, and the South American countries. All of these will have representatives there to study the live stock shows at that great exposition.

Wisconsin already has a reputation and she must keep it up. In one breed of dairy cattle she has more in numbers than any other State, the Guernseys. In the Holsteins she stands second. She has within her borders the greatest show herd of Ayrshires and she has high-class Brown Swiss. She has some of the best Shorthorns in the world. She has some of the best sheep that can be found on this or any other continent, and she has good swine and she has some high-class horses, although she does not stand out as a horse-breeding State. Her reputation in dairy cattle is pretty well established, and these countries I have mentioned, even Japan, Australia, New Zealand and South American countries have within the last three or four years' time been buyers, either of pure bred or high grade stock, here in the State of Wisconsin. We do not want some other State or some province of Canada to go there and make exhibits along live stock lines that will over-shadow the exhibit that Wisconsin can easily make if we have a chance, and this applies not only to pure bred stock, but particularly is important to the farmers of Kenosha and Racine counties, and all the other farmers of the State that are well forward in breeding good stock, that this particular part of the business, the building up of fine grade herds, grade herds of high class, shall be encouraged everywhere, and Wisconsin's work in this direction recognized.

Looking at the wide question of the value of the live stock of this State, I say that it is the grade stock that are being bred up that are adding most liberally to the value of the live stock of this great State. We must show to the world that we have good grade stock, as well as pure bred, so everybody will get the benefit from this way of advertising our Wisconsin live stock.

I said I was not going to talk so as to keep you away from your feed, because these men who feed these high-class

animals to go to such shows as the Panama Exposition, know full well that they have to start early, that they have to get these animals in condition slowly, so that they may stand this long journey across the continent. We know something about a trip of that kind. We sent an exhibit to Seattle, it took seven days on a special train without unloading, and we found that some of our very best animals had gone back so that they were down the line and the animals, many of them, that we expected to do well with got no prize money, while some of our second-rate animals won out.

I am going to stop. We hope you will keep up your interest and help us push this thing through.

DISCUSSION

A Member—Were there any Holsteins among those first prize cows you spoke of?

Mr. McKerrow—Yes, Colantha 4th's Johanna took the record for seven days, thirty days, ninety days and a year.

A Member—Tell us about this new Holstein that so much is expected of.

Mr. McKerrow—She hasn't finished yet; she is making a great record, and we Guernsey fellows are hoping she will hold up some, but fear she won't.

A Member—When will that exhibit be ready?

Mr. McKerrow—I have not said anything about what we propose to do. There are a great many Wisconsin breeders who have started to get ready, but just at the present time, with the foot-and-mouth disease and the quarantine and all those conditions staring us in the face, we cannot say anything definite. The live stock exhibit is on in October and November. We propose, if any State is able to make a good show, we propose that Wisconsin shall have one of the best, and that is all we can say about it at the present time. Many of our best breeders are fitting for it.

A Member—What will you do with the appropriation if we cannot show?

Mr. McKerrow—I have no doubt that we will be able to show. I will tell you what we did in 1904. We only spent a little over nine thousand dollars of the ten thousand dollars appropriation. The Commission told us we were the only class of people that didn't spend all the appropriation we could get and ask for more, and they rather intimated that we farmers were not quite onto the game. Now, we will have to put our heads together and find some way of sustaining that reputation. It won't do to let it go back to the State Treasury as we did in 1904.

A Member—Perhaps we can hold it for 1920, for the Plymouth celebration.

Mr. McKerrow—Maybe we can.

Recess to 1:30 P. M.

AFTERNOON SESSION, SATURDAY, MARCH 13.

Mr. John Imrie in the chair.

BUILDING A PRODUCTIVE DAIRY HERD.

H. D. Griswold, West Salem.

In taking up this subject, you will pardon me if I digress somewhat from the beaten path and discuss some things not often mentioned, and the subject which I wish to bring out particularly is in these words of the Good Book, namely, "Other have labored and ye are entered into their labors."

The first man to bring home forcibly to my mind the possibilities of the dairy cow was Hon. W. D. Hoard, and not to me only but to thousands of others. Then Dean W. A. Henry, with his study of feeding and his books on the subject, opened up a better line of thought and knowledge in that part of our dairy work, and Prof. Babcock, who gave us the simple way of testing milk which is of untold value to every dairyman in our land. These men and others who have done such good work in our State and Nation and of whom we are justly proud, have labored to bring out and develop the splendid breeds of dairy cattle that we have today. Men have spent their lives in study one generation after another to bring out and perfect these breeds of cattle, so that the farmer of today, though he be poor, can get the benefit of their years of labor in good sires for his herd, and if he does not he is wasting opportunities, not only for himself but for those dependent on him.

Again, we have dairymen who sell milk and depend on buying all their cows and sell all the calves. They have entered into other men's labors, but are doing nothing themselves to help improve the dairy business. The cow that you buy simply to give milk a year or two and sell again you have no sentiment for, but the cow that you have raised, that was born on your farm under your care and according to your ideas of breeding, that you have fed and developed and watched grow out into the mature animal of profit and beauty, and if, perchance, you have taken a premium in some contest or at some fair, there is a just pride and a sentiment that is closely akin to affection and you do the work connected with it not alone for the dollars in it but for the satisfaction that comes from things accomplished and victory won.

The real dairyman, coming home from an absence of some time, does not ask first for the cream check, but for the welfare of the herd, the calves that have been born, the records made and the health and prosperity of the flock, and the check is the last in his thought, for well he knows if the herd is prospering the dollars will come all right.

Again, do not be led away by fads and fancies and lose sight of the main thing, which in a dairy cow is production. She may have the perfect colors of the breed and all the fancy points, but if she fails to produce she is

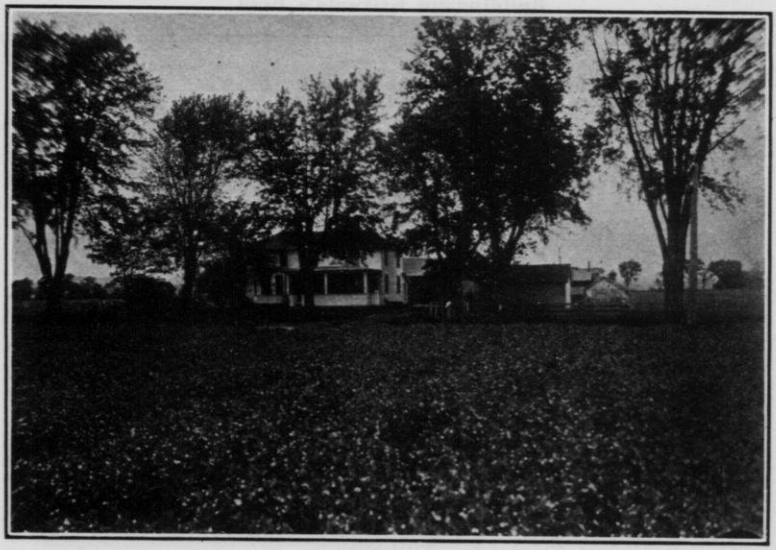
a thing of naught. Many a good animal has been sacrificed on account of some defect of color or fancy point. The champion cow of the world today is decidedly off in color markings. Let the millionaire do that if he wishes, but the man of business should look first to production and hold lightly to the minor things.

Another important thing is health. Some lines of breeding are much stronger physically than others, more able to resist disease, less easily affected by changes of weather and environment, more to be depended upon in their breeding, more uniform in their feeding and in their production.

Selecting the Sire

Don't make a mistake in the selection of your sire. It pays to study breeds and types and records. Nothing less than a full blood sire is worth considering and production is the main thing. A uniform record, reaching well back over several generations, is better and surer than phenomenal records of individual animals.

Never buy an under-sized bull. All the large records that have been made in any breed have been made by cows of good size for the breed represented and an under-sized bull is most sure to get under-sized offspring and buyers of stock today demand size.



Farm home of H. D. Griswold. Peas for canning factory in foreground. This farm home has a furnace, electric lights, hot and cold water under pressure, a sewer system, bath-room, toilet and stationary wash tubs, telephones and R. F. D.

Don't get the idea in your head that you have got the only good stock in the world and commence to inbreed. I know men that have good stock that say they can get nothing better outside and therefore save sires from their own herd and inbreed. That has brought disaster and deterioration in many cases.

Twenty Years' Work in Dairying

I believe that the greatest and best work the Farmers' Institutes can do today is to help the farmer of small means who is starting out in life to start right, and I have made out a chart showing twenty years' work in the dairy business, not as a model or a pattern, but simply to show how these things work out and the things that contribute toward success and those that contribute toward discouragement, and the time and patience required to bring results where money is lacking and a family to be supported and the investments have to be made little by little.

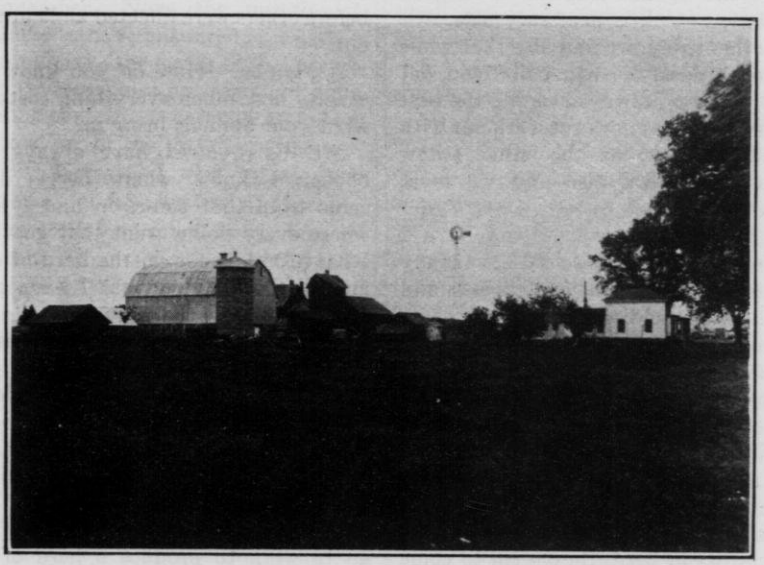
Building up Griswold's Herd

Year	Number Cows	Average Butter Per Cow	Total Returns	
			Butter	Stock
1888	3	.....	$107	$59
		First Pure Bred Sire		
1889	4	.....	$138	$198
1890	6	.....	224	229
1891	9	265	388	50
1892	9	315	529	138
1893	10	334	609	190
1894	10	379	552	245
1895	11	360	557	185
1896	11¾	357	556	171
1897	15	392	798	177
1898	16	383	1.004	189
1899	17½	385	1.129	80
1900	18	337	1.147	206
		First Silo		
1901	20	400	$1.400	$218
1902	21	424	1.937	345
1903	23½	421	2.243	234
		Abortion in Herd		
1904	27	373	$2.284	$196
1905	25	264	2.119	388
1906	23	386	2.091	1.059
1907	24	431	2.534	1.269
		All Pure Breds		
1908	24	387	$2.372	$1.703
1909	25	403	2.423	2.370

You will see by the chart that in 1888 we had three cows and the returns that year for butter were $107.00. In these records one cow must be allowed for the family of which no record was kept.

A full blood sire and a good one was bought when there were only four cows in the herd, interest was aroused and a milk tester was bought and used in 1891. At that time we knew nothing about air treatment for milk fever and we lost some good cows with that trouble. Then came years of testing and culling; slow at first, sometimes a long run of male calves and some disappointing heifers, but a gradual gain in numbers and production. The money received is not in regular proportion, as the price varied considerably, especially during the first years, running as low as 12 and 15 cents at times in the summer. The increase of the herd is also low in price, as grade cows were not much in demand at that time and as we were selling the poorest. Most of them went to the butchers.

In 1901 the first silo was built, and you can readily see the increase in production, both in the individual production per cow and the production of the herd after that. No words that I could say for the silo would speak so well for it as the figures themselves.



H. D. Griswold's Farm Buildings, showing Barns and Silos.

Then in 1904 we had contagious abortion in the herd and for three years it ran its course. What the records might have been without that trouble we do not know, it was serious enough and most discouraging, but you will note that the money returns kept up remarkably well, partly due to the better prices than before, the greatest loss being in the calves lost and the consequent loss in stock sales.

In 1907 normal conditions prevailed and better returns accordingly. Then we sold our grades gradually at good prices and replaced them with full bloods.

During all these years of grading, the offspring of two cows that we had early in the game stood out superior to all others, so that when we sold our grades they were all descended from those two of the original stock, showing that the bull alone is not enough, but good foundation stock is necessary also.

Another thing, we find also that while keeping grades, we can cull them out without mercy, always keeping the best ourselves. That does not work out with registered stock, as the other fellow wants good stock also and we must divide with him.

In these records we did not have a fraction of a cow, but we did have many fractions of years as heifers came in and others were sold out, and all these fractions were put together each year and reduced to whole numbers. The increased returns for stock are partly due to better prices and partly to better stock, as all the stock sold last year were registered stock.

We have had, I believe, most of the diseases in the calendar at one time or another in our herd, they seem to come and go, more virulent at first, then gradually dying out. The germs seem to lose their power, or else the animal gets hardened to them.

So the dairyman has to have lots of patience, "hoping all things, enduring all things." There is room for thought and study in this work; it brings out the best in us and a satisfaction in things accomplished that makes it worth while. It is our duty and privilege to so live and conduct our affairs that our children after us can say with pride and in truth, "Our fathers labored and we are entered into their labors."

DISCUSSION

A Member—What has been your expeirence with tuberculosis?

Mr. Griswold—Our experience has been that we have to look out when we bring animals into the herd. We have had individual cases three or four different times and always from animals brought in from outside. We test each year, every one of the herd, so we have been able to locate those cases promptly before others were infected and cut them out.

A Member—How do you know just exactly how much everything costs and what your animals bring in?

Mr. Griswold—I have always kept books. I know where every dollar came from that comes in and I know where every dollar went that goes out. I have kept books on the herd of cows and all these figures that I have given you are taken from those books, and I know they are correct, there is no mistake about them.

In 1902 we built a summer silo, so we could feed ensilage in the summer as well as in the winter, and we consider that summer silo is just as valuable to us as the winter silo.

Chairman Imrie—How would you go to work to produce a herd of this kind if you were selling milk from the farm as so many people in this neighborhood do?

Mr. Griswold—I would first of all have a good sire for the herd. Then I would keep back enough milk to raise all of the best heifers.

Dr. Porter—My Jersey bull was killed last August and was at that time in a late stage of miliary tuberculosis. I tested my cows in November and found one to react. Last week I read in Hoard's "Dairyman" a quotation from a doctor in a convention who said that the tuberculin test in the incipient

stages of tuberculosis is no good. What do you say to that?

Mr. Griswold—My experience has been that animals respond readily to the test in the early stages of the disease, but do fail sometimes to respond in the last stages.

Dr. Porter—I would like to know as to the possibility of that bull having contaminated those cows when he was running with them. I tested the cows in November. Now, the question I would like to have answered is, whether they could have the germs of the disease in their systems and not react. I have no doubt that the tuberculin test does tell the story in the incipient stages.

Mr. McKerrow—I wish to say that from the experience we had at the time we were testing so many cattle here in Wisconsin, some of us came to the conclusion that the tuberculin test, so far as public opinion was concerned, was too active, it found the disease too quickly, it found it before the veterinarian and those that were killing the animal could find it,—so some of them said; but in many cases, after hunting a good while, they did find it, though just in the first stages. In fact, the United States Government sent a specialist to Milwaukee and he took some lesions that were not exactly lesions, just suspicions, and sent them to Washington, and according to the report, most of those showed the tubercular germs. They singled out those cases in the incipient stages. So we concluded it was even too active sometimes, not in weeding out, but in the matter of pleasing the public who were looking for plenty of evidence.

Mr. Griswold—I know in one Farmers' Institute we held they wanted a demonstration and they took an animal that responded to the test, the animal had gone up in temperature very strong, several degrees, and they slaughtered that animal, and had very hard work to find any tuberculosis germs in the carcass, but they did find them by hunting the carcass all over. It was only in just two or three very small places, though that animal had responded very strongly in temperature.

A Member—Mr. Griswold, what concentrates do you feed?

Mr. Griswold—We always feed some bran and then any other feeds that we can. We buy any protein feed that we can, so as to secure the most protein for our money, some times oil meal, sometimes dried brewers' grains, sometimes Ajax feed, sometimes gluten meal, whatever we can buy best for our money. We do not like cotton seed meal very well, at least our animals do not seem to like it. We do like oil meal very much and the effect of oil meal in the system is very much more beneficial than cotton seed meal.

Mr. McKerrow—Do you pay any attention to ash content in buying?

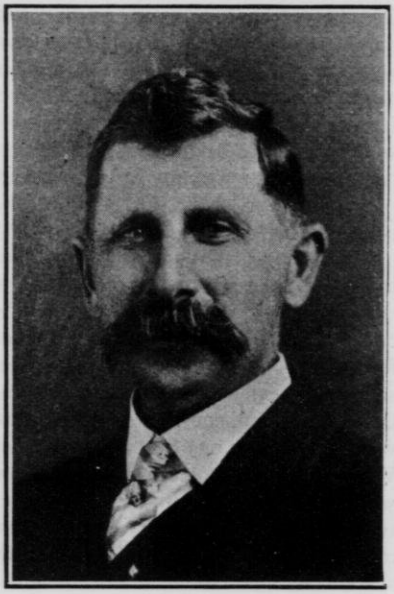
Mr. Griswold—No, we think we will have enough in these feeds I have mentioned.

Mr. McKerrow—Do you feed your dried brewers' grains dry, or do you soak them.

Mr. Griswold—We feed them dry. We do not feed a very large part of our ration of that material, not over one-half. It carries a large percentage of acidity and if we feed too much our animals do not relish it and are liable to get off their feed.

CO-OPERATIVE TESTING OF DAIRY CATTLE

W. H. Clark, Rice Lake.



W. H. Clark.

It is said that three things are essential in the building of a good dairy herd; good breeding, generous feeding, and good care. To this I would add the fourth and equally essential, testing for production.

It is not enough that we know that we have good cows, but, how good? It is the establishing of this fact that places in a large degree the value of our dairy cattle. The object of a testing association is to find and cull out unprofitable cows, to encourage better care and feeding of the herd, to set a higher standard of efficiency in the herd and create a general uplift and better interest in the dairy industry.

Methods

There are several ways of testing our herds. We can procure scales and a Babcock tester and do the work ourselves on our farms, or many times the children of the home can take samples and weights of the milk of the different cows and do the testing at school, figuring out the production of each cow of the herd, thus interesting themselves in home and farm life, doing practical examples in arithmetic and acquainting themselves with real things as they exist, and many times bring their parents to a realization of facts that they did not know existed, like boarder cows, and bring them to realize their methods of unprofitable dairy management. However, in a locality where sufficient cows are available, a co-operative cow testing association is the most practical for the average farmer.

This is an association of about twenty-six farmers, organized for the purpose of testing cows for production and cost of production. This work is under the supervision of the Wisconsin State Dairyman's Association, of which Mr. M. L. Welles, of Rosendale, is president, Mr. A. J. Glover, Ft. Atkinson, secretary and treasurer, and Mr. H. C. Searles, of Fond du Lac, superintendent of the field work of the local associations of the State.

Organizing

It costs nothing to organize an association, except a little time on the part of some of the members. Upon request, the Superintendent of the

State Dairyman's Association will come without charge and help organize the association. When the required number of cows is obtained, which is usually about five hundred, and the association is organized, a tester is hired, each member paying from one dollar to one dollar and a half for every cow he has in the test for one year. This means that if a man has twenty cows it would cost him from twenty to thirty dollars a year for testing. This money goes to pay the tester. All the glassware and equipment is furnished by the State Diaryman's Association and is under their supervision at all times.

Plan of Operation

After the association is formed and officers elected, a man is hired to do the testing. He comes to the farm in the afternoon and as each cow is milked he weighs and takes a sample of the milk and weighs the feed the cow will consume. The next morning he does the same thing, placing the morning sample in the bottle with the night before, making a composite sample. After breakfast he tests the milk for butter fat, and, taking this per cent of fat, weight of milk and feed as an average day for the month, he then computes the amount of milk, butter fat and amount and cost of feed for the month as shown in the accompanying cut. Here he also figures out the profit or loss for the month, the cost of producing a pound of butter fat, the cost of producing one hundred pounds of milk, and the amount of money received for every dollar expended in feed, as is also shown in cut.

CO-OPERATIVE COW TESTING ASSOCIATION

Cow No. 7

Breed, Jersey—Type, Dairy—Size, ...—Age, 3 yrs.—Calf, May 30, 1909, Bull; Apr. 7, 1910, Bull

Testing Period	Lbs. Milk Daily	Yield During Testing Period					Feed Fed in Testing Period								Cost of Roughage	Cost of Grain	Total Cost of Feed	Profit	Loss	Cost of Producing 100 lbs. Milk	Cost of Producing 1 lb. Fat	Returns for $1 Expended for Feed
		Lbs. Milk	Average Test	Lbs. Butter Fat	Price Butter Fat	Value Butter Fat	Pasture	Bran	Corn gd.	Barley gd.	Silage	Hay	Mixed feed	Gluten feed								
					cts.		das.	lb.	lb.	lb.	lb.	lb.	lb.	lb.						cts.	cts.	
June 2-25	32.0	736	4.8	35.3	.27	$9.53	23								$0.76		$0.76	$8.77		.10	.02	$11.25
to July 25	34.4	103.2	4.0	41.2	.27	11.12	30								1.00		1.00	10.12		.09	.024	11.12
to Aug. 25	23.8	737.8	4.8	35.4	.28	9.91	31	20.0	40						1.00	$0.84	1.84	8.07		.13	.028	5.38
to Sept. 25	25.8	799.8	4.3	34.3	.30	10.29	31	49.6		99.2					1.00	1.64	2.64	7.65		.33	.076	3.89
to Oct. 25	19.0	570	4.9	28.0	.31	8.68	30	47		93					1.60	1.54	2.54	6.14		.31	.063	3.41
to Nov. 25	14.9	462	5.2	24.0	.32	7.68	31	92		46	728	155			1.37	1.54	2.91	4.77		.63	.121	2.63
to Dec. 25	16.1	483	5.2	25.1	.35	8.76	30				675	270	165		2.05	1.81	3.86	4.92		.79	.150	2.27
to Jan. 25	9.1	282	5.1	14.3	.35	5.00	31				697	279	167		2.12	1.84	3.95	1.04		1.46	.27	1.26
to Feb. 25	4.2	130	4.6	6.0	.32	1.92	31				728	217			1.89		1.89		$0.03	1.45	.31	
to Mar. 25				Dry			28				896	140	87		2.18	1.01	3.19		3.19			
to Apr. 10				Dry			16				480	80	48		1.08	.58	1.66		1.66			
to May 25	40.4	1818	4.7	85.4	.32	27.33	45	76		211				117	1.48	4.79	6.27	21.06		.34	.07	4.35
Total		7050.6	4.7	329		$100.24											$32.52	$67.72				

Description of Cow:

Distinguishing Features in Colors:

He then goes to the next member, and so on around until he is again back to the member number one about the same date the next month. This is continued for twelve months, when every member of the association has a fairly accurate record of every cow of his herd, each cow having a page in the book like the sample shown.

Benefits of an Association

There is everything to commend an association and nothing to condemn it. It puts our dairy work on a business basis. What would we think of a merchant who bought and sold goods without keeping an account of what they cost him and what he sold them for? We farmers are keeping cows year after year without knowing what they produce or what the cost of production is. We can get this information in no other way than by testing our cows. The best way for the average farmer to do is to form a co-operative cow testing association and hire a man to do the work. We farmers are busy people and if we undertake to do the work, we are very likely to neglect it some time during the year, with a result that when our year is done we have an incomplete record of our herd. If a man is hired to do the work, it is his business to do it. It will be done whether we are busy or not, and at the close of the year we have a complete record of every cow in the herd. This will enable us to cull out unprofitable cows and select good ones to build up our future herd.

Better Feeding

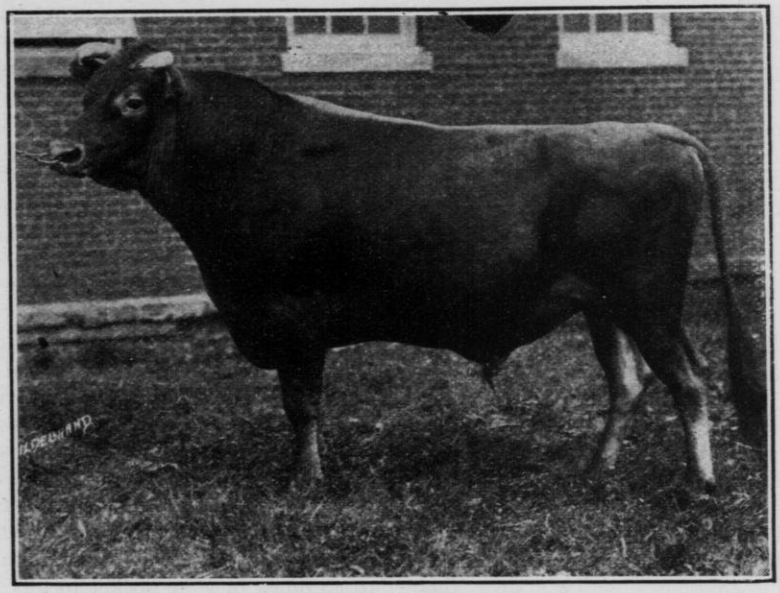
The testing of cows will also encourage better feeding. There is nothing that will encourage good feeding like testing for profit. Any of us can understand figures. When our tester comes and tests our herd, figuring out just what each cow will do and the cost of feeding, we will then realize that it pays to feed well. We will then increase the feed gradually and carefully, watching the increase in production till we bring our cow up to her maximum yield that she is capable of doing. It is impossible to feed a cow to her greatest profit unless we test her and know her production. If by the test we find that she is not profitably making use of her feed, we will then dispose of her and replace her with a better one.

The following table shows the influence a cow testing association has on the members. Here are three years' work of the West Salem Association from February 1909 to February 1912.

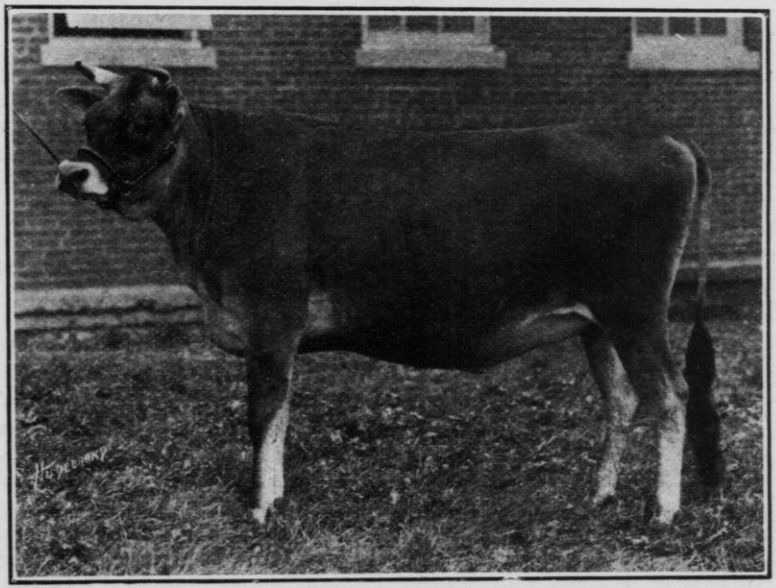
We find the second year's average profit over the first to be $4.02 per cow. Assuming that there are 500 cows in the association, the total would be $2,010.00. The third year's profit per cow over the first is $14.60, or a total of $7,300.00 for the year. Taking the two years' profit over the first, we have the fine sum of $9,310.00 for the members of the association. If it were possible to calculate the production of the herds before the association started, we would probably have a profit of from twelve to fifteen thousand dollars in the three years' work.

