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Wisconsin Farmers' Institutes : a hand-book of agriculture. A report of the eighteenth annual closing Farmers' Institute held at Kaukauna, March 15, 16, and 17, 1904. Bulletin No. 18 1904

Wisconsin Farmers' Institutes

Madison, Wisconsin: Democrat Printing Co., Printer, 1904

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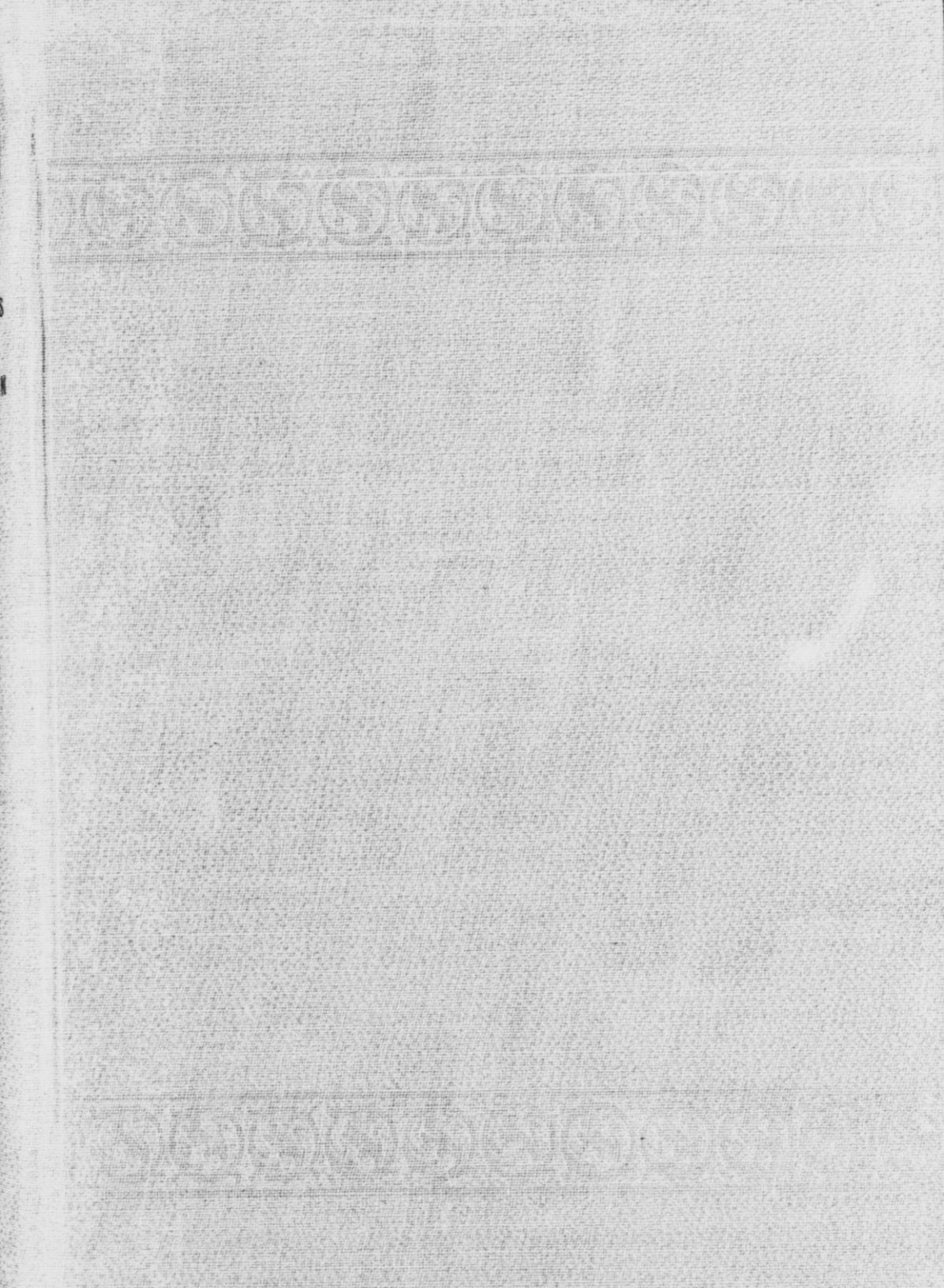