We find by referring to the report of one man in the association, he was making 152 pounds of fat per cow. In a third year he brought the production up to 265 pounds per cow, an average increase of 1,300 pounds of fat, and an average profit of $33.00 per cow, bringing an unprofitable herd to one of profitable production.

The supervisor or tester is supposed to be a man capable of advising a balanced ration and his services are exceedingly valuable to some members. A member of the Amherst association, who has 16



Senior Champion Jersey Bull, Wisconsin State Fair, 1915, owned by W. M. Knight, Eagle, Wis.



Grand Champion Jersey Cow, Wisconsin State Fair, 1915, owned by W. S. Dixon, Brandon, Wis.

cows, claims he made $401.00 more in a year's work in the association than he did the year before, or $25 per cow by better care and feeding.

Another member of the Columbus association made a gain of 75 pounds of milk a day from 12 cows inside of a week's time, and at a less cost, by the tester changing an unbalanced ration to a good one.

A member of the Augusta association was feeding a ration that cost 29 cents per day per cow. This ration was modified and reduced to a cost of 20 cents per cow, with an increase in production.

These are only a few of the benefits of the association. Each member has a special lesson taught him, except, perhaps, the one "who won't believe in good breeding and feeding" and "whose scrub sire and scrub cows are just as good as anybody's" and who says "there is nothing in the dairy business anyway."

DISCUSSION.

Chairman Imrie—You believe it is necessary to test cows in order to know how to feed them better?

Mr. Clark—It certainly is. If you know what your cows are producing, why then you have an established fact to work on and upon which to figure a ration.

Mr. David Imrie—What effect has testing had upon your own herd?

Mr. Clark—Testing our own herd has had more effect on the man than it did on the cows. The cows were all right. For a number of years we were fooling along feeding cows, not knowing what was happening really, or rather knowing that we were not getting out of them what we should by lacking the courage to buy feed. It takes considerable grit to go down in your pocket to buy feed unless you know it pays. I was in this position for a long time, we were fiddling

Name of Association, West Salem

3 Years' Work—Began Test Feb. 1909—Ended Feb. 1912

Summary giving records of.....cow in each herd

	Milk, lbs.	Fat, %	Fat, lbs.	Gross Returns	Cost of Feed	Profit	Returns for $1.00 in Feed
1st year's average of all herds	5,232	4.3	228	$66.40	$30.50	$35.90	$2.17
2nd year's average of all herds	5,085	4.6	233	70.69	30.77	39.92	2.29
3rd year's average of all herds	5,935	4.5	269	84.00	33.50	50.50	2.50
Average gain per cow..	703	.....	41	.....	.....	14.60	.....
1st year's average of one herd	5,287	4.8	253	77.76	40.28	37.48	1.93
2nd year's average of same herd	6,172	4.6	286	89.97	36.98	52.99	2.43
3rd year's average of same herd	6,381	4.6	297	82.18	38.38	43.80	2.14
Average gain per cow....	1,094	.....	44	.....	.....	6.32	.....
1st year's average of one herd	3,547	4.3	152	40.71	26.98	13.73	1.50
2nd year's average of same herd	4,539	4.3	195	58.40	29.60	28.80	1.97
3rd year's average of same herd	6,165	4.3	265	82.61	35.85	46.76	2.30
Average gain per cow....	2,618	.....	113	.....	.....	33.03	.....

along, making about two hundred pounds of fat per cow. Then we organized a cow testing association similar to this that has been spoken of here, we entered the cows in this association and began to haul a few loads of feed. The neighbors criticized me and asked if I ever expected to get our money back. I told them I didn't know, but I knew it didn't pay to starve the cows and we were going to feed them and see what happened. The result was that when the tester came around and figured out our production and cost of same we saw very soon that it did pay to feed. We can understand figures better than we can understand cows, and we kept along, feeding better and better, and at the end of that year we raised the production to 308 pounds of fat per cow. Then after that we began to think that we might have some cows that were really worth feeding and we entered them into a semi-official test. It took about two years to test the entire herd in this test, and at the end of that time we again raised the butter fat production practically 100 pounds; in other words, we brought the average production up to 405 pounds. This was done through better care and better feeding. In about three years' time we had practically doubled the production of the herd. You see, it was not the cows' fault that they hadn't been doing better all along and that is why I want to emphasize the statement that it pays to feed well. I believe that Wisconsin today has a great deal better lot of cows than it has feeders. We want to get them tested in some way so that we may know what the production of the cow is, and then feed her up, give her a chance to do better, to work up to her full capacity.

A Member—After you found out that these cows could give 400 pounds just as well as 200 pounds, did it help the sale of your calves?

Mr. Clark—Before making this test, the cows were doing the best they could, the same as they were after, but there was no record, there was nothing to show what they were capable of doing, and since making the official test we are selling our calves for two and three and four times as much as we were before. The first cow we sold that made the official test sold for enough more to pay for the testing of the herd. I had offered her for $150.00 before we made the test and after making the test the same man that I had offered her to came back and gave me $275.00 for her. I made enough profit on that one cow to pay for the whole official test at that time. It costs more now.

A Member—Isn't there danger of you wearing out your cows if you crowd them like that?

Mr. Clark—We are not crowding or forcing our cows, but working them. It doesn't hurt an animal to work any more than it does a man. I think it is a hard job to injure a cow if she is fed right and it is an awful easy thing if she is fed wrong. We have got to study an animal and we can safely feed a cow to a very large production, feed her up to her capacity, without hurting her, but we want to know when we reach that point and stop. Do not feed her an unbalanced ration; that is, a ration that is not fit for her. An unbalanced ration isn't fit for anything, but it must be balanced, not by rule but according to the individual need of the cow you are feeding.

Mr. McKerrow—Doesn't it lessen the danger if you keep plenty of succulence at all times in her food?

Mr. Clark—Yes, it does. We are feeding all the silage the cows will eat. I think if a cow is working hard that roots are very beneficial with silage.

Mr. McKerrow—Almost a necessity if they are working very hard.

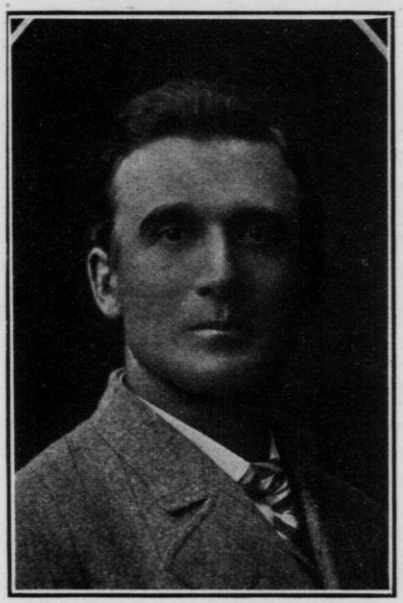
Mr. Clark—In our experience we have never hurt a cow yet by over-feeding. I think it is safe to say that there is not one cow spoiled by over-feeding where there are thousands that are injured by under-feeding.

Mr. Jacobs—I think you said one very important thing and one that should be emphasized, and that is the effect upon the man in this cow testing association. We talk a good deal about weeding out the unprofitable cow, but I think that the effect of the association work upon the man and upon the thought of the men in the neighborhood in which it is done is one of the most important features of the association. I know of nothing that has brought up the dairy thought in certain sections that is equal to it. In my own county this work has been carried on for three or four years and I think that is very noticeable, particularly so among the men who previously did not have very much interest in dairy work. Now it is neighborhood talk, when they get together they are talking about this subject. There were but very few pure bred sires among those men when this association work started. Now in thirty-seven herds there are thirty pure bred sires; there are thirty-one silos among these members, and in every way I think it has promoted dairy thought and in every way has done really more for the dairyman than it has for his cows.

Chairman Imrie—One thought that these figures bring out very plainly is that if we can feed a cow a dollar's worth of feed and get $2.50 in return, as is shown right on these figures, under this testing system, if we are smart we are liable to feed her all the feed she can take profitably.

THE CARE OF THE DAM AND CALF.

Fred Stubley, Black Earth.



Fred Stubley.

The care of dam and calf is most essential, as it is the keynote to successful and profitable dairying and the up-building of the future doing of the herd. An ill-kept cow cannot make a profitable dairy cow, nor can she grow the best of calves. The cost of production makes it a business problem and a proposition to be worked at both ends, and every detail relating to breeding and feeding must be worked out and planned ahead in order that one may carry out a profit business in dairying and breeding.

The care of the dam must begin as soon as she is bred for her first calf and be continued the rest of her producing period. A let-up in feed or care is followed by a loss in milk production and she can never be brought to where she would otherwise have been if not neglected. The feed must be of such nature as to promote health, also a balanced ration to produce milk. This will also be the best of feed for growing the calf.

We must also be prepared to care for the dam at time of giving birth to calf, and be able to observe and treat some of the common afflictions which sometimes attack some of our best dairy cows,—milk fever, swollen or caked udders, failure to clean off the retention of the after-birth, calf scours in young calves, and a number of such ailments which are common at this time.

See that the dam has a well lighted box stall, keep well bedded and dry, use plenty of disinfectants at all times in barn and stall, so the cow that has been well fed and cared for to produce the largest amount of milk up to this time may give the new born calf the right kind of a start to build up our future dairy herd.

Raising the Dairy Heifer Calf

It is generally more satisfactory and profitable to raise good heifer calves than it is to buy cows. Some of the advantages of this system are:

It does away with the necessity of expending time and money in buying cows.

It safe-guards the herd from such contagious diseases as tuberculosis and abortion.

It enables the dairyman to secure a herd of cows of uniform breeding, individuality and ability to produce profitably.

It makes it possible to keep a herd of comparatively young cows from which individuals may be sold from time to time at remunerative prices.

It affords greater satisfaction than does simply milking cows and getting proceeds from the milk.

By the time purchased cows adapt themselves to a strange herd and return over cost of feed an amount equal to their purchased price and losses, when account is made of those which result from dealing with cows of unknown breeding and character, the dairyman realizes that it is cheaper to raise calves than to buy cows.

Essentials for Growing Calves

The first essential factor in growing heifer calves is a man who loves good calves. It would sometimes seem that many men apparently like to grow poor calves. Good calves possess all the characteristics of good breeding, good feeding and good development.

Good Breeding Important

The second essential for good calves is good breeding. This is determined by the character of the sire and dam and the more extended line of ancestry. The great fundamental law of breeding that "like tends to produce like," emphasizes the importance of giving careful attention to this essential. Without respect to this law, many men raise heifer calves which never earn the cost of feed that is consumed and the labor expended in growing them.

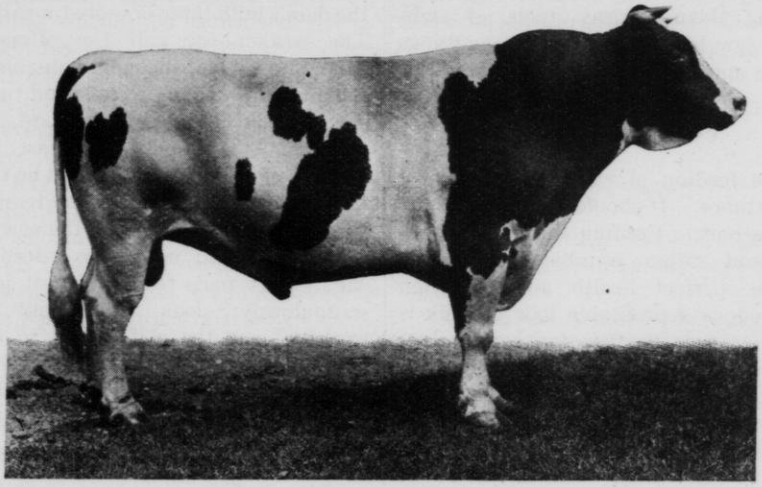
The sire is especially important, for the reason that his influence affects not only one but all the calves raised on the farm for a period of two or more years. He should be a pure bred representative of some one of the distinct dairy breeds and be selected with reference to his breeding, his individuality and whenever possible the good dairy qualities of his calves. If his calves fail to develop into proper dairy animals, the sooner he is sent to the butcher the better for the dairyman. If his calves are worthy individuals he should be used to the fullest extent by being retired from one herd to another as long as he is serviceable.

The dams of the calves to be grown should be tested for milk and butter fat production and be profitable producers as well as good individuals. Excellence on the part of all individuals for generations of ancestors constitutes the strongest foundation upon which to select heifer calves, and offers the greatest assurance against disappointment when calves are fully grown and put to the production test.

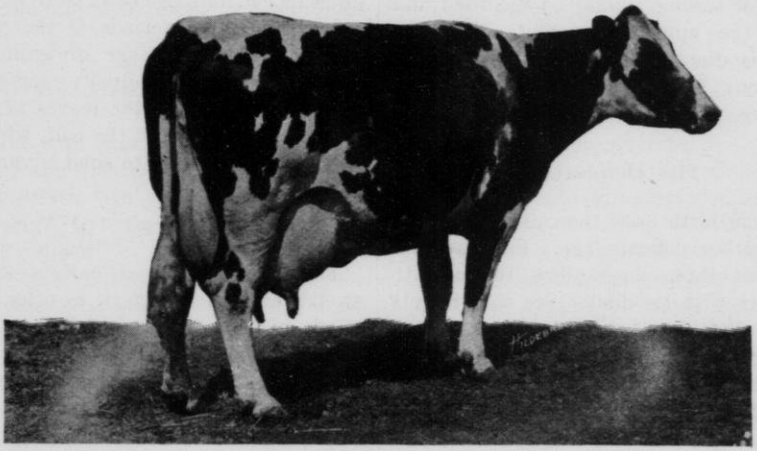
Favorable Environment Necessary

Favorable conditions of environment constitute a third essential. Conditions of environment affect men, plants and animals from without. The conditions of environment under which calves are raised in a great many instances are such that all the good is lost that otherwise is secured from good breeding and feeding. An abundance of pure, fresh air and sunlight and dry, comfortable places in which to rest, protection from vermin and disease and kind treatment are conditions necessary to growing calves successfully.

Providing stables with artificial ventilation and abundance of sunlight gives warmth and sanitary conditions that are very essential to growing calves successfully. Stables of this character can be provided at so little increased



Senior and Grand Champion Holstein Bull Wisconsin State Fair, 1914; twice Grand Champion at National Dairy Show, owned by R. E. Hager, Algonquin, Ill.



Senior and Grand Champion Holstein Cow, Wisconsin State Fair, 1914, and National Dairy Show, 1914, owned by R. E. Hager, Algonquin, Ill.

cost that there is no excuse for not having them. Barns made of slabs from saw logs furnish these conditions where one realizes their importance.

Feeding the Calf

The feeding of calves is of utmost importance. It should begin before the calf is born. Feeding the dam a well-balanced ration suitable for keeping her in perfect health and condition to produce a profitable flow of milk is considered most satisfactory for developing a strong, well-developed calf at birth.

A cow should have six weeks to two months rest from producing milk just prior to freshening. This allows her to utilize her feed for the development of the foetus and building up her strength. For the benefit of the cow and calf, the cow should be put into a box stall a few days prior to calving. To anticipate the date when the cow should be dried off and placed in a box stall, the date of service should be recorded and also the approximate date that the cow is due to calve. Ordinarily a cow freshens 282 days after the date of service.

The Delicate Age

From birth until the calf is six weeks old is the delicate age. For the first two or three days allow the calf to remain with its dam. See that it gets the first milk or colostrum which nature has prepared in a manner to produce a laxative effect and start the action of the digestive organs. If the calf fails to get this colostrum, a dose of castor oil or other substitute is necessary.

Place the calf in a clean, well lighted and comfortably warm box stall. After ten or twelve hours, when it becomes hungry enough to drink without much coaxing, feed it two to four pounds of the dam's milk three or more times daily. The weaker the calf the oftener it should be fed and the more valuable it is the more one can afford to spend time in encouraging it to get the best start possible. Gradually increase the amount of milk. Pains should be taken to have the milk at about the temperature it is when drawn from the cow, 100 Fahrenheit, and not to over-feed the calf. Have pails from which it is fed scrupulously clean. At about two weeks of age the calf begins to chew hay and a pinch of grain can be given it after it has had its milk. These feeds should be offered in small quantities and in fresh condition.

The Skim Milk Age

It is well to feed whole milk until the calf is three to four weeks of age and then gradually change the whole milk to skim milk from this age up to six weeks. After six weeks the daily allowance of milk can be 15 to 18 pounds, fed in two regular feeds, if the calf is thrifty. The allowance of grain and hay should be gradually increased. Silage, feeding only the leaves at first, may be placed before the calf, which it will soon learn to eat to good advantage.

The Oft Neglected Age

During the time a calf is six to twelve months of age, it is often very much neglected. If in summer, it is often turned to pasture and made to rustle for itself, which is a mistake. A calf is best off kept and fed in a clean stable during the first year of its life. It may be turned out in summer for exercise in shady paddocks or during the night, which protects it from the hot, scalding sun. Feeding skim milk and six to eight pounds of silage or

freshly cut grass given with good hay and grain at regular times, night and morning, should be continued. It is during this age that heifer calves often fail to grow sufficiently to become good sized, profitable cows.

During the second summer provide heifers with good pasture and water and hay if necessary, to keep them constantly growing. The second winter they should be fed daily eight to ten pounds of alfalfa or clover hay, twelve to twenty pounds of silage and two to three pounds of grain mixture.

The Breeding Age

Breed heifers at the age of 16 to 20 months to the best pure bred dairy sires it is possible to secure. Do not be alarmed if dairy heifers appear to be too fleshy. If they have been selected from the right kind of cows and are by good dairy sires they will transfer the flesh on their backs to fat in the pail when they come into milk and the dairyman will be well repaid for all it has cost to grow and keep them in good condition.

Grain Mixtures for Calves

Oats with hardly an exception constitute the greater portion of grain fed dairy calves. In quite a good many instances, they are fed alone, but the great majority of dairymen feed wheat bran, corn, barley, hominy or oil meal with the oats, making a variety of two to four kinds of feed in the mixture. A mixture by weight of 50 parts oats, 30 parts wheat bran, 10 parts corn meal and 10 parts oil meal has been found to be a good mixture. This mixture is fed in quantities ranging from a pinch to a small handful at the time the calf first receives any grain to an amount not exceeding two and one-half to three pounds daily up to the time the heifer produces her first calf. The oats are fed whole in the majority of instances, a number of dairymen, believing, however, that a fresh supply of ground oats is preferable to whole oats.

Valuable Suggestions

Pure, fresh water should be given to calves daily as soon as they have learned to drink.

Salt should be kept where they can have free access to it at all times.

All changes in feed should be made gradually.

Foam which forms on separator skim milk should never be fed, as it will cause indigestion and scours, bloat or other troubles will follow.

Calves should be separated or fastened in stanchions at the time they receive their milk and fed dry grain immediately after drinking the milk, which will tend to prevent the bad habit of sucking one another.

The stables should be cleaned regularly and kept dry.

If the stable is provided with a concrete floor, it will be worth while to have an inch board overlaid to keep calves off of damp, cold concrete.

In winter time cold draughts of air in the stable should be avoided.

In summer it is well to darken the stable to give protection from flies and to keep it as cool as possible.

Young calves should never be exposed to a hot, scalding sun.

Watch calves and keep them free from lice. Thoroughly washing or dipping calves with a five per cent solution of some of the coal tar series of disinfectants like zenoleum, creolin, etc., and repeating the washing after ten days, is the most effective means of destroying lice.

Aim to do everything possible to keep calves gaining in live weight at the rate of 1.5 to two pounds daily.

Avoid calf scours by keeping them in clean, well lighted and well ventilated quarters and feeding them regularly milk at the proper temperature from pails scrupulously clean. Treat any indication of scouring by reducing the feed. Give two to four tablespoons of castor oil mixed with one-half pint of milk, following this in four to six hours, or immediately, if necessary, by one teaspoonful of a mixture of one part salol and two parts of sub-nitrate of bismuth mixed with one-half pint of milk. This has proved a good remedy for bad cases of scours. The salol and sub-nitrate of bismuth can be secured from any druggist mixed in the proper proportions and thus be available for use at any time.

Wetting the navel of the new born calf with a one to 500 solution of bichloride of mercury is considered a safegua d against contagious scours.

DISCUSSION.

(In the absence of Mr. Stubley, the discussion was led by Mr. H. W. Griswold, of West Salem.)

A Member—What is there about that foam on separator milk that is different from the milk itself and renders it poisonous to the calf?

Mr. Griswold—There isn't any difference really, except that the calf takes in a lot of air with that foam, which causes trouble. If you will wait until the foam all settles back into the milk, it will be all right.

A Member—How long after separating would you wait before feeding that skim milk?

Mr. Griswold—I wouldn't wait at all. I would scrape the foam off and feed the calf the milk without the foam.

A Member—What would you do if the milk should be left long enough to get a little cool?

Mr. Griswold—I think it is very essential that milk should be at the same temperature all the time. I would rather feed a calf the milk that was a little bit cold than feed it too warm and then have it a different temperature the next feeding. A good many men do not weigh the milk at all that they feed to their calves. I am pretty positive that I can feed a calf more milk by feeding it exactly the same amount every time I feed than by guessing at the amount. Just now I am feeding my calves three times a day.

A Member—You think you can get them to use more milk by feeding three times than twice?

Mr. Griswold—Yes, you can get a calf to drink more milk. All these things that tend to regularity are good for the calf.

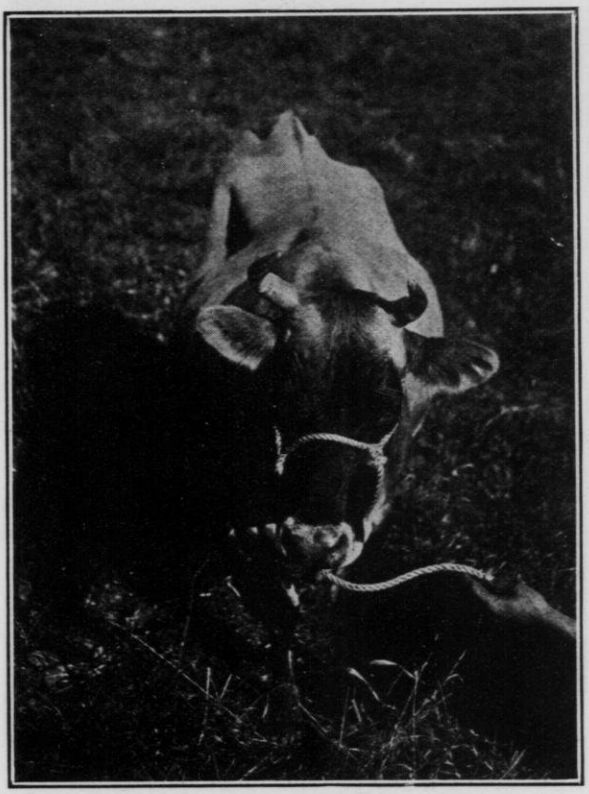
A Member—Do you feed a calf three times a day when you are milking only twice?

Mr. Griswold—No, I wouldn't, unless it was some delicate calf that needed special attention.

TYPE IN DAIRY CATTLE AS RELATED TO PRODUCTION

E. E. Wyatt, Tomah, Wis.

In the study of efficiency, there are certain evidences of its presence that are recognized by the trained mind in that which is being considered, whether it be a man, a factory, a machine or a cow. Some of the evidences recognized by the eye are to be considered in this article as they apply to the dairy cow and as are demonstrated by their actual relation between conformation and accomplishment in what constitute the type of the dairy cow. We are compelled to recognize this by results when we compare the different kinds that have been developed under diversified conditions, when the ultimate



View showing the wedge shaped conformation as viewed from front; from shoulder along top line to hips; from shoulder down over ribs and body and from hips to the rear an inverted wedge.

results of feeding, breeding and selection will to the end be the economical production of milk. It is not the type that has developed the capacity to produce milk economically, but the intensified ability with its hereditary

Dairy Conformation

The first indications of the pictures as the outstanding features of these cows that are in common are the clear-cut conformation, good size, lack of any

A clean-cut, well defined head, broad between eyes, and full, good eye, clear and bright, but not wild and nervous; open nostril, wide muzzle, with a strong jaw.

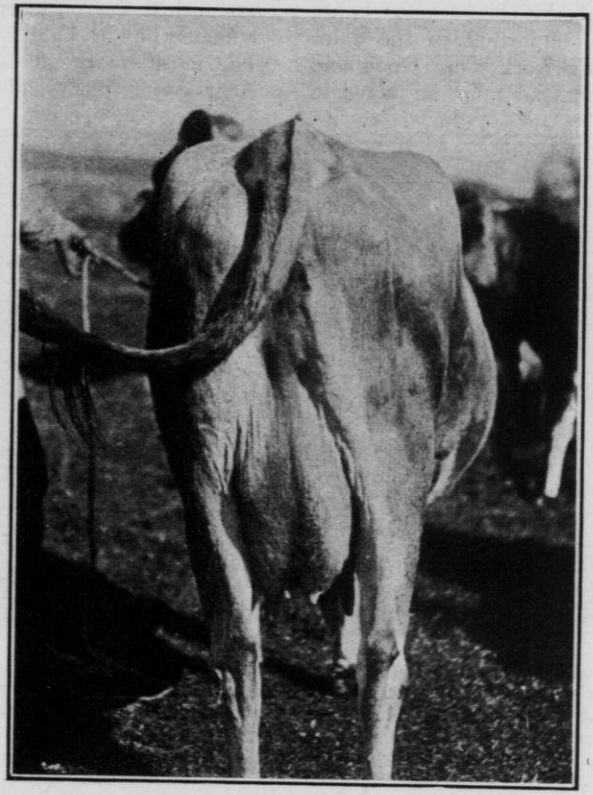
breeding powers that have produced the conformation of these animals, have made it their universal formation and thus standardized the type, and when we allow this to be the fact, we must now take this as a base to select and maintain our efficiency of dairy herds.

superfluous meat, with a strong bony frame, neatly put together and in such a manner as to insure a capacity for cramming and assimilating a large amount of food, and then a good indication of a milk manufacturing plant with a good creative and transformative

system, with health and vigor. These things we take in as we make the first general survey of the cow and they constitute the type of the dairy cow. But to study this type further, we must analyze it and take up her specific conformation as it is and why, with results.

We naturally look to the body first, as it is the larger portion, and from the side view we notice the wedge shape, first, starting with the chest as the point, it gradually deepens through the abdomen and the udder should indicate a greater depth through from the rump.

Then as a front view, we notice good, wide chest, with a gradual widening through the body to the paunch. This should show a well filled and distended body conformation, and on top line a close, clear, sharp shoulder, and as we view the top line a gradual widening as the ribs spring from the back as they near the loins and thus the hip bones set out as a base of the wedge, and thus as we look above,

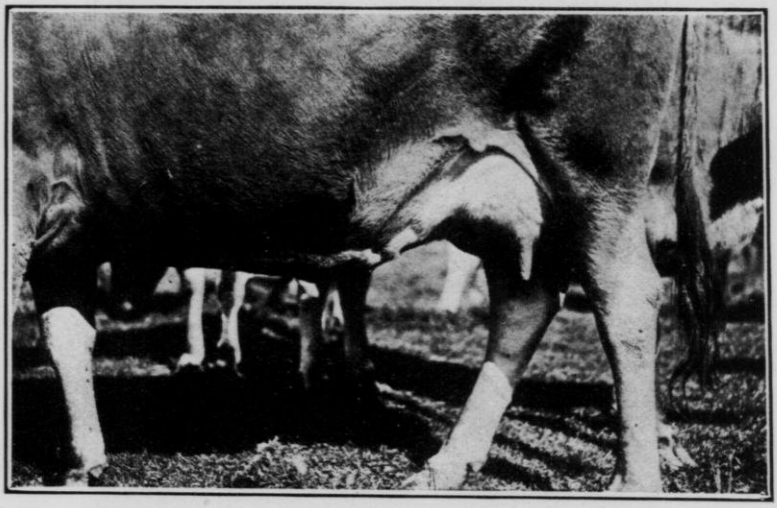


A clean udder, well attached at rear, broad and deep. No meatiness but capacity for manufacturing milk and butter fat.

down on the side of this wedge, we notice it develops another thought—the body, chest and abdomen.

This gives the general outline of the body, but some more specific points yet to be considered, at the chest it must indicate plenty of room for those vital organs, the heart and lungs, which are so important in the dairy cow, as in her work more blood and necessarily more air must be mixed in for in here is a big factory, manufacturing out of the rough and concentrated foods and water such elements as may be transported by the blood to the body for their needs and to the udder the elements to make into milk, and here the more of this work that can be accomplished the bigger producer our cow should be.

The loins are broad and well supported, giving plenty of support for



Here shows a good fore udder, good attachment, with large milk veins. Note the outstanding veins on udder. This udder manufactured 420 lbs. butter fat in seven months and a grade cow with but three top crosses of these pure dairy bred sires.

her lungs than in the lungs of any of the rest of our animals. With size considered, that means plenty of depth and width.

Then the back must be strong with a long, well spread vertebra, indicating a strong nervous make-up, also making a good roomy body. The ribs, while not as flat as a beef conformation, yet coming out well and broad, making a large barrel and well spread, giving plenty of give and take in this barrel, the foetus and good connection to the fore body with the rear parts. Here we come to the supporting frame of the udder. The hips should be wide apart, with plenty of width extending back to the pin bones, with an arched rump to give room and strength.

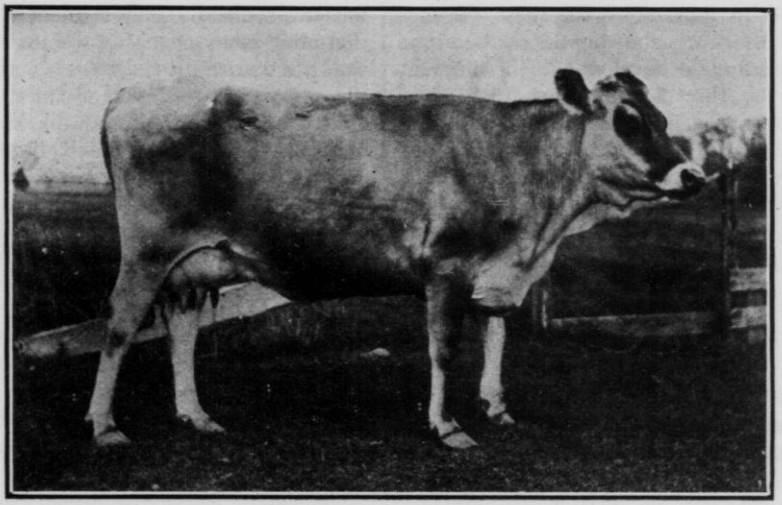
As we come down to the udder, the real milk factory, we find first plenty of room to denote capacity and ability, then the conformation is one well attached in all directions, from front,

back and high up between the thighs, with plenty of width, both in fore udders and rear, and here is where the thin thighs and wide-set limbs give room for the udder. The attachment should be firm and even, and avoid a loose and pendulous attachment, with no fleshiness or meatiness beyond a necessary sufficient amount of frame to load up the supplies of the milk-making elements between periods of secretion, the lower parts four well placed, well shaped and easily operated teats.

The veining of the udder should be prominent, its texture very pliable, with a looseness of the skin and a softness that indicates a good circulation, which should be noticed by thin, not papery, but pliable with good secretion; the hair soft, not long and wiry; the milk veins large and branching, with wells large giving plenty of carrying capacity for the blood flow from the udder.

A similar neat and out-standing nervous system should be shown in the face and head, which should be of a size in conformity with the body, set on a clean neck. The face should be broad between the eyes, with good indication of plenty of brain development; nostrils that are capacious, with a clean-cut appearance, also a muzzle that is broad and strong in connection with a strong, well muscled jaw. The eyes indicate a good deal; they should be bright and alert, clear, but not staring or wild.

With all these individual features of the dairy cow, we must have them harmonize and mingle in a symmetrical conclusion that precludes all description and can only be appreciated by one who studies them in an entirety and then appreciates the uniform coincidence of production and dairy type.



Grade Jersey Cow Lassie, owned by G. B. Newcome, Tomah, Wis., a 7-8 Jersey produced from common stock by the use of good sires. What a farmer's cow may be.

DISCUSSION.

Supt. Norgord—Do you think it is possible by selecting from the dairy type and dairy conformation, by means of the Babcock tester and the scales, getting the total production of each cow, to combine pretty continually the dairy type and production so that we will be more and more able to select the highest producing cow by the dairy type?

Mr. Wyatt—That is a point I have tried to illustrate with these pictures this afternoon, showing the relative type as we have it developed in the different breeds, showing the cows themselves that have gained big records, and then the matter of different conformation as a result as shown by weighing and the Babcock test.

A Member—Do you find that the judges in the show ring always recognize these things? Isn't it a fact that those high producing cows are put at the foot of the list by our judges often?

Mr. Wyatt—That may be the case where the judges are judging from fancy points, but where we have sensible judges, the two combine very closely.

Supt. Norgord—Isn't it a fact that you find more high producing cows on the average from cows that belong to what we call a dairy type than those off from the dairy type?

Mr. Wyatt—Yes, among several hundred records that has been proven.

A Member—Then we should look for the dairy type in buying cattle, even though some good cattle are found outside of that type?

Mr. Wyatt—Some of these cows that have produced these big records have had special lines of points that will not conform entirely to the type of the dairy cow, and some of those cows were not strong breeders either; but when we put the two together, we have the ideal condition, linking together the type and the production.

A Member—Isn't it a fact that the best show cows have made very small records, I refer to the show type, not to what we call the dairy type? As a whole, haven't they made very small records, both for short time and long time tests?

Mr. Wyatt—I haven't the figures, but I have noticed the judging in several rings where the judges' decisions were in the same order as the record of butter production placed them. Furthermore, many of these cows that have won these prizes, if they had been given the opportunity to demonstrate their ability have not produced the highest records, though they have produced very satisfactory results.

Supt. Norgord—Isn't it a fact that every one of the world's champion cows has had a good large barrel, good capacity, a pretty fair sized, well developed udder and good milk veins? That they have had the main points that stand out and indicate a good food-consuming and milk-producing machine?

Mr. Wyatt—Yes, they have had to have all those things to do the work of necessity.

Chairman Imrie—In other words, you have to have the machine to fit the type, just as in going through this automobile factory out here every machine for its place and to fit the type has to be a machine of wonderful development. It must be there.

Mr. David Imrie—At the Minnesota State Fair, looking at the show animals, I asked for a certain bull, and they said, No, he isn't a show bull, but everything along this line is his. It seems to me there must be something wrong when all of his stock was there but he couldn't be there because he wasn't a show bull.

Mr. Wyatt—We have many of the best bulls that breed that have never done anything for themselves in that

line. We have some bulls that have an inferior conformation, that are not thoroughly balanced and sometimes not to blame themselves for it, but still have the essential factors and produce cows that have made great records. They have a stronger power of prepotency, developed from the breeding before them.

Mr. Jacobs—That is quite a different proposition, that of the show bull, from that of the show cow. This bull may be a wonderful bull in his progeny because of what he has inherited. He breeds from his inheritance rather than from what he can show himself, while the cow must show her own work in production.

Mr. H. W. Griswold—Sometimes we judge a bull too quickly, some of his daughters do not amount to anything, while his grand-daughters may amount to a great deal. If a bull has good breeding, it doesn't always come out in that bull's daughters.

Chairman Imrie—But it will show later.

Mr. Griswold—We always find that the best breeder is not the best payer in results. That brings out a point to which we should pay more attention than we do in this old and tried sire. Nearly all these breeds that have been illustrated here this afternoon have suffered from the loss of certain sires in the breed, simply from the fact that the value of those sires was not realized until they were sacrificed.

Chairman Imrie—How old would you think a bull could be kept for safety?

Mr. Wyatt—I have known them to be kept until they were eighteen years old. The bull Tormentor was twenty years old when he was struck by lightning.

FOOT-AND-MOUTH DISEASE.

Herbert Lothe, D. V. M., College of Agriculture.

Foot-and-mouth disease, a most dreaded malady of animals, is paying the United States its sixth visit. Outbreaks occurred in 1870, 1880, 1884, 1902, 1908 and the last and most extensive of all during the fall and winter of 1914.

Definition

Foot-and-mouth disease, or aphthous fever as it is technically called, is an acute, highly contagious disease, affecting principally cattle: (hogs, sheep, goats and other cloven footed animals and sometimes man are also affected). It is characterized by fever and accompanied by the eruption of vesicles or blisters on the mucous membrance of the mouth and on the skin between the toes and immediately above the hoofs.

Cause

The cause of foot-and-mouth disease is not known; that is, the germ causing it has never been seen or grown outside the animal body as has that of many other diseases, such as typhoid fever and diphtheria of man and anthrax and blackleg of cattle. We do know it is contagious, for we can see it spread from animal to animal, which fact leads us to think that foot-and-mouth disease is caused by a germ, for all other con-

tagious diseases are caused by germs. This germ is different, however, from many others, in that it is so extremely small that our most powerful microscopes do not magnify sufficiently to make it visible. It will also pass through filters or strainers that are so fine as to strain out all known microorganisms that can be seen with our microscopes. The causative agent is present in the clear fluid contained in the blisters found in the mouth and on the feet of cattle suffering from the disease, as has been proven by injecting some of this fluid under the skin of a susceptible cow. Such a procedure is followed by the prompt appearance of typical foot-and-mouth disease after a period of one to two days. It has also been proven that the urine, manure, saliva and, to a lesser degree, the milk, contain the cause of the disease. The blood contains the causative factor only during the period of fever and not after the blisters have appeared. The germ or virus, as it is termed, is a weak affair as compared with many others. A temperature of 165° F. is sufficient to destroy it. The temperature on the interior of deep manure piles, especially where they have been composted, is sufficient to kill the organism. Antiseptics readily destroy it.

The infection usually gains entrance through the digestive tract, (mouth, stomach, bowels) and skin. The virus of the disease can also be breathed into the lungs, and rubbing saliva of an affected cow into the eyes of a healthy cow will transmit the disease.

Mode of Transmission

Foot-and-mouth disease is transmitted from diseased to healthy animals either directly or indirectly:

1. Directly by the secretions and excretions of sick animals, namely, saliva, milk. Intra-uterine infection of calves has been observed, namely, calves from infected mothers may be born with the disease. Besides this, animals that have recovered from the disease can transmit it for some months. Spread of the disease through the air may be possible for very short distances.

2. Indirectly the disease can be spread by any number of means. Anything animate or inanimate that comes in contact with the secretions or excretions from a case of foot-and-mouth disease can transmit the disease. Among the things that may spread the disease indirectly, the following suggest themselves: skim milk from creameries, cattle markets, feeding yards, stock cars, auction sales, watering troughs, hay and other fodder, attendants and other workmen about animals affected, cats, dogs, birds, hides, wool, etc. At times perfectly healthy cattle can carry the disease without themselves being affected or at least showing any signs of disease. Smallpox vaccine has been the cause of two outbreaks in this country (1902 and 1908). Recently it has been shown that hog cholera virus obtained from hogs in the incubation stage of aphthous fever has spread the disease.

Animals that have passed through an an attack of the disease possess a greater or lesser immunity from one month to several years, depending upon various uncontrollable factors. No permanent immunity is conferred by one attack.

Symptoms

Cattle show symptoms of the disease three to six days following exposure (rarely as long as eleven days), hogs one to two days, sheep one to six days.

There are three sets of symptoms or signs by which the disease can be recog-

nized, namely: mouth, foot and udder symptoms. All are or may be present at the same time, but for convenience each will be discussed separately.

1. Mouth symptoms. Three to six days after exposure the animal develops a temperature ranging from 104° to 106°. Diminished appetite and careful chewing due to sensitiveness of gums is noticed. Between feeds the animals stand with the mouth closed and do not chew the cud. The mouth is opened now and then with a characteristic smacking sound. Long, sticky strands of saliva drop from the corners of the mouth. In from two to three days blisters make their appearance upon the gums, tongue and inside of cheeks and lips. These vary in size from that of a pea to a silver dollar or even larger and contain a clear, colorless or yellowish fluid which harbors the germ causing the disease, After one to three days the vesicles burst, the fluid escapes, leaving a raw, painful ulcer. The ulcers heal over in from a few days to two weeks, leaving a scar which finally also disappears.

2. Foot symptoms. Lameness and stiff gait is probably the first thing noticed. The lameness is due to the formation of sensitive blisters between the toes and along the upper edge of the hoof. In cattle the mouth symptoms predominate, while in sheep and hogs the feet alone may be affected.

3. Udder symptoms. The udder shows the formation of blisters, especially on the teats. Pain is caused when the cow is milked. Catarrh of the milk ducts causes a decrease in milk yield from 50 to 75 per cent.

Course

Animals usually recover, the mortality being from one to three per cent. At times, however, in individual outbreaks the disease runs a much more severe course and losses may run as high as 50 to 70 per cent (malignant foot-and-mouth disease). This is exceptional, for recovery in from two to three weeks is the usual course of events (benign foot-and-mouth disease). In calves the death rate runs considerably higher than in adult cattle. Animals are, however, often left with deformities of feet and other abnormalities, which lessen their value.

Treatment.

As a rule, animals respond to medicinal treatment. The actual death percentage of animals does not begin to represent the loss by this disease. Other losses far exceed the actual loss by death. The fever and difficulty of mastication of food cause rapid and extreme loss in flesh and cessation of milk flow; the udders often become inflamed and ruined by abscess formation; the inflammation of the feet may cause the horn to drop from the toes, producing great lameness and permanent injury, and abortion is frequent in pregnant animals. The late Dr. Salmon, formerly chief of the Bureau of Animal Industry at Washington, D. C., placed the loss at from twenty to thirty per cent of the value of the cattle. The disease also spreads to sheep and hogs, causing proportionately severe losses among these animals. In Europe, where the malady is widespread and always present, there is probably no affection of cattle that is dreaded more by stock owners.

Methods of Combating.

Various methods have been used in combating the disease:

1. Isolation and quarantine. In Europe the disease has been combated by isolation and quarantine, but these meas-

ures have proven inadequate, as shown by its continuous existence and widespread distribution in European countries. It has been stated that cattle can transmit the disease to other cattle for five months after recovery from an attack, so that they must be kept in quarantine for at least five months, or perhaps longer, after they have recovered. From this fact it can be readily seen that the holding of infected animals is a serious problem, inasmuch as they are a constant source of danger to the community because of their possibility of starting fresh outbreaks. The length of such quarantine, which must of necessity be a very rigidly enforced one with constant watching by state and government officials, makes the universal adoption of this method prohibitive for pecuniary reasons.

2. Slaughter of affected animals. With a scourge so contagious that it is frequently and easily carried from farm to farm and in which quarantine measures have proven so inadequate, it becomes important to shorten its period of existence as much as possible. Slaughter of affected animals is the only method that has met with success in its control. This method proved successful in 1902, again in 1908 and in every other outbreak in this country. The remark is often heard that in Europe no such drastic measures are taken and that in this country the measures are entirely out of proportion to the importance of the disease. It is true that European countries have not usually employed such drastic measures because the disease has gained such a foothold, is so widespread, as to make it impossible to enforce such measures (slaughter) without jeopardizing the live stock industry. The United State government realizes that it is far better financially to sacrifice the few cattle that are affected at the beginning of an outbreak (.08 of 1 per cent of total animal population have been slaughtered to date in present outbreak or no more than are killed in two or three days at Chicago packing houses) than to suffer a loss of from 20 to 30 per cent of the value of all animals in the country by allowing the disease to spread.

The Present Outbreak.

The disease was discovered in Niles, Michigan, on October 10, 1914, and had probably existed there for some time prior to its recognition. Its origin has not been determined. From here it spread to the Chicago Stock Yards and thence to various parts of the country, until the disease occupied an area extending from the Atlantic coast on the east to Washington on the west and as far south as Mississippi, twenty states being infected.

An unfortunate state of affairs prevailed at Chicago in that the disease broke out among the cattle at the National Dairy Show which was being held there. Some 800 cattle, including animals from some of the best herds in Wisconsin and other parts of the country and valued at thousands of dollars, were thus exposed to the infection. In spite of all precautions the disease spread from animal to animal. The animals were ordered slaughtered, but because of their extraordinary value, the federal authorities allowed the owners to hold the cattle under strictly enforced quarantine regulations with the idea of saving the valuable breeding stock. It has been proven by placing susceptible cattle, sheep and hogs in the quarantine pens that the members of the original herds are incapable of infecting other animals.

Wisconsin was paid her first visit by the disease in the form of feeding cattle shipped from Chicago. All cases in this

State can be traced directly or indirectly to the Chicago Stock Yards. While the State was fortunate as compared to some of its neighboring States in point of number of animals and herds affected, nevertheless 36 herds located in 14 different counties were affected in this State. The affected herds have all been slaughtered and it is not probable that any number of cases will appear in Wisconsin in the future. In fact, the disease is well under control in all states and it is now only a question of time until the last affected herd will be under ground.

HOG CHOLERA CAN BE CONTROLLED.

B. A. Beach, Assistant Veterinarian, College of Agriculture.

If the swine raising industry is to be put on a firm basis, the most serious of all swine diseases, hog cholera, must be controlled.

The fact that this disease year after year devastates whole counties, and also that it may appear on any farm at any place without warning, lends to the swine raising industry an uncertainty which has driven many farmers and breeders from the field.

Hog cholera serum, if properly applied, will obviate all serious losses from this disease. No other agent can be relied upon.

Temporary Immunity

It has been the custom of many men who vaccinate to do so after the disease has made its appearance in the herd. This is a last resort which will usually save enough hogs to more than pay for the serum and its administration, but it must be understood that the serum is a preventive and not a cure. When the disease makes its appearance in the herd, all non-infected hogs can be saved by the injection of serum. It is at times difficult, however, to tell which hogs are infected, in view of the fact that an animal can harbor the virus for several days without showing any physical symptoms, or even any rise in temperature. A considerable loss, therefore, must be expected from this procedure. The injection of serum alone will render a hog immune for three to six weeks.

Permanent Immunity

If permanent immunity is desired, a small quantity of virus or blood from a cholera-sick pig must be injected. It is evident that the injection of blood from a cholera-sick pig is a dangerous procedure, as this blood is capable of producing acute hog cholera and unless potent serum in sufficient quantity is injected at the same time, disastrous results will follow.

There are two methods of producing a permanent immunity; the injection of serum, followed in five to fourteen days with more serum and virus, or the injection of the virus and serum at the same time. In either case, a small percentage of loss must be expected. However, the preliminary injection of serum builds the animal up, so that the subsequent injection of serum and virus does not produce the shock and sometimes serious losses that are attendant on the latter method.

A Permanently Immune Herd

Whatever method is employed to combat this disease, those animals

which are to be retained for breeders should be permanently immunized. Then every year when the pigs reach fifty pounds in weight, they too should be vaccinated. In this way all serious losses will be prevented and the farmer may feed as many hogs as he can fit for the market without fear that cholera will at any time appear and annihilate his herd.

Precautions

If good results are to be had, the serum must be used with judgment. As has been stated, it is not a cure but a preventive agent. Vaccination against hog cholera in infected herds has not always been attended with good results, owing largely to the very erratic nature of this disease. In those outbreaks where the hogs die very rapidly, some of them before the onset of any noticeable symptoms, the injection of serum will do very little good. On the other hand, in those outbreaks of a less acute nature, the injection of serum not infrequently will result in the saving of more than ninety per cent.

Do not attempt to use virus yourself. A State law limits its use to experienced veterinarians only. The indiscriminate use of virus (disease-producing blood) has been known to start hog cholera in a locality.

Several days before the hogs are to be injected, they should be confined in clean, dry quarters and fed lightly on soft feed. This should be continued two weeks after vaccination if virus is used. All temperatures should be taken at the time of vaccination and virus given to none showing an elevation of 104 to 105, depending on conditions.

Summary of Results with Various Methods of Vaccinating Hogs Against Cholera in Wisconsin

(To June 30, 1914)

Method of Vaccination	Condition when Treated	Number Treated	Deaths	*Recoveries*	
				Number	Per cent
Serum—alone	Healthy	5,369	11	5,358	99.79
	Infected	6,009	957	5,052	84.07
Simultaneous	Healthy	850	106	744	87.53
	Infected	449	166	283	63.03
Combination	Healthy	4,524	210	4,314	95.36
	Infected	372	35	337	90.59
All methods	Healthy	10,743	327	10,416	96.96
	Infected	6,820	1,148	5,672	83.17
Total		17,563	1,475	16,088	91.60

Care should be exercised in cleaning the site of the injection, as the introduction of filth may give rise to blood poisoning or abscess formation. The best place to inject is the arm-pit in small pigs; large hogs may be snubbed to a post and injected behind the ear. The foregoing table shows the results of the various methods of vaccination last year.

REPORT OF COMMITTEE ON RESOLUTIONS.

The report of the Committee on Resolutions was submitted by its chairman, Mr. L. E. Scott, and unanimously adopted, as follows:

Resolutions

WHEREAS, We believe that further academic training for our farmers' sons and daughters after they complete the eighth grade work and issue from the rural schools at the average age of 14 years is the greatest educational question that now confronts the American people, and

WHEREAS, The results of sending these young people to our city high schools, with nothing to do outside of school hours, and to be away from home at that critical, formative period of adolescence, when they so much need the restraint of parental control, have not been satisfactory, and

WHEREAS, As a very small percentage of such high school graduates have returned to the farm, and

WHEREAS, As a result of this condition many farmer parents have been obliged to sell or rent their farms in their declining years, be it therefore

RESOLVED, That we urge our State Superintendent of Public Instruction and all educational authorities and forces to use their utmost endeavor to encourage the establishment of township high schools with a course of training better adapted to the needs of those intending to engage in farming or other industrial pursuits than the courses provided in our city high schools, with a winter's short course for such students as are needed upon the farm during the summer months.

RESOLVED, That we believe that every township should provide all academic education needed by our young citizens within driving distance of their parental roof-tree.

WHEREAS, The World's Fair Commission have responded to a resolution passed at our last Annual Round-up Farmers' Institute, asking that a liberal portion of the $75,000.00 appropriated for a Wisconsin exhibit at the Panama-Pacific Exposition be used for a creditable live stock and agricultural exhibit, by setting aside $10,000.00 for such exhibit, be it

RESOLVED, That we thank the above named Commission for said recognition of the claims of Wisconsin live stock and agricultural interests.

From the proper and necessary activities of this meeting, we are constrained to pause and with bowed heads to pay tribute to the memory of our friend and co-worker, Captain Alexander A. Arnold whose passing occurred but a few days ago. The greater part of his long and well-rounded life has been spent in Wisconsin, doing pioneer work and ever standing for better agriculture, better live stock, better education, better homes, better government and better citizenship. With profound re-

spect we would extend to a sorrowing family our tenderest sympathy.

RESOLVED, That we express to the citizens of Kenosha our appreciation for the respect and honor shown to the cause of agriculture in the hearty welcome given us, its representative, and extending to us the freedom of the city, the beautiful decorations and the splendid industrial exposition, especially in the liberal premiums offered for worthy specimens of products of the soil, for the fine music dispensed, the beautiful flowers furnished, and for the many courtesies extended to the tillers of the soil.

Resolutions offered by the Local Committee and read by Mr. W. S. Dexter, were also unanimously adopted, as follows:

WHEREAS, The farmers of Kenosha county, their wives and children, have taken so deep an interest in and contributed so liberally to the exhibits of grains and farm products, home preserves and baking, and school children's drawing and sewing contests, and

WHEREAS, We feel that these various exhibits have in a very large way helped to make this Twenty-ninth Annual Round-up Institute the success that we feel it really is, therefore be it

RESOLVED, That this Institute in session at Kenosha, March 11th, 12th and 13th, extend to the contributors a hearty thanks for their co-operation.

WHEREAS, After a careful survey of the various departments of this Twenty-ninth Annual Round-up Institute, held in Kenosha, March 11th, 12th and 13th, we feel that it has been a real success, and

WHEREAS, This success has been brought about by the splendid management of its conductor and his assistants, their able and well directed talks and demonstrations, therefore, be it

RESOLVED, That a hearty vote of thanks and appreciation be extended to Supt. C. P. Norgord and his staff for the part they have played in making this Institute the success that we feel it was.

WHEREAS, It was necessary to appoint various heads to handle the different departments of this Farmers' Institute, and

WHEREAS, We find much time has been sacrificed by these workers in helping to conduct a first-class Farmers' Institute, therefore, be it

RESOLVED, That a vote of thanks be extended to the heads of the local school system, the county school system, the head of the Women's Institute, the various ministers, the police and fire departments, and others who have assisted in making things comfortable for the Institute visitors.

CLOSING REMARKS.

Supt. C. P. Norgord, Madison.

Ladies and Gentlemen, we come to the close of the last session of this Round-up Institute. This has been one of the most successful Institutes held in the State, so Mr. McKerrow and the other Institute workers say. It has been difficult to determine the exact attendance because of the exchange of people between this hall and the Coliseum, but as near as we are able to determine, the average attendance has been between 450 and 500

people for each session. The attendance at the Women's Institute has been around two hundred per session, and up to last evening, including last evening's session at the Coliseum, the total attendance was 4,500, as judged by the tickets that were sold for admission.

One feature of this Institute that has been very pleasing has been the way in which the people have taken part in the discussions. Men may present learned essays and long discourses, but they may not strike the problems in which the people are directly interested. The psychological time to get information is when you are seeking for it, and therefore the question and answer discussions which have come up in this Institute I think have been of great value and will be of value as they are read from the Bulletin. This is not only an Institute for Kenosha, but through the Institute Bulletin we speak to the entire State.

This Institute closes the season's work. The men who so faithfully and effectively have withstood the hardships of the winter's work are now to return to their farms to "practice what they have preached."

Farmers' Institute workers are not missionaries preaching a gospel of religion, but they preach a gospel of better soils, better crops, better stock, larger net income, better schools, better homes, better men and women. They present a very practical gospel and that is what we are looking for in these days of efficiency ideals. We are not teaching Greek and Latin, nor culture in literature, but we are teaching a culture that comes to men when they learn how to master their work, their profession, that upon which they are dependent for their livelihood, how to get the best results and thus be able to make an independent livelihood. When a man makes a livelihood in this way, when he has that preparation for his life work, he can look any man in the eye with confidence in himself and his powers, and that confidence breeds independence, reserve power. It is the fundamental basis and the greater part of true culture.

And so we have come to this Institute to get together and enjoy our mutual comradeship and to close the work of this year. The men who have been chosen for this work are men who began in the early years, many of them twenty to thirty years ago, when there was but little agricultural science written in books. They have watched the growth of agricultural science year by year, they have read it, bulletin by bulletin. They have tried and practiced a good part of it on their own farms, they have seen and heard of the experiences of thousands of others, and from all this they have learned the good and the bad, the practical and impractical. They are thus able to speak with authority and advise with wisdom on farm problems.

Go where you will within the State and you will find men who have built and filled silos, who are feeding, testing and breeding their dairy cattle, who are handling their crops according to the ideas and through the inspiration received from the Farmers' Institutes. The influence of the Farmers' Institutes has borne fruit. "By their fruits ye shall" and we all do "know them."

That is why you can go out into the State and find the farmer who says, "I began using the silo because the Farm Institute people advocated that and they told me what was the best silo to build and how I could best handle my crop by putting in my silage." You will find another man who says, "I am testing my cows, weighing my milk and finding out which are the best cows in

this way because the Farmers' Institutes advocated that practice and told me how to do it." You can find men who have learned to make the most of their opportunities, to secure the most profitable prices on their products, who received their start from the Farmers' Institute, who in all these and other ways have reached the people. "By their fruits ye shall know them."

Now, I could not say these things about the Farmers' Institutes if I had been running them for years, the work of the Farmers' Institutes and the credit for that work has not been mine, but it belongs to Mr. McKerrow and to those who came before. We owe to him a large debt for the wisdom which he has put forth in guiding this work and the energy and the spirit which he has put into the work and which has brought forth this fruit.

Now, with these words and with the hope that this Institute may have been of some considerable benefit locally to the farmers surrounding Kenosha and to the citizens of Kenosha, I want to close this Institute.

Before doing so, however, I want to speak of the excellent plans which were early laid for this Institute by Mr. Funck and his hard-working committee. The details of the work connected with this Institute and the plans necessary were carefully laid and have been carefully carried out; the beautiful flowers which we have found each day on the stand, the decorations here, the music, and that fine exhibit at the Coliseum, all of these things speak of excellent plans, well laid and well executed, and in behalf of the Farmers' Institute force I wish to thank the committee and the citizens of Kenosha for the splendid Institute you have made it possible for us to hold in this city.

Adjourned.

WOMEN'S DEPARTMENT.

Held at Kenosha in Connection with the Closing Farmers' Institute, March 11, 12 and 13, 1915.

Conducted by Miss Laura B. Breese, Waukesha; Miss Nellie Maxwell, Neenah; Miss Abby L. Marlatt, Madison, and Miss Elizabeth B. Kelley, Madison.

Stenographic Report by Miss Nellie E. Griffiths, Madison.

FIRST SESSION.

Thursday Afternoon, March 11, 1915.

The meeting was called to order by Mrs. Jordan, who outlined the object of the Institute and introduced Miss Laura B. Breese, of Waukesha, who addressed the Institute on "Home Nursing."

HOME NURSING.

Miss Laura B. Breese, Waukesha.

Miss Laura B. Breese.

That there are certain things regarding health and disease that we should know, all progressive, thinking people now believe. It is never intended that because of this knowledge the family physician can be dispensed with or that the trained nurse will not be needed. It is only expected that one may be able to diagnose some of the common diseases, recognize the degree of accident and render first aid treatments before the doctor arrives and be of invaluable service to the doctor afterwards in nursing the patient back to health.

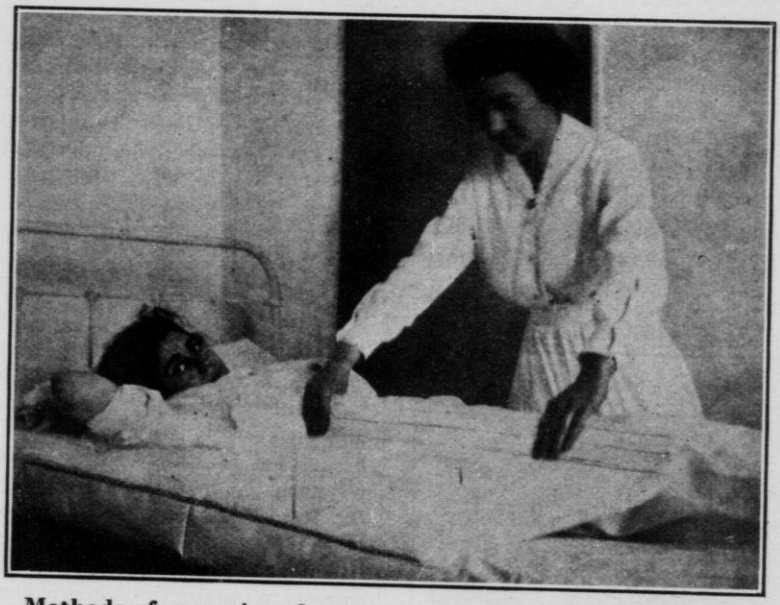
It is a great satisfaction and comfort to intelligently administer to the suffering. One may economize, if by a knowledge of symptoms of disease she is able to report these to the doctor by telephone and thereby probably save a call. With telephones so universally established, communication with the family physician is now easily possible.

In order to render good service in times of sickness and accident, one should have some knowledge of physiology, of the anatomy of the human body and of the laws of health. It would be a simple matter to get such information from any standard text-book in physiology. In no sense is the old saying "An ounce of prevention is better than a pound of cure," of greater importance than when applied to sickness.

proper attention to the bowels are necessary for good health.

(a) Pure air is necessary both day and night. As the best air is out-of-doors, keep outside as much as possible. Ventilate homes well and sleep with windows open at night, winter and summer.

(b) Good food. There is a close relation between diet and efficiency and health. Too little food results in



Methods of preparing clean draw sheet to displace soiled one with least tax upon patient.

How to Keep Well

Two important factors must be considered for this, namely, we should make our bodies as strong and sound as Nature meant them to be, and we should avoid contagious disease. Pure air, good, well-balanced food, pure water in generous amount, a proper amount of exercise, sufficient rest and sleep, personal cleanliness, good habits and

dangerous weakness, too much in the accumulation of fat, and an excess of the proteins and carbohydrates will cause different physical ailments. The amount and the combination of food will depend upon the person, the character of work and season. With light work and in hot weather, less food is required. The following references will furnish information regarding the food requirements of different

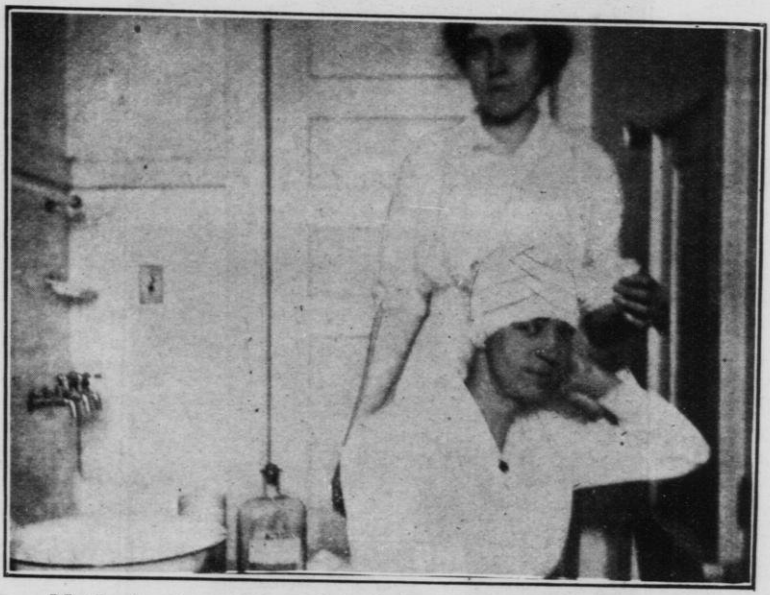
families: "Food principles and their nutritive value", Agricultural bulletin, Department of Agriculture, Washington, D. C., and can be obtained free by writing for it.

The plainer the food, the better for the health. Excessive use of dishes made of a lot of different things, greasy sauces and rich pastry and fried foods will cause indigestion. If people would stick to simple, wholesome foods, they would live longer and be happier.

Food should be kept clean and protected from flies and vermin, so that disease germs will not be carried in this manner.

After food has been wisely selected and prepared, it should be thoroughly masticated, otherwise the stomach and intestines will be taxed with work they were not intended to perform.

(c) Good water. Drink plenty of good water daily. Water has many functions in the body; two important ones are its aid to digestion and its value as a flushing agent, helping the body get rid of the waste products. Do not drink any water unless you know it is good. Bad water is a common carrier of disease, particularly typhoid fever. Most cities have good water supplies. Well water is very often contaminated. If a well is located to receive surface drainage, or drainage from the out-houses, the water is unsafe to drink. Water may be purified by boiling fifteen minutes.



Method of applying Spiral Bandage about the head.

Ice may be as dangerous as water and unless you are sure it is good, it is safer practice to cool substances by placing them on the ice.

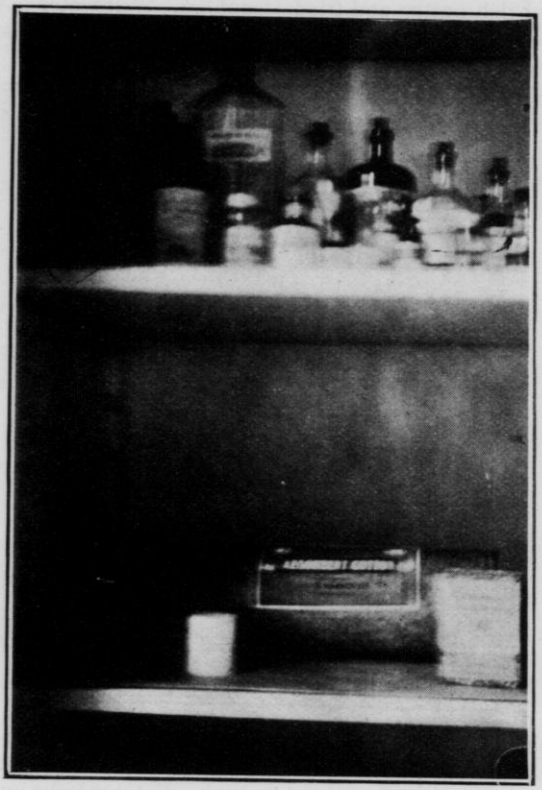
The common drinking cup should be abolished.

(d) Exercise. Moderate and daily exercise is necessary for every one, in order to keep in good condition. Ex-

ercise that is most agreeable and out-of-doors is the best. Do not get overheated. Exercise of the muscles accelerates the circulation, clears the brain and imparts new life and vigor to the entire system.

A certain amount of recreation is also necessary for stimulation of spirit.

(f) Personal cleanliness. The impurities of the body are excreted by the skin and should be removed by frequent bathing. Daily baths are neces-



A home medicine closet containing bottles labeled properly and sterilized gauze and absorbent cotton for dressing wounds.

(e) Rest and sleep. Adults require seven to eight hours sleep, youths eight to ten hours, children ten to twelve hours, babies much of the time. A very tired body is much less able to resist disease. Recreative processes are operating during periods of sleep and rest.

sary when the skin is very active as in summer time. Frequent bathing is a tonic, will prevent skin diseases and boils. The hands and nails should receive careful attention, as dirt may be

carried by them to the mouth. Underclothing should be kept clean, as well as the skin, for the same reason.

(g) Good habits. Even the moderate use of alcoholic liquors is harmful. Some of the worst diseases are due to the drinking of these liquors. Tobacco does no good and should be let alone. Patent medicines which contain morphine and cocaine are worse than alcohol. Tea and coffee taken in excess are bad and for some people these are dangerous. If you suffer ill effects from either, it is better to go without. Growing boys should not be allowed to smoke cigarettes.

(h) Attention to the bowels. If the waste of the body is not expelled regularly and daily from the bowels, weakness and tiredness, low spirits, headaches and loss of appetite will follow. Bulky food will tend to correct constipation, which is easily cured in the beginning but with difficulty later. Good, laxative foods are vegetables, oatmeal and other cereals, fruits, particularly prunes, apples and figs.

Contagious Diseases

These diseases are passed from one person to another by means of disease germs, which enter the body through the nose, mouth, break in the skin, etc., hence to avoid these contagious diseases, keep yourself and family away from any place where you may catch them, and if they occur in your home, observe the strictest rules of quarantine to prevent the disease from spreading.

Home Care of the Sick

(a) The room for the sick. Furnish the room in the most sanitary manner possible. Painted walls and ceilings, or some finish that can be cleaned by washing off, is the best. Floors may be of hardwood, or may be covered with linoleum or painted. The object should be that of furnishing it in a manner causing as little dust as possible in its cleaning. If these ideal conditions cannot exist, care should be taken at the time of cleaning to follow a method raising the least dust. If the floor is carpeted, the suction cleaner is best to use; if this is not available, use a dampened broom, or dampen the carpet before sweeping and sweep with short, light strokes, raising the dust frequently. It is best to dust with a dampened cloth or dustless duster. Nothing should be allowed in the room in the way of furnishings but what is necessary.

The room should be kept well ventilated and be one where plenty of sunlight enters and be in a quiet part of the house. As good, fresh air is very important for the patient's recovery, continuous ventilation should be planned for besides the daily airing of the room. Continuous ventilation can be provided withont danger to the patient by opening the lower window about six inches and fitting a board into the opening. The air will then enter at the center between the sashes, causing a continuous changing of air in the room. For the thorough, daily airing, protect patient with more covering and by putting a screen beside the bed, between it and the window, open windows wide, or if the patient is too weak to allow this method, the fresh air may be let into an adjoining room first and then allowed to enter the patient's room.

While plenty of sunlight is desired in the room, the patient should always be protected from the glare of the light in her eyes. This holds true also with artificial lighting, which can be subdued with paper shades.

(b) The bed. A single iron bed is preferred, because it is more easily kept sanitary, and a single bed makes it easier to lift patient, etc.

The springs and mattress should be the best possible and the bedding clean and not heavy. Blankets or wool comfortables are best for coverings, because they yield warmth and are not heavy upon the patient. Too heavy covering is a drain upon the patient's strength.

(c) Making the bed. It is a good plan to have the bedding arranged upon a table, in the order in which they are to be placed upon the bed.

Spread the bottom sheet on smoothly, tucking it under well at both ends (making mitred corners) and at the sides, pinning it to the mattress underneath at the corners with large safety pins, first pulling the sheet tightly, removing any wrinkles. If the patient is very sick, it may be necessary to protect the mattress and lower sheet by placing a rubber draw sheet over the lower sheet. The rubber sheet should be long enough to reach from the patient's back to her knees and wide enough to permit tucking in well at the sides. The draw sheet is an ordinary sheet folded lengthwise in a manner to entirely cover the rubber sheet and tuck well under the mattress at the sides. This and the rubber sheet should be pinned to the mattress underneath with safety pins. Do not use the rubber sheet unless necessary, as it is hot under the patient.

The top sheet, blanket and spread are placed in the same manner as those of any well-made bed. The spread should not be heavy, but of some light white material.

Blocks of wood are used under the bed at times when the patient needs to be raised, the casters being first removed. This is usually necessary during hemmorhages. By this means the patient is elevated without taxing her by lifting her. It is well to remember that a patient's strength should be considered and protected always.

(d) Changing the bedding when the patient is in bed. To change draw sheet, prepare a clean one by folding it and rolling up one-half of it. Remove the safety-pins and pull out the ends of soiled draw sheet from under the mattress. Roll or lift patient gently over to one side of bed, roll the soiled sheet on the other side up to the patient's back, place the roll of the clean sheet close up to the first roll, being careful to have the roll uppermost, and spread the other half of the clean sheet over bed and tuck and pin it under mattress. Gently lift patient over to the clean side and then remove the soiled sheet and smooth out the rolled half of clean sheet. Tuck and pin it under mattress. Follow this same method when changing the lower sheet.

The method for changing the upper sheet is as follows: Pull the soiled sheet loose from the mattress, but allow it to remain over the patient. Put the clean sheet over the soiled one, tuck it in well at the bottom and one side, being careful not to catch the soiled sheet with it. Ask the patient to hold the top of the clean sheet, then take a hold of the top of the soiled sheet and pull it out from underneath the clean sheet from the open side. The blankets can be changed in the same way. The patient should always have some covering during these processes out of consideration of her modesty and these changes can easily be made under the covering of a sheet.

Before changing the bed or bathing a patient, the windows should be closed and the temperature of the room raised a little.

Question—Would you remove the under sheet the same as you do the draw sheet, or at the same time?

Miss Breese—If it is necessary, change it at the same time as you

change your draw sheet, because you can replace three pieces as easily as you can replace one. Usually the rubber sheet protects the lower sheet and it is not necessary to change it at the same time. It is necessary to change it occasionally for the sake of appearance. Sometimes when accidents occur and the lower sheet becomes soiled, it is necessary to change it.

But one pillow is required usually when a patient is lying down, but more are used when she is to be bolstered up, the number needed depending upon the extent she is raised; for a sitting posture, as many as six are needed to give her proper support from her hips to head.

There are three things to keep in mind in the care of the bed, namely, keep the sheets underneath the patient free from wrinkles and dry (wrinkles on damp sheets may cause bed sores and are annoying to a patient), keep the bed looking well made and bed clothing clean.

(e) Taking temperature, pulse and respiration. It will be found very much of a help if the practical nurse would learn how to make report of the pulse, temperature and respiration of the sick one.

Taking temperature. Use a clinical thermometer, shake it lightly in order to drive mercury down a little below normal temperature, which is 98.6° for an adult. Then place the thermometer in the mouth of the patient under her tongue and have her close her lips over it. Allow it to stay in about four or five minutes, then remove it and record temperature. Any degree above normal indicates fever and any degree under 96.8° is sub-normal and may be just as serious.

When people are delirious, temperature should be taken either under the arm or in the rectum. There is danger of their breaking the thermometer by biting it when they are delirious, if it is placed in the mouth.

To take pulse. Place first two fingers on the wrist over the radial artery below the thumb. Have watch at hand and count beats for a minute, or it may be easier to count for two half minutes. By the latter method, the count of the last half minute would be a means of verifying the first half count. The normal pulse for an adult is 72 beats a minute. Notice also whether it is a strong or weak pulse, and whether it is regular or irregular, and record these observations.

To take respiration. Place hand on chest of patient when she is asleep or unconscious of your motive and count the respirations. Normal for an adult is 18 per minute. A respiration is one inspiration and one expiration of air.

The normal pulse, temperature and respiration run higher in children and vary some with the age of the child, but your doctor will tell you what should be normal for the age of the child sick.

Some First Aid Treatments.

In every home a few first aid materials should be kept. A cabinet fastened to the wall is the best place to keep them safely. The cabinet should always be locked when not in use. All medicines should be labeled in a clear manner and medicines that are poisons should have the word "poison" written in large type on the label. The poisonous medicines should be placed upon the highest shelf and beyond the reach of children.

Major Charles Lynch, of the United States Army, recommends the following articles for the home cabinet for first aid treatments:

1. Two ounces alcohol. A good liniment for strains, sprains, bruises, etc.

2. Two ounces aromatic spirits of ammonia. Use rubber cork in bottle. A stimulant in one-half to one teaspoonful

doses in one-half glass of water for fainting, shock or weakness.

3. Two ounces castor oil; a laxative. Dose: one-half to one teaspoonful for an infant; one to two teaspoonfuls for a child.

4. One box Seidlitz powders. A mild purge for constipation, sick stomach, bilious headache.

5. Two ounces of mustard, powdered. To cause vomiting, one teaspoonful in a glass of lukewarm water.

6. Two ounces syrup of ginger. For cramp in stomach and diarrhea with cramps. Dose: one-third teaspoonful in a glass of water.

7. Two ounces syrup of ipecac. Specially used as an emetic in croup in children. Dose: one teaspoonful.

8. One small bottle 5-grain bismuth subnitrate tablets. Four tablets powdered afford a safe remedy for diarrhea.

9. One tube carbolated petrolatum. Used for burns.

10. One ounce boracic acid. Dissolve as much as possible in water. This is a good eye-wash and antiseptic wash for wounds, mouth, etc.

11. Twenty-five tablets of potash in bottle. Allow one tablet to dissolve slowly in the mouth for sore throat.

12. Soda mint tablets, 50 in bottle. Use for indigestion.

13. One dram oil of cloves, labeled "poison." For toothache, a drop on cotton put into cavity.

14. Talcum powder. For all inflammations and irritations of skin.

15. One package antiseptic gauze (a small package). To cover wounds.

16. Gauze bandages, three large and three small. To hold dressings, splints, etc., in place.

17. One bottle collodion with brush. To paint over slight injuries of the skin.

18. One box tooth plasters, for aching teeth.

19. One box corn plasters, to prevent rubbing of tender corns.

20. A sharp knife and pair of scissors.

21. One clinical thermometer.

22. Pins, common and safety.

23. Two Red Cross aid outfits. The contents are: a gauze bandage, a triangular bandage and safety pins. Each part is enclosed in paper and the gauze bandage arranged so it can be put on a wound without being touched at the place which comes in contact with the wound. The triangular bandage is more convenient at times than the roller bandage. Is used over hand as a mitten, over the head as a skull-cap, and over the foot as a mitten to hold dressings in place. May also be used as a sling. Bandages may be made out of clean, old muslin, cut the desired widths, rolled tightly and sterilized. They may be sterilized by placing them in a pan in the oven, subjecting them to the high temperature about 30 minutes, then putting them away in a sterilized fruit jar, which should be tightly sealed and labeled.

24. A pint bottle of lysol or of 5% carbolic acid solution for a good disinfectant. Carbolic acid may be made in 5% strength by buying 95% acid, then diluting by using one part of acid to 20 parts of water.

Disinfectants are used to kill all germs and are, generally speaking, more powerful than antiseptics. Antiseptics are used to prevent or arrest the growth of germs and may not be powerful enough to kill all kinds. All disinfectants are antiseptics, but all antiseptics are not disinfectants.

Question—How about peroxide?

Miss Breese—It is not a disinfectant, it is an antiseptic and I am going to consider those a little later.

Question—Can you get the lysol of any ordinary druggist?

Miss Breese—Yes.

Question—How strong?

Miss Breese—Four per cent solution for washing wounds, and in getting the lysol you get a little circular which tells you exactly how to make the different things.

Question—Isn't it a good plan to have the solution ready?

Miss Breese—Yes, I think it is. Have it mixed up in one bottle by itself and labeled, so when you have to hurry you have it ready. That is one advantage of the 5 per cent carbolic acid, you have it ready to apply just as soon as you want it.

Question—What is the difference between antiseptics and disinfectants?

Miss Breese — Disinfectants are stronger, they kill germs. The antiseptics may; they arrest the growth of the germs, they are strong enough to do that, but may not kill all of the germs. They are used when there are no open wounds, for gargles, mouth washes, etc., but when you have open wounds you want to kill any germs that are present. Hydrogen peroxide is an antiseptic and on the label of this you are told of the different strengths for different uses. The boric acid is a good antiseptic. It is very good for mouth washes and you can use it in different strengths. For an eye wash, you would want a teaspoonful in a cup of water; for a gargle not quite so strong. A saturated solution of boric acid would not be injurious. Another very good antiseptic is just salt and water.

For disinfectants, as I have said, I would advise you to have carbolic acid and lysol. It is cheapest to get the carbolic acid crystals and dissolve them in water, 6 ounces in one gallon of water for No. 1 Standard solution. When you are using it in any great abundance, particularly after contagious diseases, it is an item to consider. Tincture of iodine is also a good disinfectant. It is handy to use, just paint the wound with it. That is used very much in hospitals.

Miss Kelley—Will you tell us how to sterilize a jar?

Miss Breese—I am going to ask Miss Kelley to tell us how to sterilize a jar. She is an authority on that subject.

Miss Kelley—You put the jar in cold water, bring it to a boil, and let it boil for 15 minutes. Then be very careful that you also sterilize the top to the Mason jars that you generally use. They are now selling a white porcelain top and you would do the same with the top that you did with the jar, boil it 15 minutes and be very, very careful when you take it out that you close it while it is hot, because you know it is the air that is around us all the time that is not sterile, so it will have to be closed while it is hot. You do not have to close it just as you take it out of the water, but before it gets cool.

Question—Is it necessary to put the bandages in the jar before it gets cool?

Miss Breese—Yes, put them right in and seal them up tightly before you take it out of the hot water, so you won't get in any of the air which is not sterile.

Question—You couldn't have the jar closed while you are sterilizing it?

Miss Breese—You have it partially closed.

Question—Could you sterilize the cover enough while it is on the jar?

Miss Breese—The steam formed in the jar will sterilize the cover. You can sterilize it with dry heat, it doesn't have to be moist heat, but it is the high temperature that kills the germs.

Miss Kelley—You could put your jar in the oven, but have it in water, so you are protecting your jar from the bottom of the pan.

A Lady—Speaking of laxatives, sometimes eating an apple or an onion makes a very good substitute. I think it is certainly very much better than taking medicine.

Miss Breese—It is, and if you are careful of your diet, in your habits, in drinking water, etc., and in eating foods that have a stimulating effect upon the bowels and kidneys, you will not have much trouble with the organs of elimination. We know there are certain foods that are particularly good for that purpose, like prunes, figs and apples, onions and other vegetables.

Question—There are Epsom salts and Rochelle salts. Are they both used?

Miss Breese—Yes; I cannot tell you very much about their value, but Epsom salts are what are commonly used.

Question—The Rochelle salts are so much milder to the taste I wonder if they give as good results?

Miss Breese—I have heard several times that Rochelle salts are injurious to the system, but I do not know that to be true. I know that it is Epsom salts that are used the most frequently.

Question—Will you please tell why some doctors use Epsom salts and some castor oil?

A Lady—Castor oil is cooling to the system.

Miss Breese—Individuals differ in regard to their opinion upon those two laxatives. One individual will find that salts will act more quickly and with less pain and they naturally take Epsom salts.

A Lady—My doctor gives a tablespoonful of Epsom salts and the juice of half a lemon.

Miss Breese—Castor oil is a lubricant as well as a laxative and that is why there is less pain during its action.

Wounds

When an injury occurs in which the skin is broken, it is called a wound. The danger in wounds is the possibility of infection, which would cause blood poisoning. One must always be careful to have clean hands before beginning to dress a wound. The hands should be scrubbed with soap and water until thoroughly clean; all dirt should be removed from under the finger nails. Dip the hands in a 70% alcohol solution and dress the wound as follows: Unless the cut is covered with dirt, it is best not to flush or wash it. A compress wet in a saturated solution of boracic acid, or a 5% carbolic acid solution, or 4% solution of lysol, should be placed on the wound, then bandaged over well. Before dressing the wound, it is necessary to determine which blood vessel is cut and to arrest the bleeding.

There are three different blood vessels: the arteries, veins and capillaries. The arteries carry the blood from the heart, the blood is bright red in color and flows in spurts. To arrest the bleeding of an artery, tie up the affected part on the side nearest the heart, pulling tightly. Twisting the bandage by inserting a stick or pencil in the knot will increase the pressure.

Veins. These blood vessels carry the blood to the heart and the blood is dark red in color and flows smoothly. The pressure should be applied on the side of the wound fartherest away from the heart. Sometimes just placing the thumb and finger on the blood vessel cut and pressing it hard against a bone will stop the bleeding. If the blood is oozing from a little surface, then the capillaries are wounded and an application of hot water will soon stop this flow.

In bandaging, hold the roll in the right hand, with the roll uppermost,

wrap it twice around in the same place over the compress, then wind in spiral fashion up a distance beyond the wound and back again, and fasten the end with a small safety pin on the upper side of the part affected, to prevent any annoyance to the patient when the affected part is resting on any support. It is better to unwind the roll only two or three inches ahead as one applies it.

Fractures. When an injury occurs without causing any break in the skin, it is known as a fracture. There are simple and compound fractures. When a bone is broken without tearing the flesh around, it is a simple fracture, and a compound fracture if the flesh does become torn.

Fractures of either kind are a little beyond the amateur's judgment in treatment and a doctor should be summoned at once. About all the amateur can do is to carefully lift the fractured limb on to a pillow, taking great care not to bend the injured part and causing laceration. Cold compresses can be applied over the swelling to alleviate the pain. If a doctor cannot come in a reasonable time, the amateur may go so far as to bandage splints on to hold the bone in place and relieve pain caused by the moving of muscles. Put a thick padding of cotton next to the skin; place the splints, one on each side, then bandage in place. Splints may be made of thick card board, thin boards or canes, pencils, umbrellas, etc., may be used in emergency.

Question—In the case of pain in any part of the body, can you apply a hot compress first and then cold? Would you apply a hot compress when you thought it was appendicitis?

Miss Breese—When pain is due to swelling, cold compresses are better. With appendicitis, the most comforting compress is the hot compress or hot water bottle.

Question—I know some doctors recommend one and some another.

Shocks. Every injury of any consequence will be accompanied by a shock. The injured nerves carry the jar to the brain and produces an effect there known as shock. Sometimes the shock causes unconsciousness, patients are cold and have weak pulse and shallow breathing. This may get worse and cause death, so treatment of shock is very necessary. Stimulate the body in every way. Lay the patient on his back, so blood can more easily flow to the brain. Cover warmly and place hot water bottles or bricks around the body. Be careful not to burn the patient. Massage limbs and as soon as consciousness returns, give a stimulant of aromatic spirits of ammonia, then hot tea or coffee. Never give drinks when person is unconscious, as it may cause strangulation.

Heat stroke and exhaustion. These are more apt to occur in hot, close rooms than in the open air. Heat exhaustion is practically a faint and is treated the same.

Sunstroke. The face is red, eyes bloodshot, person lies in a stupor and the skin is very dry and hot. One must work quickly. Send for doctor at once. Carry patient to a cool place. Remove clothing and put him in a cold bath or wrap him up in sheets wrung out of cold water. Rub him vigorously and when he can swallow give cold water to drink. Never give stimulants.

Fainting. Due to lack of blood in the brain. Lay patient flat on his back, put his feet up on a cushion, loosen clothing and let in a lot of fesh air. Sprinkle face and chest with cold water. Massage limbs toward body. Hold smelling salts at nose. When he can swallow, give stimulant.

Suffocation. This is caused by anything that stops the air from getting into the lungs. It may be due to asphyxiation, drowning and electric shock, etc. Plenty of fesh air should be allowed around the patient and artificial respiration practiced. This is done by placing patient flat on his stomach, turning his face a little to one side. Raise his arms above head and let out straight on the ground or floor. Next stand astride him, opposite his hips, facing his head. Place the hands on each side of back on the lower ribs. Now swing the body forward, keeping your arms straight and allowing your weight on the patient's back; then swing back, taking your weight off. Do this about fifteen times a minute. Your weight presses his chest together, forcing the air from the lungs. When you release your pressure, the chest expands and draws air into the lungs. This is imitating breathing. Recovery may be slow. Keep up the work for at least two hours. After he returns to consciousness and is breathing well, put him to bed, cover warmly and give him plenty of fresh air. Give him a little hot coffee and let him sleep. After he starts breathing, rub his limbs toward the body, but not before he is breathing.

Choking. A foreign body in the throat will cause suffocation. Slap person between shoulders, or if necessary hold person up by the feet and slap him between the shoulders.

Poisoning. Do not delay in sending for a doctor and give person something to make the person vomit. Syrup of ipecac or mustard and water or salt and water will do this. Give quantities of warm water to wash out poison by their vomiting. Poisoning is usually suggested by sudden and severe illness, with bad, cramping pains. When the case is suspected food poisoning, then the above treatment is the best to follow. If it is a case of acid poisoning, it would be best to first give a dose of some weak alkali, as baking soda or magnesia. If the poison is from alkali, neutralize it by giving a dose of weak acid, as lemon juice or vinegar. Then follow with an emetic and purgative.

Burns and scalds. A burn is always worse than it appears and is not to be trifled with. The more skin involved, the more serious is the burn. If one-third of the skin area is covered by the burn, it may cause death. Especially is this true of scalds. Ice water is good for a fresh burn. If skin is broken, cover with a saturated solution of boracic acid, cold compresses, the colder the better.

Carron oil is also good to put on burns. Carron oil is equal parts of lime water and linseed oil. Bandage burns after dressing them. Blisters should be pricked with a sterilized needle (sterilize by holding it in the blue point of a gas flame for a few minutes), but the skin should not be removed.

A Lady—I have had several experiences with burns. May I make a suggestion that I found good at a time when my son was badly burned? I grated raw potato and bound it on the wound and it comforted him very much.

Miss Breese—I am glad to have these suggestions. You simply grated the potato and tied it on the burn?

The Lady—Yes. It was a scald and a bad one, too.

Miss Breese—When you have blisters, break the blisters, but do not remove the skin, leave it for protection to the burn underneath.

Question—What would you advise for a healing ointment? You would want something after the pain has ceased.

Miss Breese—Zinc ointment is a very good healing ointment.

A Lady—I know of an old-fashioned remedy that is very good. Tea steeped in sweet cream until it forms an oil and

then used as an oil. Take a large teaspoonful of uncolored tea, put it in a cupful of sweet cream, put it where it will get hot gradually and it will go to oil. You strain the oil and it is an excellent one for burns.

Poisonous bites. If from a mad dog, send patient at once to an institute to be treated. Shut up the animal and watch its true condition. It sometimes develops that there are no traces of madness and, if so, much uneasiness of mind is allayed.

If it is a snake bite (and the leg is the most common place bitten), tie a cord between the wound and the heart, suck wound to draw out the poison, taking care to spit it out of the mouth. The best drug to apply is permanganate of potassium, the crystals placed right in the wound. Never put an acid on a snake bite.

Insect bites and stings. Apply ammonia or baking soda. Pull out sting if it sticks in the wound.

Nose-bleed. Hold head back, apply cold compresses at back of neck and on forehead above nose. If necessary, put plugs of cotton soaked in a solution of alum up the nostril affected.

Colds. Take a hot bath and get to bed at once. Have plenty of fresh air. Use enough covering to start perspiration quickly. Drink a glass of hot lemonade. Take castor oil or a Seidlitz powder for a laxative. Cough medicines may be dangerous, as so many depend upon some preparation of opium for their quieting effect. Use of such might start the opium habit.

Poison ivy and poison oak. Wash with boracic acid, dry the affected part and cover it with vaseline. Should be done daily.

Prickly heat. One part alcohol to three parts water as a wash for the skin. Afterwards dust skin well with talcum powder.

Croup. Call a doctor, begin work at once. Give something to make child vomit. One teaspoonful of syrup of ipecac, followed by a drink of warm water. Wring out cloths in hot water and put them on the child's throat and chest. Cover these with a dry cloth and change as soon as they get cool. Quiet the child and he might go to sleep.

Convulsions or fits. Put the child in hot bath. Apply cold compresses to the head. Produce vomiting. A finger put down the child's throat will sometimes start vomiting quickly. Keep perfectly quiet after the convulsion. Give a hot enema.

Foreign bodies in eyes, nose and ear. If in the eyes, roll eyelid over pencil and take out particle with a clean handkerchief. If it is obstinate, send for doctor. Never probe about the eye.

In the ear, drop in a few drops of sweet oil. The particle may be syringed out.

In the nose. Cause person to sneeze by smelling pepper. If these simple remedies are not successful, call a doctor. Do not attempt more yourself, as these are all very delicate organs, especially the eye and ear.

SECOND SESSION

Friday Afternoon, March 12, 1915

INVALID COOKERY

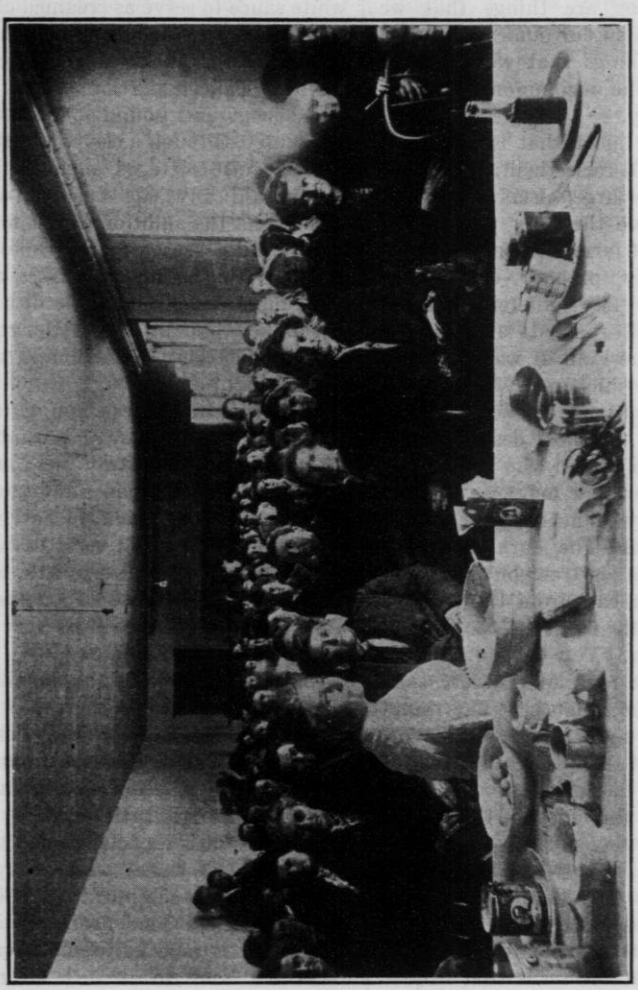
Miss Nellie Maxwell, Neenah, Wis.

Miss Nellie Maxwell.

The meeting was called to order by Mrs. Wells, who introduced Miss Nellie Maxwell, of Neenah, Wis., and who then gave a demonstration lecture on "Invalid Cookery."

Miss Maxwell—It is a pleasure to be here, to see many of the faces that I saw last year and to meet the old friends again. I trust that we will have a good time together and hope you may feel perfectly free to ask questions. This is not a formal lecture, we are just here as housekeepers and if there is any problem that you want to discuss, just speak right out in meeting. Do not be afraid of interrupting, for I talk all the time and will be glad to have some one else say something once in a while.

The dishes to be given this afternoon are quickly prepared and easily digested. It does not always follow that things that are easily prepared and easily digested would be good for invalids, but the easily digested foods are usually the foods that we give to people who are ill. Any doctor will tell you that the food that the convalescent is given is much more important than any medicine. The broken-down tissues wasted by disease must be built up, and the only way we can do that is by giving good food. One of the vital things upon which every woman should inform herself is the cooking of good, nutritious, wholesome food for her sick people. In the country especially, where it is hard to get trained nurses, it is a problem that almost every woman has to meet some day, the general care of the sick and preparing of the food for them. It is not always easy to get people who are trained in those lines in the country home, it is not always easy to bear the expense of a trained nurse, so that the woman who reads and studies and in-



Miss Maxwell Conducting a Cooking Demonstration at Women's Institute at Spring Valley, Wis.

forms herself on these things is the one who is able to meet those conditions and restore her sick one to health.

The dishes that we shall prepare this afternoon are some that are not at all uncommon, they are things that we make every day in our homes, however, they are the things that we ought to speak about. The uncommon things are not so necessary.

Chicken is a meat that is very well known. You all raise them; if you are farmers, you are large raisers of chickens and always have them for your table, but I think that farm women, like town women, usually prepare chicken in about four or five different ways—fried, fricasseed, roasted, and boiled, that is about the limit of ways that we ordinarily serve chicken.

What part of the chicken do you think would be the most desirable portion to give to a person who is ill?

A Lady—The dark meat.

Another Lady—The breast.

Miss Maxwell—The dark meat has more flavor, that is true, but it is also tougher. The meats from the muscles that are used the least in the animal are more tender. You will note in the beef animal the muscles that are used the most are the toughest. The round of the meat has a great deal more flavor, but it is also apt to be tough, because of the activity of the muscles. The same may be said of the chicken, the darker meat has more flavor, but it is not so easily digested as the white meat, so if we are giving a very dainty piece to a person who has begun to get well we would give a little chicken breast, and of course we want to serve that in just as nice a manner as we possibly can, making it just as appetizing to look at, so that if the patient did not have any desire for food the sight of it would make him want to eat. This afternoon I am to prepare some chicken which has been stewed for broth and consequently the breast has had a good deal of its flavor taken out of it, so that we are going to use the broth for one dish and will use some white meat in a well seasoned white sauce to serve as creamed chicken.

Another very delicious dish that you can serve for an invalid is a chicken souffle. Take a portion of the tender white meat and pound it in a mortar, then rub it through a sieve. add the well beaten whites of eggs, make it just as you would any egg custard without sugar, with the addition of this meat for flavor, with seasonings. Bake it in water in the oven. It makes a very light, dainty, delicious little dish. You can bake that in the little ramekin dishes, or in these custard cups, serving just a small portion.

In serving to a sick person, give them very little, so that they may want more. Do not overload a tray with a large quantity of food, because they may see what you expect them to eat and be discouraged and won't want to eat anything. Give them a very little bit and it will taste and look so good they will want more and they will be very much more apt to digest the food.

Another food that I want to talk about this afternoon is bran bread. It is not a bread, perhaps, that you would give to all sick persons, but it is a bread that is especially wholesome for anybody who has little exercise. I do not suppose it is especially good to give to farmers or farmers' wives, they have plenty of exercise, but it is good for those who sit a good deal, and it is a bread that is especially wholesome because we have in it just all of the wheat, and the bran gives it a coarseness which excites the intestines and in consequence it is easily digested, it also gives bulk to the food. I want to give you the recipe. It is one given by a famous doctor.

Bran Bread

Recipe

4 cups wheat bran
1 teaspoonful salt
2 cups whole wheat flour
1 teaspoonful soda
¾ cup New Orleans molasses
2 cups sweet milk

Add shortening and raisins if desired.

It is not every day that we are so favored that we have gas and kerosene stoves in the same room, but because of the generosity of this gentleman, who wished to show this beautiful stove, he asked to put it here and he will be very glad to show you all of its advantages. The fuel used is kerosene and for five or six years I have been using them in our Cooking Schools all over the State. They are an ideal stove for a farm kitchen in summer, or winter either, for there are many times when you are in a hurry, wanting a cup of tea, or if some one is sick in the house, you can light them and get a cup of boiling water or hot soup in a very few minutes. The heat is almost as intense as gas heat. It has a good, easily operated oven. With a blue flame stove we have to be very careful to use just one burner for slow baking. I will have one burner on just as low as I can possibly turn it. This bread needs to bake for about an hour. The recipe makes two loaves.

In all the measurements you will find in the Women's Bulletin, when it speaks of a cup it means a half pint cup, and when we say a tablespoonful we do not mean a heaping tablespoonful, we want one leveled off with a knife, and the flour is always sifted before measuring, and you level your cup before using, never pack it down, but heap it lightly into the cup with a spoon after it has been sifted.

Some of you older housekeepers may say that it all nonsense, I wonder if she thinks I am going to stop to measure a tablespoonful when I am making bread or anything of that kind, but, really, you know, that makes all the difference between a good, standard product and a hit-or-miss product. You say you don't measure, and that you just take a little of this and a little of that and a little of the other thing, but if you lose your measuring cup that your grandmother left you, or you break it, you have a difficult time until you get another one. You measure with your eye, but when we teach young people to cook, we have to be more exact with our measurements, we have to have some standard, and in all of our red books you will find that the majority of cases give you even, level measurements; when it says a tablespoonful in this book it means a tablespoon leveled off. The flour we sift first. The reason for that is that flour can become very hard, packed in a bin or barrel, and you can dip a cup down in a sack of flour and get a great deal more than you ought to have in your mixture, and if you sift it first, then measure, you have a uniform amount.

As I have just the one cup, I will measure my dry ingredients, then measure my liquids.

You can buy different varieties of bran for this bread. Bran that is put up in these boxes you can be sure is perfectly pure and you need have no fear about using it. This is simply lightened up, then measured. It is not sifted because we cannot put bran through an ordinary sifter.

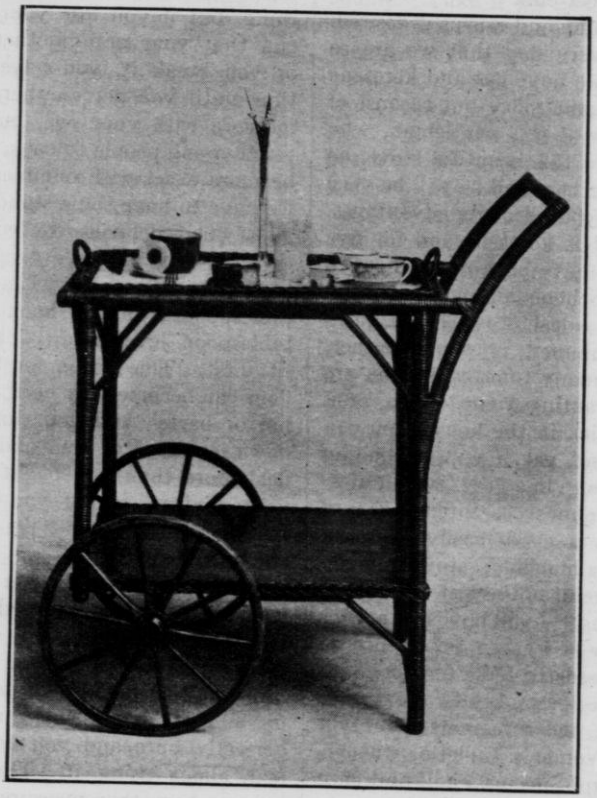
We use New Orleans molasses for this. When I say New Orleans molasses that doesn't mean Karo syrup or sorghum. We do not get the New Orleans molasses that we used to have.

You can add raisins if you like, they will add food value to the bread and

make it more tasty, but you have to be more careful about baking it. Of course molasses is a substance that burns very easily and it should be baked in a very slow oven. Bake your loaves one hour in a single loaf pan.

The soda can be sifted with the flour or can be added to the molasses, but a half a teaspoon of salt. Mix it well with the dry ingredients, then add the milk and molasses.

This is an especially fine bread for any one who is troubled with constipation. Are there any questions that you want to ask about this recipe?



A Wheeled Tray makes a convenient Invalid's Tray.

which ever way you use it, be sure that it is well mixed. Now, if you want to have a half a teaspoonful of soda, measure your teaspoon level and then right down through the center make a mark, scrape off that half. The same way with salt,

Question—What kind of bread would it make if you used something besides that New Orleans molasses?

Miss Maxwell—It would make a bread that had a different flavor and color.

Question—Syrup wouldn't do at all?

Miss Maxwell—I do not mean to make it as strong as that, but in making a ginger bread, I find people that will use Karo syrup or sorghum, and it is never as satisfactory.

A Lady—It makes it very good if you use coffee for wetting.

Miss Maxwell—Yes, you could use coffee, but some people do not like that flavor. If you have a ginger bread, you want it to taste of ginger. There is no reason why people can not have it, for we should get a very good brand of molasses. Try different kinds until you find one that suits.

Question—Why use sweet milk with soda?

Miss Maxwell—We use the soda for the molasses, not because of the sweet milk. There is an acidity in molasses that needs to be neutralized by the soda.

Question—Then this will raise without any other raising?

Miss Maxwell—It will raise without any other ingredients.

You can add a little shortening to this if you want to make it a little richer. It is not as desirable for all uses to add shortening. It is much better to be used as a health bread without the fat added to it.

Now, of course, we use some sort of drippings or lard for the greasing of our tins. I will use just a little butter. Why do we not use butter for greasing bread dishes and things of this sort?

A Lady—It burns.

Another Lady—Another thing, because it is too expensive and it burns more quickly.

Miss Maxwell—Why does it burn more quickly?

A Lady—It is something like milk; that always burns, and butter is a product of milk.

Miss Maxwell—Yes. What is there in butter that burns so quickly?

A Lady—Salt.

Miss Maxwell—Salt dissolves just as soon as moisture strikes it. It wouldn't be the salt.

A Lady—It is the casein.

Miss Maxwell—Yes, that is the part of the milk that is left in the butter.

A Lady—I thought it was all out.

Miss Maxwell—You will notice there is always a sediment in the bottom of your dish. That is the casein in the milk.

Now, if I should add raisins to this bread, of course it would take a little longer to raise it.

Question—Could you make this same bread and steam it and then bake it a little?

Miss Maxwell—Yes, you could, but I do not see the object in doing that.

The Lady—I think it would be better.

Miss Maxwell—Perhaps—try it and see which you prefer. It is a good plan to let it stand a little while to raise before you bake it.

I think we are very prone to accept things that have been handed down from generation to generation, to do things the way our mothers did them, and with very little thought of why we do them. A common answer for most questions asked as to why you do this or that is because my mother did it so and I do it so.

Question—Don't you think it was because she had tried it and knew it was good?

Miss Maxwell—Possibly. How many of you use a pinch of salt in whipping the white of an egg? Why do you do it?

A Lady—It whips quicker.

Miss Maxwell—Is that all?

The Lady—I thought it was.

Miss Maxwell—I have put it in for another reason.

A Lady—Why does salt make an egg boil faster?

Miss Maxwell—I always find a few Yankees in every audience, I ask a question and they will come back at me with another one. I asked you why you put a pinch of salt in a white of egg when you beat it. You see it done every day, and your mother did it. I think that is the answer about ninety-nine out of one hundred of us would give. Some say because it causes the egg white to beat up more quickly, but more say because mother did it. There is a real reason for it, but I do not believe it was a woman who found it out. I think it must have been a man. I wonder why it is that men always find out things and women are always accepting results.

A Lady—We make use of them when we can, when it is advantageous.

Miss Maxwell—I like to see people stand up for their sex. I am sorry that we women are not as broad in our thinking as men, we are a good deal more conservative, more like sheep, follow a leader. We are too apt to follow in the rut that our mothers and our grandmothers have made. It is easy to follow and we keep right on doing the same old things in the same old way. The up-to-date woman, who is studying the work and getting new thoughts, is the one who is making the advance. We do not want to accept old ideas unless they have proven good. If they have, hold on to them, but find out why you are doing them. That is what makes house-keeping and cooking so interesting, the working out of things, see what the results are when we do certain things. Now, you tell me why by the addition of a little salt to a white of egg it beats up quicker, and somebody says it acts on the albumen of the egg. Yes. What does it do to the albumen of the egg?

A Lady—It makes it beat quicker.

Miss Maxwell—Yes, but what does the addition of salt do to uncooked meat? It hardens it, toughens it. It has the same effect on the white of the egg. Now, why do we want the white of the egg toughened?

A Lady—Tell us.

Miss Maxwell—We want it to stay firm when we beat it up. We want the air we have beaten into the egg to stay there, and if it is not toughened by some process it will not stay in the egg. The addition of salt toughens the egg and makes it stand up. We beat the egg to get the air into it, and when we put the egg into a cake we want to be careful that we do not lose any of the air that we have beaten into the egg, so we fold it in very carefully.

In beating an egg with a Dover egg beater, we are not beating in as much air as if we use a whisk. You will notice the difference between an egg beaten with a Dover egg beater and one beaten with a whisk. You get more air when using a whisk and a flat dish. You get more air in, and a lighter mixture. You will notice half a dozen people with the same size egg, the same kind of a beater and the same kind of a dish, with varying quantities of egg white. I did not find a good whisk, so I am using this. You see that the texture of the white of egg is very fine and velvety from beating with a Dover egg beater, and with a whisk, using long strokes in beating, you will have larger air spaces and the egg will stand up lighter and better.

To go back to the question as to why salt is used in boiling eggs. If enough salt is added to the water to change the specific gravity of the water, it boils faster.

I am now preparing a dish which is nourishing and wholesome for a person who cannot eat heavy food. This is called Hamburg cream.

Hamburg Cream

Recipe

1 egg yolk
1 egg white
1½ tablespoonfuls lemon juice
1 tablespoonful sugar
Speck of salt

This is cooked over water until the egg is cooked; it just takes a few minutes, and then the white is whipped in and it is poured into a glass. This is one way of serving lemon, giving the flavor of the lemon to the egg. A great many people object to the raw taste of the egg, so if this is carefully cooked it makes a very palatable dish.

Here is our bread. This will be a very nice bread, not as light as if made with graham flour, it has such a large quantity of bran in it, it will be porous, but it will be very light and tender.

Question—If we used shortening for this bread, would you put it over the top?

Miss Maxwell—You can spread the top with butter, or any sweet fat, to soften the crust, if you like, and it increases the nutriment.

One of the most important things to remember in feeding an invalid is the amount, the quantity that you serve, which I mentioned before. Make it a small amount, do not over-urge them to eat, but give them something that looks attractive and that is wholesome. Eggs are a food that is very valuable and we ought to give them in various ways and in various combinations, and milk is another of our valuable foods, but there are so many people who cannot take milk. I recall one lady who said she had great difficulty with her little boy, he got tired of milk and she had to use all kinds of devices to get him to take the food he must take in order to gain his stength. One clever little device that is a very good one for mothers to remember is the putting of these little transfer pictures with the picture side on the bottom of the glass, so that he could not see the picture until he had emptied his glass. The little fellow would drink the milk down with the thought that he was going to have that picture. You have to do this with little children, and sometimes with grown-ups too. You know that a person who is ill is out of balance mentally, physically, and sometimes morally. Some have lovely dispositions usually, but when they are ill you cannot do anything to suit them. This is especially true of both men and women, so that we have to take into consideration those things when we are dealing with sick people. We have various characters to deal with.

Question—Is that the egg with the lemon juice?

Miss Maxwell—Yes, this is the Hamburg cream. Now, a little double boiler would be an ideal thing for this, it would cook much quicker.

I want to tell you about one way of serving things for children before I leave the subject. There are so many hundred things to talk about that I am just going to touch the high places. One mother found she could get her child to eat by making little paper cones and fastening a little flag on the top of them and putting these over the top of whatever dish she wanted him to eat, and he would be very anxious to see what was under the cone and each day she used a different flag and had some story to tell him about the different flags. He had a great time taking off the cone and finding out what was underneath it and enjoying it. The idea in feeding sick people is to take their minds from the fact that they are being nourished or fed when they dislike the sight of food. Have you ever been ill in bed and have some one come in with the tray and serve your meal and then stand or sit

and watch you eat every mouthful and urge you to eat this and that, so that you got so you really objected to the sight of food, no matter how attractive it was? Don't do it. Do not, as a rule, ask a patient what he wants to eat, let his food be a surprise and he will enjoy the food better. Sometimes I have seen people very anxious for a certain dish in the morning and you might spend a whole forenoon preparing it and when you brought it to them they would have lost all desire for it because they had been thinking about it all the forenoon. Make the dish a surprise, do no let them know what they are going to have to eat.

The Hamburg cream is cooked and then the white of the egg is folded into it. Just put it into a glass and serve it cold.

There is one thing that we are apt to forget in the preparation of egg and that is that egg will cook very much below the boiling point. Do not forget that. You can give a hard cooked egg to a person who is convalescing and it will be digested very easily if it is cooked according to the rule on page 41 in the Women's Bulletin. The yolk will be dry and mealy and cooked to the center.

This Hamburg cream is one way of introducing egg into an invalid's diet. Of course egg nog is very desirable. Beat up an egg and add lemon juice and water, or, if you are giving milk, milk can be added Hot malted milk with the addition of an egg beaten and added to the hot milk, not having it over the heat at all, just simply pouring it over the egg, is another good way of serving egg.

Jelly water and grape juice is another good drink which is cooling. If you haven't fruit juices, give them a glass of nice cold water that has been treated with any kind of jelly. The jelly will melt in the glass of water. You can add a little sugar if necessary and it is a very refreshing, cooling drink. Of course all kinds of fruit juices are very wholesome, especially to a person who is suffering with fever. We need to supply the water that is constantly being used up in the fevered body, with good, cooling drinks.

Another form of drink is koumiss. You will find a recipe for that in the Women's Bulletin on page 92. This is milk that has been treated with yeast and it makes a sort of effervescing drink which is especially wholesome and partly digested by the action of the yeast on the milk. It makes a very splendid drink for people who are tired of milk. The recipe given you here is very easy to follow; you won't have any trouble in making it.

Another form of milk is junket; milk treated with rennet in the form of junket tablets. I expected to make some junket this afternoon and had my junket tablets all laid out and left them up at the hotel, but I want to tell you about it, because it is certainly one of the dishes that is one of the most attractive that we can give to a sick person. The whey can be given to them to drink and the thickened part with a little whipped cream and some flavoring makes a most healthful way of serving milk when you want to get the patient to take milk. Often a child will take junket when it won't take milk. Have it very cold and they will enjoy it and get a great deal of nourishment from it. A mother had a sick child who had to have milk in his diet, he got very tired of it, so she made some junket, flavored with vanilla and sugar, put it in a glass and called it liquid ice cream. He would drink the milk and enjoy it, but he wouldn't have taken milk, as he was tired of plain milk.

When milk is hard to take, we have to treat it up with these different things, giving it a different flavor and garnishings to change the appearance of it.

Oysters chopped up very fine and cooked in a little cold water and the

liquid strained off in a little milk will be very agreeable to a person who dislikes milk. Oysters are especially good, they are not very nutritious, but are used because they are easily digested. They are not as nutritious as we have been taught to believe in times past, but they are very good indeed to have because they add a variety to our diet, and a flavor to dishes, so we cannot get along without them.

Another thing that we have erroneously called very nutritious is beef extract. Beef extract is not at all a food. Beef extract in broth is simply an appetizer, it warms up the stomach and prepares it to digest food, it is next to valueless as a food, but it is very valuable as a flavor. Somebody has said that more people starved to death in hospitals thinking they were being nourished with beef tea than were killed in the Civil War.

You women who have kept house for many years know the value of crust coffee. Brown four or five crusts very brown, pour water over them and let stand until cold, or use it in a half hour or so, and you will have a delicious brown liquid which you can sweeten, add a little bit of sugar, a pinch of salt and some cream, and you have a very delicious drink that is also very wholesome. Brown bread crusts may be used, many like the flavor better than white bread.

There is a phase of life that is little considered in the dealing with and in the care of invalids and that is the attitude of the invalid himself or herself. We are so apt to consider only one side of the question and forget about the invalid's standpoint, yet the attitude of the invalid determines the success or failure of our treatment. We have all sorts of invalids. There is the fussy one that nothing suits, there is the pessimistic invalid who knows she is going to die, and there is the invalid who is so anxious to get up that she overdoes and taxes her strength to the utmost and has a relapse. It is necessary to think about these things, so that if we are ever ill ourselves we will make ideal invalids and remember that we must take what is done for us and not try to dictate to the doctor or the nurse. It is never wise to feed any patient without a very decided understanding with the physician. We do not know all of the phases of the disease or the idiosyncrasies of the invalid and we must follow the directions of the physician all the way through. Any wise nurse would consider herself very imprudent if she was careless about following the doctor's directions in regard to feeding, as the feeding is an important thing.

Before serving a meal to a person who is in bed, have a damp towel and wipe the face and hands of the patient before giving him a meal. He will feel very much better, more refreshed to partake of the meal and be ready to eat it when you bring it.

Arrange the tray with the very prettiest dishes you have. Do not put any thing on any old plate in any old way for a person who is ill. You should put real thought and care into the preparing of food for an invalid. You can give left-overs to a person who is well, but do not try that with sick people. They should have their food freshly prepared.

These dishes are going to be here for you to taste after the lesson. There will not be enough to pass, but I will have them here for you to see if you so desire after the lesson is over.

Have your tray laid with the prettiest china you can find, and have things on it that will blend well. If you have one kind of a tea pot and a different kind of a cream pitcher and another kind of a cup and plate it does not make as

attractive an appearance. Have your tray covered with an attractive cloth, a good sized tray that will hold all of the necessary things, such as the napkin and the water glass and the silver, just as you lay a cover for your table. Just as soon as the meal is over, take away the soiled dishes and the food, do not leave them in the room where the patient can see them. A very great help in the sick room is a chafing dish. It is such a nice thing to use some times to heat up a dish of soup or making a delicate omelet, or something of that sort quickly, and very nice, too, to keep things warm. If you have a fire underneath the pan you can set the dish that you want to serve hot in the water and have it piping hot when you serve it to your invalid. Above all things, remember that when you are serving hot things, serve them on hot plates. A good many times in going from the kitchen to the bed room food will be chilled when the patient gets it. Have everything well covered, have it piping hot, and if he is well enough to pour his own tea, have the cup warmed and let him pour it himself. Have a little creamer and sugar bowl on the tray for him to serve his own cream and sugar. Children especially like to do this. If they are served anything hot in a little hot pitcher, like milk or cocoa, they like to pour it out themselves, it entertains them to wait on themselves.

Question—I would like to know how you would add the fresh egg to the hot malted milk.

Miss Maxwell—Put the boiling water on the malted milk and then pour it very gradually over the beaten egg at first, then a little faster afterwards. If you add it in a hurry you are going to cook the egg in lumps.

Question—How do you prepare the beef for beef extract?

Miss Maxwell—You will find the recipe for beef extract on page 93 of your Women's Bulletin No. 7; beef extract and beef tea. That kind of beef tea and beef essence is not what I mean. I mean the beef extract that you buy in the little jars. Made in the home it is very good, but it is the beef extract which you buy which I said was not especially nutritious, that which you make at home will have more nourishment.

There is another dish which we like to give our invalids, and well people too. It is quickly prepared and it is a dish that is easily prepared. Just simple, ordinary, plain custard. Bake it in little custard cups, or cook it in water in the oven, always have your dish set in water, and be very careful that the heat is not too strong to cook it too much and make it watery. The custard should be smooth and velvety, without any whey or any holes in it. A good way to test a custard when you are cooking it in the oven is to put a clean knife into it and if it comes out without any of the custard clinging to it the custard is done. A pinch of salt is always added to a custard.

Question—Do you ever steam the cup custards?

Miss Maxwell—Oh, yes. In steaming cup custards the result is just about the same as cooking them in the oven in water.

Add a little nutmeg. Nutmeg is a flavor that is generally liked and is wholesome. A drop or two of vanilla can be added and mapleine is another nice flavor. How many of you use mapleine? It is such a dandy flavor, a bottle of it costs 35 cents and will last for a year or two, it is so strong. Mapleine is a very delicious flavor for junket or cake. Be sure it is thoroughly dissolved in boiling water before using.

The junket comes in little boxes, I presume most of you know about them. They cost 10 cents. One tablet will thicken a quart of milk and you have to be very careful about heating your milk. Have it just warm enough so when you drop a drop on your wrist it will feel warm. That is one way of testing the baby's milk. The directions are on the box and they will be very easy to follow.

Question—Sour milk is very wholesome. Isn't it very much the same as preparing it with junket?

Miss Maxwell—It is the lactic acid that has thickened sour milk.

Question—Does junket add any flavor?

Miss Maxwell—No, it thickens the milk and makes it more easily digested.

You can see how attractive this little dish of Hamburg cream is for a person who is ill. They would eat it with enjoyment when they would not touch plain milk.

If eggs are poached in milk they have a better flavor and they are more delicate. When you are preparing anything for an invalid, you know you do not think very much about the cost of the dish because you are doing it to save life. Milk is expensive in town, but we wouldn't consider it a very extravagant thing to poach an egg in milk if it was for a sick one.

Another very delicious dish is an egg baked in cream. An egg can be dropped in one of these dishes with cream, put into the oven in a little water and you have a very delicious little dish for an invalid. Cook it just long enough to set the egg, do not cook it until it is hard and indigestible. Season with salt and butter.

These little paper doilies are something you can all get. Put one under your cup to keep it from slipping. They also add to the beauty of your table decoration, they are very cheap and make your tray more attractive.

These little cups are very nice for custard. You can get any number of them and then if you want to mold your custard these little aluminum cups are very nice. Wet them in cold water, pour in your custard and cook them and then turn them out after they are cooked. If your custard is made of enough eggs to hold the shape it will stand up in nice form, then you can add whipped cream if you want to add nourishment to your dish, or a little caramel sauce makes a very delicious sauce for a custard.

Caramel Sauce

Recipe

Melt sugar until it is brown, then add boiling water, let it cook up until it is dissolved and just pour that right on your custard. It is not very sweet, the browning of the sugar destroys some of the sweetening power of the sugar and makes a very digestible, wholesome flavor for an invalid.

I will dip these cups in cold water, then put the custard in them. Now, these can be cooked on top of the stove in water, or they can be steamed or baked in the oven. Put a grating of nutmeg over the top if serving a plain custard.

Question—How much milk would you allow for one egg and what will make a custard stand up?

Miss Maxwell—Add four eggs to a pint of milk for a molded custard, two for an ordinary one. If you are not sure that your custard is well cooked, try it by putting a knife into it.

Question—How much sugar do you use?

Miss Maxwell—Three or four tablespoonfuls, three tablespoonfuls is con-

sidered enough for a pint of milk. Put a little bit of nutmeg over the top. If your patient does not like it, use some other flavor.

If we were preparing a meal for threshers, we could not do a lot of these things. I know one time I was giving a lesson in cookery, was saying how delicious we could prepare apples by coring and cooking them in a thin syrup of sugar and water and when they were tender covering them with halves of almond thrust into the top, and I was flattering myself by thinking how pleased those ladies were with this dish, when a lady spoke up and said, "What kind of a dish do you suppose that would be for threshers?" No, I don't believe I should prepare them for threshers, although I do know of three or four women who prepared them for a church supper in Milwaukee, and those people were as hungry as threshers might be. We cannot do these little things for a big family, but if you have a sick person you are glad to know how to make some dainty thing for them which would not be economy for a large family.

I want to show you how to make an attractive little dish to hold creamed sweet breads or creamed oysters or mushrooms, it doesn't take so very long to make it. You want to have a good, even grained bread, not very fresh. Cut it until you have a little box this shape, cut the crusts off until you have a little square piece like this. When you have cut out these little boxes, just measure on it the depth that you can cut it without cutting clear through. Put your thumb nail on your knife and you can take the blade of your knife until your thumb nail strikes that and then cut all the way around, scoop out the center and you have a hollow or box-shaped piece. Now, we will take out the bread inside and we have a little receptacle to hold our creamed chicken that we are going to prepare this afternoon. Be careful not to puncture it clear through, and if your bread has very big holes in it your sauce would go through, but have pretty firm bread, so it will make a nice little box. Spread with butter inside and out and brown in the oven. If you have some melted butter you can do better than by spreading it this way. Now, of course a person who is very ill would not eat this little dish, but an ordinary invalid who was eating nearly everything solid would enjoy eating the little dish that held the creamed chicken. I am going to put this in the oven to brown it.

Now the white sauce for the chicken. I will take the breast of the chicken, take off the skin, if we are making this for an invalid we want to be careful that every part is as dainty as we can possibly make it, cut it into very small pieces and put it into a little seasoned rich sauce. You can make that sauce with cream, providing your patient can have it, or make it simply of milk, it depends a good deal upon the form of disease that your sick person is recovering from. Fats of all sorts are not considered good for every invalid, but there are some diseases where they are simply fed on just as rich foods as they can assimilate. People recovering from tuberculosis are fed in this way. Cream is one of our easily digested foods and fresh butter is also a good one.

Chicken, because of its short fiber, is one of the easily digested meats. Mutton is another. We are not as a rule especially fond of mutton, but mutton is one of our delicious meats and ought to be served more frequently.

I want to give you a few broths that I think it might be well for you to put down in your books. Broth is made from different meats. Chicken broth, with

the addition of a little celery and onion, makes a very delicious flavor to the chicken broth.

Then I want to give you Triplex soup, one that so many physicians order for sick people. It is a very popular one, given by Fannie Merritt Farmer in her book on "Invalid Cookery," a very valuable little book to have in the home. There are different recipes for different diseases, diabetes, Bright's disease and different disorders, diet in special diseases. You will find a good deal of information in the book that is very valuable. This soup is of equal quantities of beef and mutton or lamb and veal, a pound of each cut in small pieces, cover with cold water, add a pint of water for each pound of meat, cook four hours, skim and strain and season, then remove all of the fat after it is cold.

When you get butter from the market like this in pound bricks, score it in the center before you cut any of it, and you have a cupful in each half, cut this through again and you have a half cupful, and so on. It is not necessary to measure it in a tablespoon or cup, but just cut down with a knife, and wrap the blade with paraffin paper and you will have a nice, clean cut, giving an exact measurement and saving the soiling of dishes.

I am going to use two tablespoonfuls of butter. It is not necessary to have a very rich sauce, because the chicken is rather rich. We will put the butter on one side of the pan and the flour on the other and they can be blended very quickly. Have the butter very hot and bubbling, then stir in the flour.

I wonder if you all know the value of these little wooden spoons. They never get hot, they are easy in the hand to stir and beat with, and they are such a comfort in canning fruit, or when you are stirring anything like jelly, they never get lost in the mixture, they never get hot and are always there when you want to use them.

I am going to add a little paprika to this butter and flour after it is thoroughly mixed. That is the sweet red pepper that we grow in our gardens. You needn't be afraid to use it, or even red pepper. Just a touch is all right for a sick person. Don't put too much in it. Red pepper is wholesome and it is a good quickener of the liver.

A cupful of milk to the two tablespoons each of butter and flour makes a good thick sauce. You have to have a rather thick sauce for this chicken for you do not want your little croustade to be soaked or lose your cream through the bread.

I want to make some sandwiches. These are especially nice for children, if you want to give them something that is attractive. These are called kindergarten sandwiches, made of brown and white bread. They are wholesome and of course perhaps we would not give brown bread to all sorts of sick people, but it is very nice to have on occasion. Take a good sharp doughnut cutter and cut out the rounds, put a white center into the brown bread and a brown center into the white bread, and it makes a very dainty and attractive sandwich.

One thing we want to remember in cooking, and that is that all starchy foods should be thoroughly cooked, never allowing anything that has flour or corn starch in it to be under cooked. Starch that is uncooked is very unwholesome, causes acidity of the stomach and is an entirely wrong food to give a sick person.

When you are cooking for anybody, it makes no difference if it is an invalid or a well person, the seasoning of the dish is a very important thing. It should be thoroughly seasoned, taste it often and see that it is well seasoned before you serve it, and have it hot. All hot things

should be hot and cold dishes cold. Ruskin says, "Much tasting means no wasting." I suppose he means that if we taste our food when it is being cooked it will be well seasoned and our family will eat it all. The right seasoning in cookery is one of the arts that we do not consider enough. A little touch of this and a little dash of that makes a dish very appetizing and if that little seasoning is left out, perhaps you will have marred a very dainty dish.

All kinds of bread can be used for these sandwiches and you can use an ordinary doughnut cutter and get the two cuts at the same time

Now, do not think because the crusts have been cut off from the bread that they need to be wasted. There should be nothing of any of this material wasted, because they can all be used for crumbs and that brown bread is delicious for crust coffee. If toasted real brown in the oven it makes a very delicious crust coffee.

You see the delicate brown the little croustade is. You can toast it until it is a nice brown all over, and if you want it to be very attractive dip the top of it in beaten egg and then dip the moistened top in parsley that has been minced. It gives a pretty, fringe-like top to the croustade. The parsley is minced by holding it tightly in the fingers and mincing it with a sharp knife. This is to be put on very lightly, and then when it is filled with chicken you have to be very careful not to disturb the fringe that you have arranged around your croustade. I am sorry I did not put a small piece of onion with this chicken when I was cooking it, I am sure it would have a very much better flavor.

I have some chicken broth that I am going to prepare and I think there is going to be enough so you can all have a taste of chicken broth. We will strain it, so as to be sure that all of the bones and pieces of meat have been removed. Then we will add a very little tapioca. You can cook it in boiling water and have it already cooked. I put a half a cup of tapioca in boiling water and cooked it. You can see what a full cupful it makes. It gives bulk to your soup; it is not necessary to put it in unless you want to, but it adds to the soup.

This bread, of course, would be better served after it is thoroughly cooled, but you can see it has risen almost double its bulk.

Question—Can you got a strainer like that at the ten-cent store?

Miss Maxwell—Yes, you can get one just like this at the ten-cent store. They are very nice, you can put them over a large sized dish.

When you add egg to the hot soup, mix it with cold cream or milk, or whatever you are using for your soup, and see that the egg is thoroughly mixed before you pour the hot soup on it, otherwise you will have a curdled soup. A little bit of onion salt or a little bit of celery salt cooked with the chicken when it is cooked will add flavor to the broth; it makes a very delicious, wholesome and nutritious soup served with the egg, then a little sprinkling of parsley over the top of the dish will add to its appearance. Cut it very fine and make it look like moss.

Now I think if the ladies will pass the spoons we will have the soup served. The creamed chicken will be here, what there is of it that was not put into the croustade, and you can taste of it after the lesson is over.

The custards are done and you notice the consistency of them, they are very delicate, they would not mold because there is not egg enough in them to mold, but they make a very delicious dish served just as they are or with a little caramel sauce or whipped cream.

We have the tray arranged as we would like it for a sick person.

We will break this bran bread up in a few pieces and let everybody have a small portion, so you can get an idea of the flavor of it.

When you are serving a tray for the sick, have a small bouquet or a flower to lay on the tray, if you do not want to use a vase. It will brighten up a tray and make it so much more attractive for the sick person.

I do not know whether you all saw this little vegetable slicer, which is so useful in the home for slicing all kinds of vegetables, slicing them in shoestring or lattice form, which makes a very nice way of serving French fried potatoes or potatoes when you want to have a uniform piece for creamed dishes. I got this at the ten-cent store too.

This closes the lesson for the afternoon. I would like to have you look at this tray and remember when you are placing one not to have it crowded quite so much as this, so there will be room for the different dishes.

THIRD SESSION

Saturday Afternoon, March 13, 1915

The meeting was called to order by Mrs. Mary D. Bradford, City Superintendent of Schools, of Kenosha, who introduced Miss Elizabeth B. Kelley, of Madison, who gave an address upon "The Farm Home."

THE FARM HOME

Miss Elizabeth B. Kelley, Madison

The keen interest in the work of Miss Breese and Miss Maxwell shows how eager women are to improve in methods of housekeeping and the attendance this afternoon is substantial proof that the material side of the home is not the only side that is attractive. My talk on the building of the farm home naturally follows Miss Marlatt's talk on "The Rights of the Child." There are only two men here this afternoon. I hope at our next "Round-up," when subjects of the home and children are discussed, there will be as many men as women present. Should men not be interested in the questions discussed here today? In the questions of making the home and rearing the children?

For years the Colleges of Agriculture have been sending out plans for farm buildings and instruction for the raising of better live stock and better farm products, but until very recently nothing has been done for the farm home. When I have asked why plans for houses and for easy methods of doing housework, etc., were not sent out for the woman, I was sometimes told to look at the houses in Wisconsin, every one of them had bathrooms, power washers, running water, etc., but more frequently the answer was: "We must first make the farm pay, then the house will be taken care of." In reply to the first answer I will say that there are many farm homes in Wisconsin equipped

A well kept lawn and trees add to the beauty and comfort of the farm home.

as well as the most up-to-date city home, but there are many others costing as high as $6,000 or $7,000 that only the size and the outside show the prosperity of the owner. I have frequently seen homes of this kind where there was not even running water in the kitchen. These are generally the homes where the people have endured every privation, waiting for prosperity to come. Material prosperity found them bankrupt in health and with no will to have an up-to-date, modern home. If the mind has been for thirty or forty years centered on the acquisition of money, we cannot expect when it is acquired that we will see in it only the means of purchasing those things that help to make life easier. The dollars themselves have come to be the biggest things, and we are not willing to part with them, so when the new house is built, frequently the modern conveniences are left out for two reasons. The cost seems out of proportion to the return in comfort and mother thinks if she has gotten along with the old order thus far in her life she can get along for the remaining years.

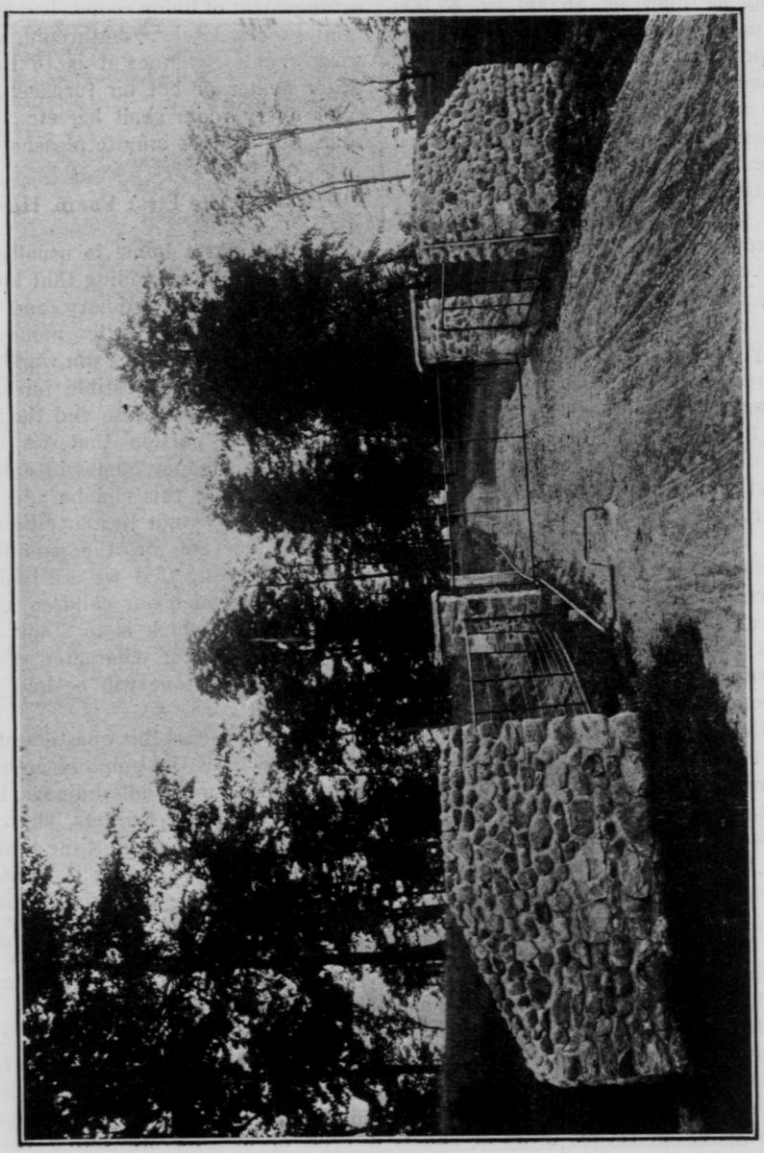
In the beginning it may be necessary to get along without some of the conveniences we need (we all must help to make the farm pay), but we must keep our vision of our farm home where some day we shall have all the city conveniences and all the pure, open, joyous life of the country. No home that endures and expresses the individuality of the owner was ever built in six months or a year. It takes years to decide on a site, whether it is to cap the top of the hill or nestle down at its foot; whether it is to be "on the side of the road where the feet of men pass by," or tucked away in some secluded nook; whether the best view is to be from the kitchen window where mother will see it oftenest, or from the broad front porch; to decide on what material we can afford; to decide the arrangement of living rooms, bed rooms, dining room, kitchen, bathroom, men's wash rooms; whether it is to be hot water heater or hot air furnace; what color every room shall be, etc., takes time, but it gives infinite pleasure.

Planning the First Farm Home

The first farm home is usually put up with the understanding that later it will be used as a granary and consequently just as little money as possible is put into it. I am wondering if it would not be possible for us to plan for the whole house and then put up only that portion that we need. Later, as the money comes in and the family increases, this can be added to in such a way as not to mar either the present structure or the completed whole. Knowing that we are building the home in which our children are to be reared and which is to stand as a visible sign of the character of the builders, every stone will be laid with the greatest care.

We might discuss this question of the farm home from the point of architecture, building material, drainage, location as to railroads, markets, churches, schools, etc., but with my time limited, I shall endeavor to discuss it from the point of the dwelling place of the family and its influence on their lives.

We are constantly hearing this cry, "Keep the boys and girls on the farm." I feel that the home, more than any other one factor in country life, is responsible for the exodus of the farm folk to the cities. Fortunately, here in American we are beginning to deve op a type of architecture suited to he country. It is the exceptional country home now that is built on the lines of the tall house designed to stand on the



An attractive entrance has a friendly look

narrow city lot and match hundreds of its kind. A house to be beautiful must first fit into the landscape. If it is to crown a hill, it must seem to cap it; the lines of the roof must be in harmony with the lines of the earth. If it is to be on the open plain, it must spread out spaciously to harmonize with the broad expanse of the view. Think of what a lesson this sense of fitness will teach, not only the family, but every passer by.

Next, our house must be honest—to our bank account, honest in the materials used. If we cannot afford stone, let us have cement, but let it show cement, not cement made to resemble cut stone block If we can only afford common pine, let us make the best of our common pine, not try to paint it up to look like white pine or mahogany. Nothing that is a sham ever lasts or gives lasting pleasure. When I go into a house that is all sham, I expect to find the people like their houses. We cannot live all our lives surrounded by pretenses and develop sturdy, honest characters. Let us encourage simplicity in our homes and in our lives. Meaningless ornaments, like meaningless words, give us a feeling of weariness and confusion.

Mother's Workshop

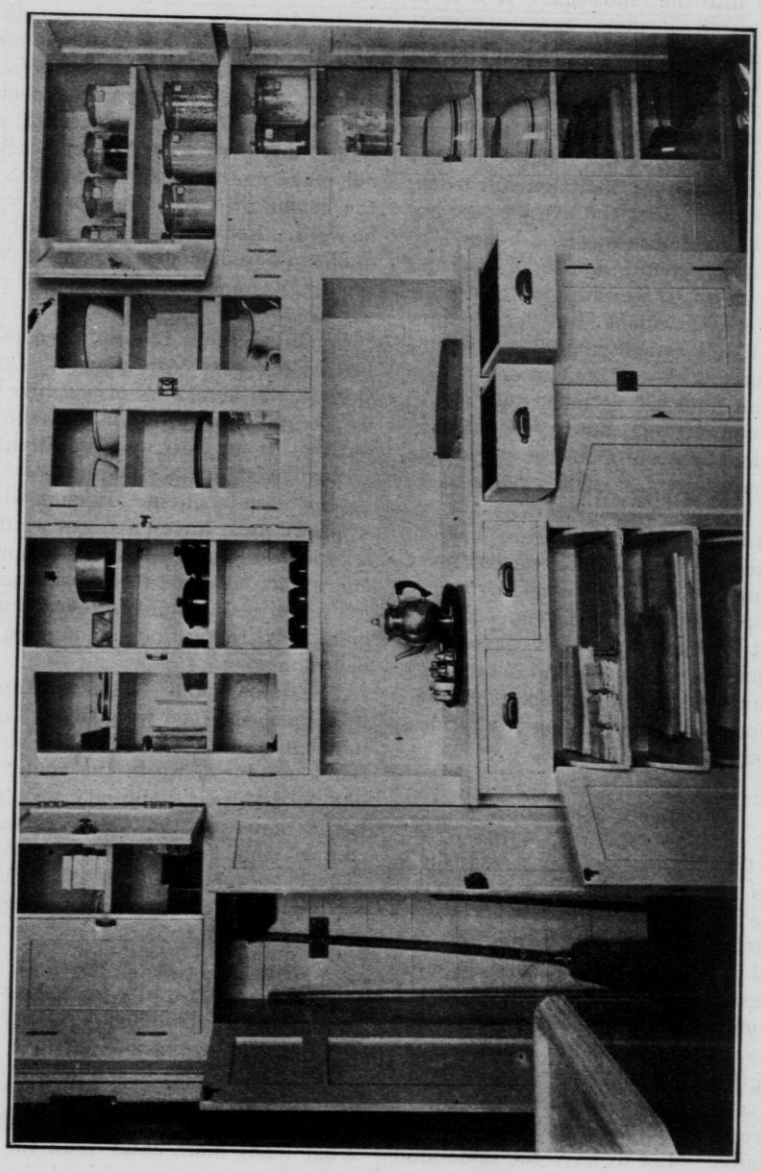
In the kitchen—mother's workshop, let us put first running water, every device to save her time and health. We hear constantly, "Do not rob the soil of its fertility, do not hand down to the next generation a farm impoverished by your bad management." I want to say, "Do not rob the home of the strength and health of the mother; do not send into the next generation children impoverished physically and mentally.' Let us have the same kind of a gasoline engine to run the washing machine, to pump the water, to grind the sausage meat, as cuts the feeds, cleans out the stalls, carries the feeds in the barns. Let there be a dumb waiter to carry up the heavy things from the cellar. Let there be plenty of closet and shelf room, right in the kitchen, not in a pantry twenty feet off. Adjust the working surfaces of sink, table, stove, to suit mother's height, not make mother bend her back to suit the height the carpenter *thought* would be right. Let the floor be covered with linoleum or some covering that gives to the tread, so when night comes there will be no weary, aching feet.

I shall pass over the dining room and bed rooms with only a word. Let us sleep in the same pure atmosphere that we breath all day; let us not shut up our bed rooms as if we were afraid the blessed sunshine and the pure air might get a chance to slip in. Even in winter, when we must have on storm windows, let's have them so they can be opened. One thousand cubic feet of air space is the prescribed amount for every human being. Is there that amount in our bed rooms?

The dining room. I like to stop and talk about the food we give our family, but that is another topic, but let me say, thank goodness, we in the country do not need this as some city people do. Let us have our table large enough so that we can easily make room for the unexpected guest, and let us ask him to sup with us, if we have only bread and milk. Hospitality is the joy of a home.

The Living Room the Keynote of the Home

The living room should be given all the space we can afford. Here, if possible, should be the open fireplace. What lends more cheer than the open fire? The furniture should be substantial and usable. Here is the place



Suitable Shelves for "Mother's Workshop"

where the family are to gather for recreation and study. Everything about the room should be conducive to the development of friendly, harmonious relationship. Here are the books, the magazines for young and old; here is the piano or the victrola, with records, some serious, some gay, some light, some classical; here are the pictures, copies of the great masters, that are going to be silent uplifters of our souls; here, in truth, are going to be gathered the best of the vast accumulations of the ages that are going to enrich the lives of our children and make the farm home the best, mentally, spiritually and physically to live in.

Let the houses in which we rear our children be real homes, whether they are made of logs or New Hampshire granite; let us surround our country boys and girls with all that makes for development of character; let the mother and father husband their health and strength so they may be able to enter sympathetically into the joys and sorrows of their child, into the upbuilding of their schools, their churches, their community and their state.

SELECTION OF HOUSEHOLD EQUIPMENT

Helen M. Atwater, Assistant in Nutrition, Office of Experiment Stations

[From Year Book of Department of Agriculture, 1914]

When one considers the variety of things which must be put into a house to furnish it even simply, the question of household equipment appears a complicated one. The variety is necessary because a house serves many different purposes. Considered merely in its material aspect, it is the place where the family eat and sleep and take their ease, and it is also a workshop in which a great many things are made, and each of these purposes must be recognized in furnishing it.

Considered as a workshop, it is sometimes a bakery, sometimes a clothing factory, sometimes a cleaning establishment, and so on. The list of tasks which are performed in the household is by no means as long as it was in the days when cloth was spun and candles made at home, and almost every decade sees more work removed from the home to the commercial factory. Nevertheless, a great many tasks still remain and are likely to remain in the home, for which provision must be made in furnishing it.

In equipping her home, the housekeeper should be guided by the same principles that would be followed in the selection of equipment for any other workshop, and should choose furnishings and tools which will make it possible for her to carry on her various household tasks with the least waste of time, work and materials. In other words, a house should be equipped for efficiency in carrying on housework just as carefully as a modern shoe factory is equipped for making shoes. In such a factory, lighting, heating, ventilation, sanitation, etc., are as carefully considered as the machinery, and these matters of hygiene are even more important in the home, which is not merely a workshop, but also a place in which to rest and recuperate. Since a home is even more than that, and serves also as

the material setting for the life of the family, other points must be considered which have little or nothing to do with efficiency in a factory. It is certainly as important in a home to provide for comfort and wholesome enjoyment as for cooking and cleaning, eating and sleeping.

Planning Before Buying

Sometimes when a woman takes up the problem of house furnishing, she has to buy everything new from the beginning, and sometimes she already has a more or less complete equipment which she hopes to improve gradually, that is (to continue the comparison with the factory), she has to do with a "going concern." In either case she must study the situation carefully and make sure of what she most wants before she begins to buy. It is impossible for her to select to the best advantage unless she has all the principal needs in mind to begin with and goes at the task systematically. Haphazard buying is always extravagant and nowhere more so than in connection with house furnishings. There is such a bewildering variety of things to be used in a house that, unless the housekeeper keeps a clear idea of what she wishes most and plans her buying carefully, she will find herself getting things which, though useful, are not the most useful, or are not the best adapted to her particular needs. Two dining tables may be equally good of their kind, but one may be much better adapted to a particular house and family than the other. If it is a case of furnishing a house entirely with new things, it is wise to go slowly and learn from experience what will suit best the special conditions, even if this prevents putting the whole house completely in order at once. For example, it might be well to see how one's belongings fit into the built-in cupboards before deciding whether to buy a sideboard or a china closet. If only a limited amount of money can be spent at one time, it would probably be better to leave an extra bedroom unfurnished or do without an extra rug than to "skimp" on the quality of the necessary things. When it is merely a question of renewing or increasing old equipment, the thoughtful housekeeper considers the value of each article in connection with what she has or expects to have as well as by itself. If she has no convenient cupboard for her ironing supplies, an ironing table of the settle type with the box under the seat may be more serviceable than the ordinary kind; and if she expects to get a new set of table dishes soon and can then use some of the old ones in the kitchen, it is poor policy to stock up unnecessarily with kitchen ware.

In order to buy in accordance with a definite plan, she must often steel herself against the allurements of bargain counters or of beguiling salesmen, not because the wares they offer are not intrinsically good or cheap, but because in spite of being good or cheap they may not be what she really needs most. It is poor economy for her to buy sheets which will not be used for several years instead of napkins which are needed at once, simply because the sheets happen to be a few cents cheaper than usual, or to be persuaded to take an omlet pan when what she had meant to get next was a new coffee pot.

Choosing for Necessity, Convenience and Pleasure

In equipping any workshop, whether it be a factory, a dairy or a house, the two chief elements which govern choice are necessity and convenience. Very often one article answers both these demands, and if possible those should be

chosen which not only fill a need but fill it in a way which is economical of labor and material. For example, a kitchen stove is usually considered a necessity, not a convenience, but in selecting it a model which is convenient to work at and to care for is what a good housekeeper looks for. In choosing labor-saving devices, it is a good rule to give the preference to those which save heavy work and which lighten tasks most frequently performed. A machine for washing clothes saves more bodily energy than a patent roasting pan. and a meat chopper is used more often than a device for stoning cherries.

The third element of choice in the case of many articles of household equipment is that of pleasure or beauty. As has already been pointed out, this marks the difference between furnishing the house and furnishing other workshops. Whereas the output of a factory consists of the particular line of goods which it makes, and the output of a dairy, of milk, butter and cheese, the output of a home includes not only such material things as food and clothing and even general comfort, but also such immaterial things as the mental, moral and spiritual welfare of its occupants. We sometimes assume that these less material factors of home life are independent of the furniture and equipment of the house and can be trusted to take care of themselves if they are not actually discouraged. But if a family really wishes its home to be more than a place to eat and sleep in, it ought to plan as deliberately for increasing the production of comfortable and profitable leisure, pleasant social intercourse and an intelligent interest in things outside of its material needs as for mere food, clothing and shelter. Fortunately, this does not always mean buying more costly furniture and more elaborate equipment, but rather choosing things which not only are necessary and convenient, but which at the same time give pleasure. Since we must have dishes to eat from, we might as well have them in attractive shapes and patterns and color, especially as good looking ones do not necessarily cost more than others. The more any article that is used in the home includes all three elements of necessity, convenience and beauty, the more efficiently will it serve its purpose.

Fitting Equipment to Particular Conditions

It is impossible to lay down hard and fast rules as to exactly what articles or materials are best for use in the household, because conditions vary so greatly. No two homes are exactly alike as regards house and occupants and income, and what is suitable and economical in one may be inconvenient and extravagant in another. In a new house stained and varnished woodwork may be easiest to take care of, but when the woodwork is old and worn paint may make a more satisfactory finish; in fact, if the wood has already been painted, it may be difficult to use any other finish. It would be as poor economy for a family in easy circumstances to hesitate at the price of such household improvements as a screened porch or a good kitchen floor as it would be for people who can hardly pay for keeping their everyday necessary equipment in proper condition to buy a charcoal broiler for steaks and chops or a collection of expensive brushes intended for cleaning special kinds of furniture.

The housekeeper must plan her household equipment with reference to the amount of labor there will be to run it. If she is to do everything herself, she must not only arrange her work and her implements so as to avoid all

unnecessary work, but she must also avoid many other things, such as bric-a-brac which is difficult to dust, polished surfaces which have to be frequently rubbed, and elaborate linen which it takes much time and skill to launder. On the other hand, if she does the work herself, she may be justified in buying things of better quality than if they were to be used by a careless helper.

The question of space must also be considered. In a large house with plenty of storage room, one can perhaps afford to have special equipment for this, that or the other kind of work, but where space is strictly limited one must concentrate. For example, one must choose one's pots and pans so that each will serve several purposes, and arrange the closets and cupboards so that all the space in them will be used to the best advantage. It is questionable whether unnecessary utensils and scattered, half-filled closets are ever worth the extra work they occasion, but where space is limited it is certainly poor economy to keep superfluous things about.

What Makes a Well-Furnished House

The well-furnished house is not one which is cluttered up with things which may be useful or attractive in themselves, but which nobody uses or enjoys, but one which contains those things which are necessary for convenience in working and for comfort and satisfaction in living, and no more. It need not on that account be strictly utilitarian; on the contrary, if it were well planned, perfectly convenient and perfectly comfortable, it would also be beautiful, because beauty does not lie so much in the ornaments which are put on a thing as in the perfect adaptation of that thing to the use for which it is intended. In a collection of historical furniture, the most beautiful pieces of each period are not those which are most elaborately decorated, but those in which material and shape and workmanship best answer the needs they were designed to meet. If there is ornament, it does not interfere with usefulness or comfort, and is so applied that it brings out the inherent beauty of the lines and material. The reason why some of the plain old tables and chairs which we have inherited from earlier times look better than many of the elaborate and showy ones which have just left the factory is that their makers were more interested to make them strong and comfortable than simply to produce novelties, the chief merit of which is to catch the eye. The same principle holds in all household furnishings—in fact, in everything. If a woman tries sincerely to arrange her house according to this idea of adaptation to use, she need not worry about its being "pretty." She may not be rich enough to have expensive things, but if she uses harmonious colors for her walls, floors and upholstery, and chooses furniture for its good design and comfort rather than for its ornamentation, her house can hardly fail to be restful and attractive.

It sometimes seems difficult for a person who cannot patronize expensive shops to find furniture with strong and yet graceful lines, wall papers and upholstery materials in simple designs and good, soft colors, or china and glass with plain but good shapes and decorations. Nevertheless, they do come in inexpensive grades, and the more people demand them, the more dealers will carry them. Undoubtedly it is easier to take what is offered and to be satisfied with the assurance that

"it is positively the latest," even when one's own better judgment says that it is neither suitable nor beautiful. If women would insist on getting what they want instead of what the dealer may want to sell, their houses would be better furnished, and they would do much toward improving public taste.

It is possible to carry the idea of simplicity too far. For example, a chair is not necessarily beautiful, comfortable or easy to take care of merely because it is made up of straight lines. On the contrary, such severely plain furniture is often both awkward looking and uncomfortable. Too many useless ornaments in a room undoubtedly give it an overcrowded, restless look, and have a further disadvantage in making unnecessary work in cleaning. On the other hand, no ornaments at all would make it seem bare and unfriendly. The sensible woman steers between the two extremes and uses a few ornaments, chosen because they are useful things in especially beautiful form, or because they represent the artistic interests of the family, or have the intangible but none the less real value of personal association. A usable vase of handsome glass or pottery, a good-looking box for matches, a graceful lamp with a shape which not only throws a good light but is beautiful in shape, color and design by day as well as by night, a candlestick which is a family heirloom, and a few good photographs or prints of famous places or pictures in which the family is interested are examples of ornaments which are suitable, because there is some reason for using them.

Economy in Cost and Care

When it comes to the point of deciding between several forms of the same article, price is perhaps the first thing the majority of us must consider. So far as possible, the housekeeper should have a definite idea of how much she ought to pay for each part of her equipment and not let her choice run much above or below that. It is not true economy to pay more than one can afford for a thing, no matter how useful or how desirable it may be. On the other hand, the cheapest is not always the most economical. Other factors besides price enter into consideration, foremost among them being suitability and durability or wearing quality. It is evident that if dish-toweling at 18 cents a yard wears twice as long as that at 12 cents, the more expensive is cheaper in the end. Very often the wearing quality influences not only the price but also the convenience of an article. In the case of wall paper, curtains, furniture coverings, and other things on which considerable labor must be spent before they go into use, it is a satisfaction to have them durable, so that the full value of the work as well as of the materials may be obtained. Moreover, after one has put care and thought into the selection of such furnishings and they prove successful in use, it is discouraging to have them wear out quickly and leave the whole task to be done over again. Some families get tired of their belongings so soon that they prefer them not to be very durable, and argue that two cheap things give more pleasure than one expensive one. This is evidently a question of taste, but it is worth noting in this connection that in household furnishings styles change much less rapidly in articles of good quality than in the cheaper grades, and that among people of cultivated taste whose means allow them to choose what they like, furnishings are kept in use for many years and are admired not for their novelty or fashion but for their intrinsic beauty. Moreover, in such things as furniture, upholstery materials, linens,

etc., durability and beauty frequently go together, because both depend upon good quality in the materials, and workmanship, and if one gets good-looking things, they often turn out to be durable. The size and circumstances of a family sometimes change faster than its good furniture wears out, and unless this possibility is borne in mind when the furniture is bought, the family may find itself stocked with things which still have a great deal of wear in them but are not suited to existing circumstances.

Another important element in the choice of furnishings is the amount of labor required to care for them and keep them in good condition. There is a greater range of choice here than many women realize, and it is a question which is worth more consideration than is often given to it. Rough surfaces like those on cheap earthenware, and worn, rough and unpainted wood catch and hold dirt and are much harder to clean than smooth ones. Carving on furniture, elaborate castings on stoves, elaborate metal fixtures, fancy-shaped handles on dishes, etc., are things which make cleaning unnecessarily difficult. Polished metal usually takes much rubbing to keep it in condition, and for this reason dull finishes are often preferred on door handles, etc. Sharp angles in moldings also collect dirt and are hard to clean. Rounded moldings where the wall and floor meet have been introduced in hospitals and might well be imitated in private houses, as they make it much easier to remove dirt.

General and Permanent Equipment

The articles which go to furnish a house are so many and so various that it is impossible to enumerate them in a brief article, or even to mention all of the more important groups. All that can be done is to discuss some of the latter in a general way which will show how to apply the principles of choice which have already been described.

Some of the articles of household equipment are installed permanently, and some of them are changeable. Many of the permanent ones are built in when the house is constructed and come within the province of the builders. Nevertheless, the woman for whom the house is being built, or who is choosing one already built, has a right to pass judgment on them, since it is she who uses them and keeps them in order.

If the house is provided with a water and drainage system, she should try to get fixtures which are convenient to use and easy to care for. Open plumbing is now generally accepted as more sanitary than inclosed and is not harder to take care of, particularly if the pipes are smooth, symmetrically arranged, and so placed that they are easy to get at. Porcelain-lined fixtures are in common use in kitchens and bathrooms now, and if the interior surface is smooth and unbroken, they are easy to clean, but if the enamel has rough spots in it these will hold the dirt most obstinately. If possible, the kitchen sink, washtubs, bathtub, closet and washbasin should be so placed that it is easy to clean around and behind them.

There is considerable choice of material for kitchen sinks, each having its disadvantages and advantages. For example, the porcelain sinks show at once whether they are really clean or not and can be kept tidy easily, provided they are smooth, but they are rather expensive; enamel is easy to clean and not expensive but chips easily; soapstone is durable, but difficult to clean; iron is also durable and not especially hard to clean, but it does not show dirt and so invites carelessness. Whatever material is chosen, the sink should be

placed where the light is good and should be set at the height most convenient for working. This question of height also applies to work tables, washtubs, etc., and will be discussed later.

If a house has neither plumbing nor a drainage system, it should at least have a kitchen sink of good size and height and, if possible, made of material which can be kept clean easily. A suitable pipe should be provided for carrying away waste water, either to a bucket from which it may be emptied or to a drain outside. The latter must be constructed so that it will be sanitary and should not be merely an open trench, which is not only disagreeable but which often becomes dangerous to health.

If the house is heated by stoves, plain, substantial ones should be selected. It is difficult to see why garlands of leaves and flowers in polished metal or bronze dogs should ever be considered appropriate decorations for stoves, yet such designs have often been chosen in preference to models which owe their good looks to good proportions and construction. Not only can the latter be more easily kept clean, but they are more in accord with the requirements of good taste than those which are awkward in shape or laden with useless ornaments, so-called.

If the house is heated with steam or hot water, radiators should be selected which are of suitable size and shape and which have plain surfaces without raised designs to catch and hold dirt. Since their main purpose is to heat the room, their size and location depend chiefly on this, but as far as possible they should be arranged so that they will not interfere with the placing of furniture in the room and so that it will be easy to clean around and behind them.

Whatever means of lighting is used—oil, gas or electricity—simple lamps or fixtures are usually preferable, because they are easier to keep clean than fancy ones and, if they are made of good materials and good designs, are better looking than very elaborate ones. Light is often used more economically if there are several fixtures in different parts of the room, and if those are planned for in the beginning they can be obtained with little extra expense. In the room where the family sit to read and sew, a good lamp or drop-light on the table or fairly low side lights on the wall are better for the eyes than high central lights. A good light should be provided in the kitchen, especially in the places where the work is chiefly done, such as over the sink and the work table.

Screens for windows and doors are sometimes considered part of the permanent and sometimes part of the changeable equipment of a house, but in any case the house should be well supplied with them, not so much because flies and mosquitoes are disagreeable, as because they actually carry disease and are very dangerous pests. The screens which are made to fit the individual windows and do not need to be removed each time the latter are opened are undoubtedly the most convenient, but if they are too expensive, cheaper kinds can be used satisfactorily. If the ready-made, adjustable ones are chosen, care must be taken to have them fit tightly. If there are any cracks, flies and mosquitoes will find their way in but not out.

Door screens should be provided with springs so that they will be sure to close tightly. Bronze wire mesh which will not rust is perhaps the most durable material for screens. Cheaper wire carefully painted lasts fairly well and cotton netting is equally efficient as long as it is whole. It is better to have a house thoroughly screened with netting than badly screened with wire, but the net-

ting will have to be carefully watched and frequently renewed to keep it fly proof.

In cold climates, double windows are often used in winter, and soon pay for themselves by the saving in coal.

Built-in closets or cupboards are other features of permanent equipment which are most important to the housekeeper. If she has anything to do with planning her house, she should try to locate them where it takes the least possible number of steps to get at or put away their contents. A small closet, provided with shelves and drawers especially adapted to the things kept there, is more satisfactory than a larger closet poorly arranged. In planning drawers, it is well to remember that a larger number of shallow ones are usually preferable to a few deep ones, because all of the space in them can be used without piling things on top of each other. Similarly, narrow shelves, preferably not more than a foot wide, are usually more convenient than wider ones and are easier to keep clean. Many housekeepers prefer the movable kitchen cabinets to built-in cupboards for kitchen supplies, because they have a convenient place for all the necessary things and no waste space.

Woodwork and Walls

The finish of the woodwork and walls of the house is part of its permanent equipment which plays an important role in its general attractiveness and the ease with which it can be taken care of. Woodwork of the baseboards, doors, window casings, etc., should be easy to dust and wash. This means round corners and no elaborate moldings. Whether or not such surfaces should be painted or stained and varnished depends partly upon how good the wood is and partly upon personal taste. As a general rule, varnished woodwork is easier to keep in order than painted, but paint covers up poor wood better and can be used in lighter colors, a point which is often in its favor in rooms where there is insufficient light or where a "light" treatment in color and furnishings is desired. Good enamel mixed with the last coat of paint prolongs its life and makes it easier to clean.

For floors, paint is less durable and harder to clean than well-finished waxed varnish, but if the boards are old and rough it would probably be better to paint them. Carpets or mattings tacked down close around the baseboards may be warmer in winter than rugs which do not cover the whole floor, but they are less desirable, because it is so difficult to take them up and clean them. Not only must the tacks be removed from the carpet, but their larger size makes them more difficult to handle than rugs. For months they remain full of dust and dirt which flies into the air when they are walked on, and for this reason they are very insanitary. If a floor is too bad for ordinary rugs, it is better to paint it and then lay down a carpeet rug large enough to cover all but the edges than to tack a carpet over the whole floor. For the floors of kitchens, bathrooms, and passageways which must be washed frequently, some material less absorbent than wood is desirable. Cement is sometimes used for back entries, pantries, etc., but it is hard and cold under foot for the kitchen. Good, heavy linoleum is perhaps as satisfactory as anything for kitchen, laundry and bathroom, as it is comfortable under foot, easy to clean, and very durable. Oilcloth is cheaper, but not so durable. Walls may be painted with any of the good water or oil paints or covered with paper. For rooms where the walls need frequent cleaning, or where water is likely to be splashed on them, as in

kitchens and bathrooms, a paint which will not be injured by moisture or some varnished paper or other waterproof material is preferable. In other parts of the house the ordinary wall papers are most common because they can be obtained at almost any price and in a great variety of styles and colors. Fashions in wall papers vary from time to time, taste inclining sometimes toward darker tints or larger figures, sometimes toward lighter colors or inconspicuous designs. Such changes in style are not important, however, and the selection of paper suitable for the room is always more satisfactory in the long run. In wall papers, as in furniture, many of the best designs now on the market have been adapted from old ones of different periods. Tapestry effects, for example, are suggested by the real tapestries which covered the rough walls and broke the drafts in medieval houses, and some of the floral designs come from the silks and velvets with which the luxurious palaces of Italy and France were hung. These have stood the test of time because they are in accordance with the fundamental principles of decorative art. One of the reasons why the wall papers seen in so many rooms are unsatisfactory is that designs good in themselves are used in places where they do not belong. Because a bold floral design carried out in rich brocade looked well on the walls of a Venetian palace, it does not follow that a similar design imperfectly reproduced on paper would look well in a small room of a simple frame house in this country. Extreme designs are always rather difficult to adapt successfully, and it is usually safer to choose simple effects which are sure to prove satisfactory.

It is usually better to consider the wall covering of a living room as a background than as a decoration. This is especially true if pictures are hung against it. In wall papers, as in dress, inconspicuous designs and neutral colors are more satisfactory for "steady wear" than the reverse, particularly if one is limited as to cost, for "showy" material of poor quality soon reveals its cheapness.

The exposure of a room and the amount of light in it should be considered in choosing the color for the walls. It is well-known that cream, yellow and yellow-brown shades on the walls of a room with northern exposure "warm them up" and that soft greens and grays temper the light in sunnier rooms. As a rule, large, striking designs should not be used in small rooms. Stripes also should be used cautiously, especially where the rooms are high. The most satisfactory designs are often those in which the figure almost covers the background or in which the color contrast between the two is not very striking. Some of the best ones combine different tones of the same colors in the background and the figures. Figure 1 shows an example of paper with an inconspicuous design in two tones of soft brown, in contrast to Figure 2, which though well designed is unsuited to a moderate-sized room in an ordinary house on account of the strong color contrast between figures and background, and the size of the pattern, the largest flower being some twelve inches in diameter. A plain paper, such as cartridge or the various so-called "textile" or "oatmeal" papers, can be obtained in good colors and at low cost and is always safe to use. There has been a great improvement in the designs of inexpensive papers in recent years, and attractive ones can be found at almost any price.

The color of the walls usually determine the color of the other furnishings of the room, and really good and pleasing effects in house decoration depend more on such color combinations

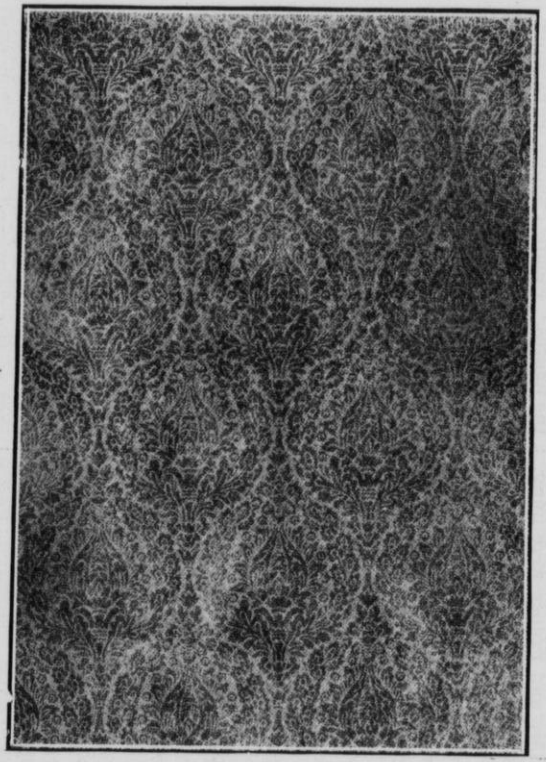


Figure 1

A good design of wall pager in two tones of the same color and with the figure covering the background

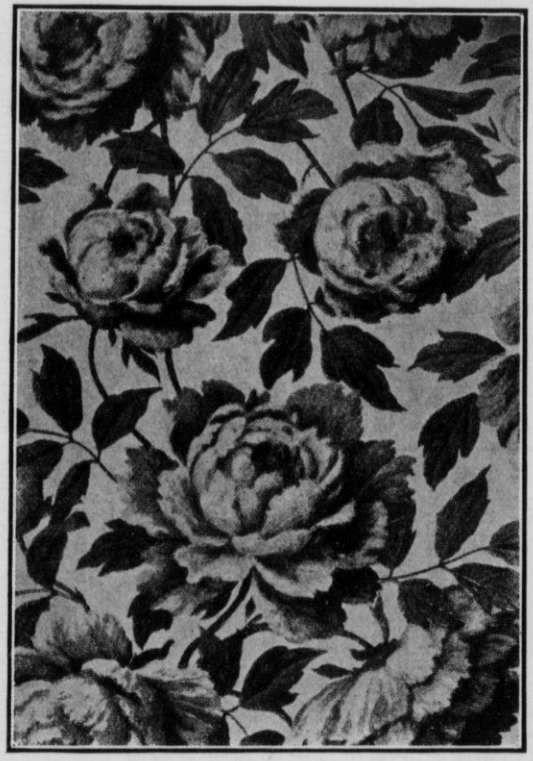


Figure 2

A striking design, good of its kind and suitable for certain types of large, specially furnished rooms, but out of place in an ordinary private house

than on any other single factor. If wall and floor coverings, curtains and upholstery all blend, the effect will be much more pleasing and harmonious to the eye than if each stands out from the others distinct and hard. A single spot of rich color against such a blended background, say, a table cover or a sofa pillow, will do more to brighten a room than brilliant colors spread indiscriminately over the walls and furniture. Just as the principal objects in one room should harmonize in color, so adjoining rooms should show in harmonious colors. A hall, for instance, should usually be in neutral tones, so that its color will not clash with the rooms opening from it.

Textiles for Household Use

Textiles of one kind or another make an important part of the changeable equipment of a house. Carpets, rugs, curtains, furniture covering, household linen, blankets, etc., all come under this heading. A general knowledge of the different fibers—cotton, wool, silk, linen, etc.—of which these materials are made, the effect and durability of different dyes, the values of the different methods of cleaning, etc., would evidently be a help to the practical housekeeper. Much has been written regarding color, design and other matters pertaining to household textiles from the standpoint of the fine arts, but many of the other questions, especially regarding durability, strength, etc., have not as yet been systematically studied. Some of those which bear most directly on everyday household processes are being investigated in this department by laboratory methods, and it is hoped that as useful results may be obtained as have been gained from the scientific investigations of food materials. In the meanwhile, general practical experience is a great help in selecting such furnishings.

As has been pointed out, tacked-down carpets and mattings mean too much work in cleaning to be recommended, and movable rugs of some kind are much to be preferred. Rugs large enough to cover the whole floor are not as easy to handle, but stay in place better than small ones. In choosing rugs, one should select those which are firmly woven and which lie flat. If they are too thin or loosely woven they will work up into wrinkles or ridges, especially if they are large. Good oriental rugs are very beautiful and wear a long time, but they are too expensive to be generally used in the majority of homes. Carpet rugs are now manufactured in a great variety of shapes, sizes, materials and designs and are very satisfactory. Some of the best are those adapted from oriental ones. Good Brussels and some of the firmer of the pile carpetings are excellent, as are also those which resemble the heavy, old-fashioned "three-ply" ingrains. Old-fashioned rag rugs and their modern imitations have an attractive, pleasing style of their own. They are especially appropriate for bedrooms and bathrooms, but are often too thin for places where there is constant passing. Matting rugs, which now come in good tones of the standard colors, often prove useful, though they are not so durable as good wool. They are particularly suitable for warm climates.

What was said of color and design in relation to wall paper applies also to carpets and rugs. Soft colors and inconspicuous figures wear better to the eye and harmonize better with the other furnishings than gaudy figures on a bright background. The rugs should tone in with the coloring of the walls and should ordinarily be darker in shade than the latter, not only because they show soil less, but also because they seem to bring the room and its furniture into their proper relations.

Window curtains serve the double purpose of regulating the light and of breaking the hard, straight lines of the casings. Window shades of Holland or similar material are more satisfactory than draperies for shutting out strong sunshine by day and securing privacy at night, but they do not soften the general light of the room as do draperies. The latter, if they come next to the glass, should be light in color and texture and should be easy to launder. If a little color is desired around the windows, the fashion of hanging straight curtains of some thicker colored material inside thin white ones of lace or muslin is an excellent one. Some housekeepers use only thin ones in summer when coolness and air are wanted, and put up the heavier, darker ones when cold weather makes the effect of warmth desirable

In choosing bed coverings, the principal thing to remember is that one wants as much warmth with as little weight as possible. For this reason wool is preferable to cotton or to wool and cotton mixed for blankets, comforters, etc. Linen sheets and pillow cases have almost disappeared from general use because of their high price. Cotton ones are, for all practical purposes, quite as satisfactory. All bed coverings should be large enough to tuck in firmly all around the mattress, a point especially to be remembered in buying ready-made sheets, which are sometimes too short for ordinary beds.

It is generally agreed that some material which can be easily laundered is the best for tablecloths, napkins, etc. Real linen is preferable to cotton or cotton and linen mixtures, because it lies flatter, does not look "mussy" so soon, does not leave lint on the clothing, and takes a better luster in laundering, As in almost all textiles, a firm weave is more desirable than a sleazy one. Provided the threads are smoothly twisted, coarse table linen is as durable as fine, but it is not as handsome. White is usually preferred to colored material, both because it stands more washing and because it shows at once whether it is clean or not. If neatness is desirable anywhere it must be at the table where we eat, and though white tablecloths mean much washing for the busy housekeeper, she should think twice before she substitutes dark-colored cloths, which may be dirty before they have to be changed "for appearance's sake."

Linen is usually considered more satisfactory than cotton for toweling, because it absorbs water fully as easily and dries more quickly. Too firm a weave or too heavy a thread is not desirable, in spite of greater durability, for these make it less absorbent. For hand towels many people prefer a rough weave like huckabuck to a smooth one like damask, not only because it is more absorbent, but also because it gives a better friction to the skin.

There is such an infinite variety of material for furniture covering that it is almost impossible to include all types in a brief discussion. Leather, wool, silk, linen, and cotton are all used. Leather is dignified looking and the good qualities are durable, but in the cheaper grades the surface tends to wear off and crack, and it is often rather stiff and uncomfortable. Silk materials are appropriate in certain places, but are too expensive for common use, except perhaps for cushion covers, hangings and possibly for the covering of a choice piece of furniture. Cotton is inexpensive and does not wear through quickly, but often it does not hold its color well and often catches dirt easily. Nevertheless it is frequently used in cretonnes, chintzes and similar printed goods and in low-priced velours, tapestries, etc. It is worth noting that mer-

Figure 3-A

Inexpensive plate with good type of decoration in simple band of color set off by gilt lines

Figure 3-B

Teapot inconvenient to clean. Note small opening at top and irregularities on handle which tend to collect and hold dirt

cerizing and some of the other new methods of treating cotton during its manufacture have improved its appearance and also its wearing qualities. Linen is occasionally used in materials similar to chintzes, but its most common use in furniture covering and draperies is in velour, a sort of heavy velvet material which is also made in cotton, but which is more durable than linen. Except for the fact that moths and buffalo beetles are so likely to damage it, wool is probably the most satisfactory fiber for upholstery. It is more durable than silk or cotton, does not catch the dirt as easily as the latter, and holds its color excellently. It is made into a great variety of materials—damasks, tapestries, plushes, etc.

The use to which the room is put influences the selection of materials in furniture coverings and draperies. Gay, light chintzes or cretonnes are appropriate for a bedroom, which one wishes to have clean and airy looking, whereas for a living room substantial looking material like velour or tapestry would be more suitable.

Furniture

In furniture itself, good quality depends on well-chosen materials, good design, and good workmanship. Wood is the most common material, but metal is sometimes substituted for beadsteads and wicker or rattan for chairs, couches, and small tables. Soft wood, especially pine, is used for cheap painted chairs, kitchen tables, etc., but harder varieties are preferable for general use. The important qualities in furniture wood are strength and beauty of grain, though color is also a consideration. Oak is probably the most common kind now used in standard grade furniture, and mahogany is always in demand for handsome pieces. Bird's-eye maple, cherry, rosewood, etc., are also occasionally seen. Black walnut is another beautiful wood for furniture, but is seldom seen in new pieces now, partly because the supply has run short and partly because it is chiefly associated in our minds with the heavy, over-ornamental style of furniture for which it was used some fifty years ago and which has now fallen into disfavor. Some of the more expensive woods are imitated by staining cheaper kinds.

The advantages of wicker furniture should not be overlooked. It is light, comfortable and durable; some of the simpler designs are very good and combine well with other kinds of furniture, especially when the wicker is stained a harmonious color.

Any piece of furniture should be and should look strong enough for the use to which it is to be put. Chairs and couches should be selected for the comfort of the persons who use them, and a living room should be provided with a sufficient variety to suit all the members of the family. As regards design, those which suggest comfort and strength should be chosen rather than "gimcracky" types, and if there is any ornamentation it should be placed where it brings out the important lines of the piece rather than seem to be put on for its own sake.

The number and size of the pieces of furniture in a room should bear some relation to the size of the room. Though crowded tables, insufficient book-shelves or too few chairs are inconvenient, having a room so full of furniture that one bumps into it at every turn is even worse.

It should not be forgotton that well distributed empty spaces add to the beauty of a house. In cities where extra space means extra cost, small, overcrowded rooms are sometimes unavoidable, but women who are so fortunate as to live in roomy country houses ought to make the most of their privileges

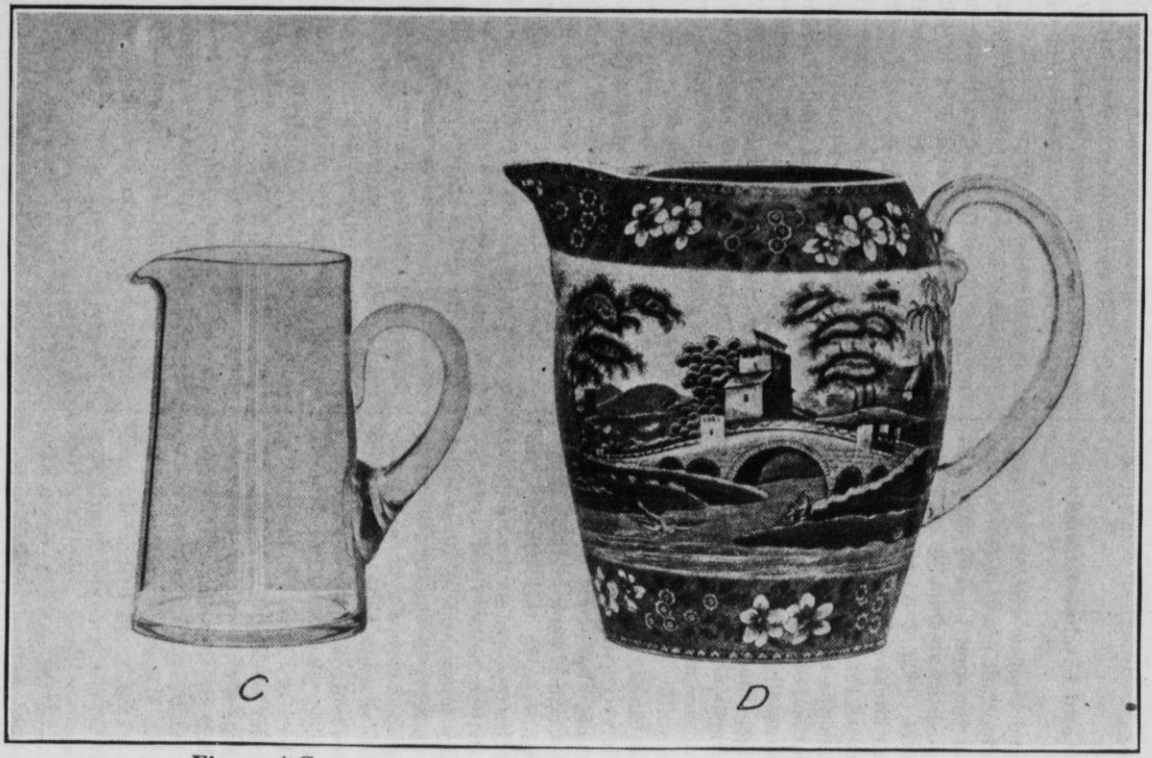


Figure 4-C

Glass pitcher, plain but good in shape and easy to clean

Figure 4-D

Old blue and white pitcher, good in shape and design and easy to clean

and give their families the pleasure of ample space, even if this means banishing to the attic a few superfluous pieces of furniture.

Table and Kitchen Utensils

Table and kitchen utensils make up another important group of furnishings. Very often the same kind of articles in different qualities are found in both sets. Table plates, (Fig. 3 A) for example, differ from kitchen plates more in their attractiveness than in any other way. Real china or porcelain, which is always translucent and of which the choice tablewares are usually made, is more suitable for occas ional than general use because it is rather fragile, but its light weight, fine color and smooth surface are undeniably beautiful. Earthenware with a good glaze usually ranks next to procelain and is very satisfactory for general use. The old blue and white Staffordshire wares, which were so highly prized in colonial days in this country, belonged to this type and similar ware (Fig. 4 D) is still to be obtained in many satisfactory designs, one of the common ones being the well-known willow pattern. Large and conspicuous designs usually become tiresome on things which are used as frequently as table dishes and it is safer to select plain white or some all-over pattern or inconspicuous bands of flowers, color or gilt. It is usually wiser to buy tableware from an open-stock design than to take the regular sets, which often include unnecessary pieces and cannot always be replaced when broken. Good, plain shapes are ordinarily to be preferred to fancy ones, because they are better adapted to their purposes and are easier to clean than those which have irregular surfaces and "nubbles" which catch and hold the dust. Pitchers, teapots and other dishes with openings so small that the hand cannot be inserted to wash and wipe them are to be avoided. Figure 3 B illustrates a teapot which is hard to clean on account of both the elaborate handle and the small opening. Kitchen crockery, like tableware, should have a good, smooth-finished glaze which will clean easily and not chip.

Glassware is to be obtained in almost any grade, from the most expensive cut glass to the coarse kind used in jelly tumblers. The choice depends chiefly on the pocketbook, but it should not be forgotten that plain glass or glass cut in a simple pattern is easier to keep shining and is usually more beautiful than any except possibly the very expensive types of elaborately ornamented glass. Figure 4 C shows a pitcher of plain, inexpensive glass and a shape which is both graceful and easy to care for.

Knives, forks and spoons are made in several kinds of metal. Silver is the most durable and always has an intrinsic value. Plated silver is made so well and so cheaply nowadays that almost every family can have at least a supply of forks and spoons. Many prefer steel-bladed to silver knives for the main course at a meal because they cut better, but they are harder to care for than silver or plated ones. Tea sets, pitchers and other serving dishes come in good designs in plated as well as solid silver. If the family happens to own handsome ones, they make appropriate side-board ornaments; but they require frequent rubbing up to keep them bright, and unless they are needed every day on the table it is better to put them away and reserve them for special occasions than to let them stand about tarnished.

There is much discussion as to the best material for cooking utensils. The truth is that no material is best for all and the work is most easily and satisfactorily done if different kinds are

chosen for different needs. Earthenware is excellent for certain purposes, as it holds the heat evenly, and baking dishes or casseroles in which the food can be served as well as cooked save dish washing. Such wares are not adapted to all kinds of cooking, however. The great heat of fat in frying, for example, especially when the hot fat spatters up against the cooler parts of the dish, is likely to crack it. Enameled ware is light in weight, easy to clean and is little affected by acids; but the cheaper grades do not always stand the heat of cooking well and soon chip. The enamel should be free from bubbles and have smooth, evenly finished edges which will not chip readily. Aluminum heats quickly and so economizes fuel, comes in very good shapes, is light to handle and very durable; it is affected by alkalies, discolors easily and is rather hard to clean. Nevertheless, since it does not rust, it is especially desirable for teakettles, double boilers, kettle covers, etc. Cast iron is still common ware for kitchen utensils, but it is being replaced in many homes by material which are lighter in weight and less expensive. Good iron pans and skillets are excellent for some kinds of cooking, however, because they heat more evenly than those of other materials and they last for generations. Iron rusts easily and is affected by acids as aluminum is by alkalies. It is because of this action of acids that iron dishes sometimes injure the color and flavor of food, and for this reason food, especially acid food, is usually not allowed to stand in them. Tin and sheet iron plated with tin are in common use in most kitchens because they are rather inexpensive, but they are not entirely satisfactory. Unless they are unusually heavy, they lose their shape quickly. In thinly plated kinds the tin wears off and the iron beneath rusts easily.

The shape of kettles has much to do with the quickness with which their contents heat. The smaller the surface which comes in contact with the heat the longer it will take the contents to become warm, and vice versa. This means that in a kettle with a broad base the contents heat more quickly than in one with a small base. This point should be especially considered where gas stoves are employed and fuel must be carefully used.

Because a thing is to be used in the kitchen is no reason why it should be ugly to look at, and if the housekeeper can find mixing bowls and kettles which are attractive in shape, color and finish, as well as convenient and easy to clean, they will give her a sense of pleasure every time they are used.

Arrangement of Kitchen Furniture

Since the kitchen and laundry are the rooms where the hardest part of the household labor is performed, the question of efficiency in their equipment is especially important. This efficiency depends not only on having the most convenient devices for doing the work, but also on having them placed where they can be most conveniently used. If a woman has to go to a distant closet or pantry every time she wants a dish or a little flour, or even if she has to cross a large room as she moves between the stove and work table, the sink and the cupboard, she will waste a considerable amount of energy in the course of a day's work. It certainly is worth her while to study her movements as she works and see if by changing the place in which some things are kept or by moving the work table or the kitchen cabinet she cannot reduce this waste of energy. As has been already suggested, the height of work tables, sinks, and laundry tubs has much to do with the

ease of working. Different kinds of work, of course, call for tables of different heights. Ironing, for example, which consists of pressing down hard, is easier on a lower table than would be chosen for general work. The height of the worker also makes a difference. From 32 to 36 inches from the ground is the usual height for general work tables, and the bottom of the sink should usually be 30 or 31 inches from the floor, but it is better for each housekeeper to test out

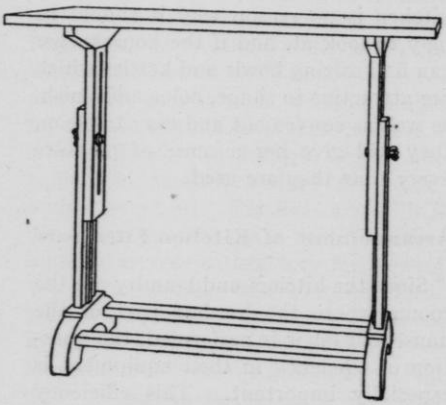


Figure 6—Table with adjustable top

the matter for herself before she buys a new table or has a new sink set up than to trust to general rules. These and other points in kitchen equipment have been discussed in a recent Farmers' Bulletin ("The Farm Kitchen as a Workshop," U. S. Dep't of Agr., Farmers' Bulletin 607.) Figure 5 shows a woman working at a table of correct height and at one which is too low, and makes clear how much discomfort and unnecessary effort comes from bending over the latter. An attempt is being made in the calorimeter laboratory of the Department of Agriculture to measure exactly how much energy is expended at tables of different heights, and it is hoped to extend the work to include the expenditure of energy during various household tasks performed under favorable and unfavorable conditions, so that questions of efficiency in housework can be placed on as accurate a basis as in the dairy or the factory. A table (see Figure 6) with an adjustable top which permits the working height to be easily changed has been made for experimental use in the calorimeter laboratory, and the same principle might be applied for use in the home.

Importance of Studying Household Questions

A generation ago such subjects might have been thought beneath the dignity of scientific investigation, but the last few years have seen a great change in this respect. The way in which our homes are run, or, in more technical terms, the science of home economics, is now in much the position that scientific agriculture was in twenty or thirty years ago. The leaders had shown that science can improve crops and some of the more progressive farmers were giving the new ideas a practical test, but many of the rank and file were still doubtful whether it was worth while. Few farmers of today, however, would care to go back to the days before experiment stations, ferilizer control, etc. The fact that the problem of making the home as efficient as possible includes so many different kinds of questions will make necessary a great deal of study along many different lines, just as agriculture has included problems as different as those of insect pests and cheese making. In solving these every intelligent farmer who has studied them on his own farm has done his part as well as the special investigators in the laboratories. In the same way, every intelligent housekeeper who studies the household problems of cooking, cleaning and

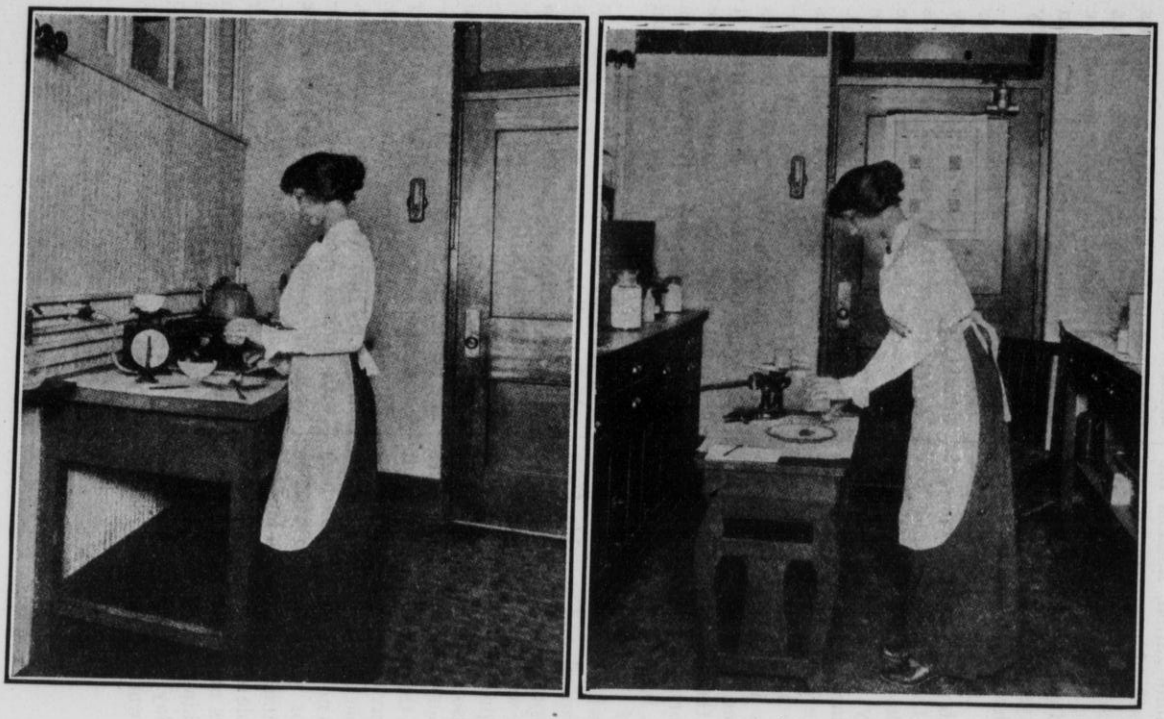


Figure 5

Work table of correct height, allowing worker to stand in easy, natural position

Table too low, requiring worker to stand in bent, uncomfortable position

furnishing and tries to solve them with the help of both practical experience and scientific information, hastens the day when household management can be as accurately planned as that of the factory and the farm.

Planning and equipping a home in an accurate and systematic way does not mean that it should not have any individuality. On the contrary, while the principles which govern a wise choice of furnishings are the same for all kinds and conditions of houses and families, the articles usually chosen in accordance with these principles would vary just as much as the house and the families for which they are intended. Whether one's house is large or small, things should be chosen to fill actual needs and to fill them in the way most economical of money, labor and materials, and, as far as possible, to give pleasure as well. If the house of the family is large, different things will seem necessary, convenient, economical and suitable from those which would answer the requirements if there were less space or fewer persons to be provided for. The size of the income also influences choice, but the fact that one cannot pay high prices does not mean that one must always put up with inconvenient or unattractive things. A table of easy working height probably costs no more than one too high or too low, nor would making wooden blocks to set under the legs of a low one be an impossible expense, yet a difference of a few inches may mean the difference between working easily and getting tired every day. Increasing the convenience of working by such simple means as moving a table or stove or rearranging the kitchen cupboards or kitchen cabinet may make a noticeable difference in the number of movements necessary for the daily work, and this saving of energy not only lessens the labor, but also prevents the irritation which an intelligent person naturally feels at wasting effort.

As far as the element of pleasure or beauty is concerned, it is the necessary things rather than special ornaments which make the greatest difference in the attractiveness of a home. Comfortable furniture of good, plain design and harmonious colors on the walls and floors are more necessary to make a house restful and pleasant than many pictures and much bric-a-brac. Fortunately, it need not cost any more to get these necessary things in satisfactory forms than in poor ones, though it may mean choosing more slowly and carefully.

If the best equipped house is the one which in all its features and furnishings are most completely suited to the needs of its occupants, the standard for every family must be adapted to such individual peculiarities as the location of the house, the amount of the family income, the size of the family and their different occupations and interests. Judged by this standard, a woman who, with limited means, has made a convenient, comfortable and attractive home out of an unpromising, inconvenient farm house has shown greater ability than one who, with the help of an expensive decorator, has obtained a good effect in a house equipped with all modern improvements.