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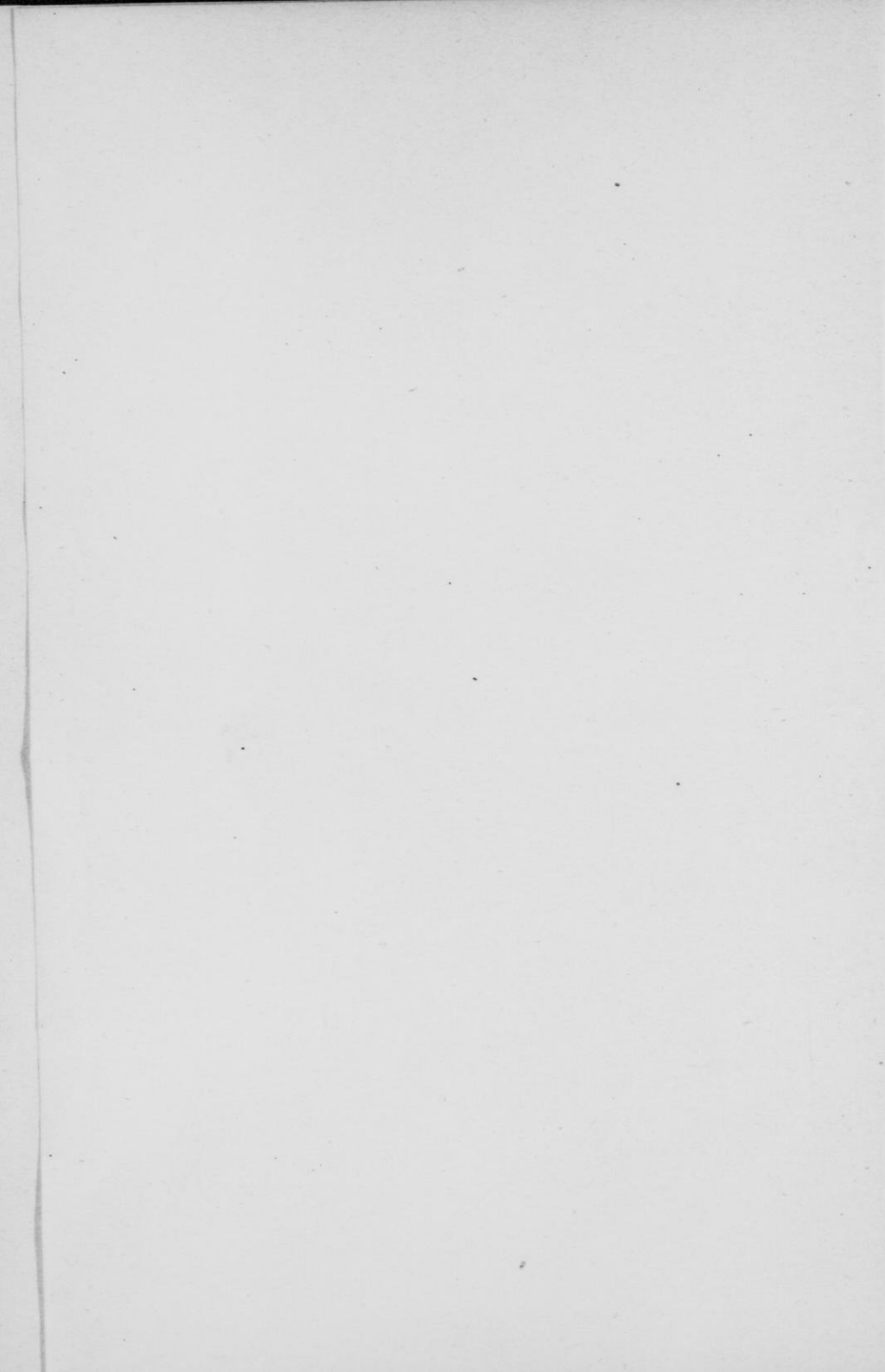
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Library
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University of Wisconsin

5.



"It is impossible to measure, or even estimate, the importance of agriculture to a people. It is the foundation upon which civilization and society rest; the basis and source of the permanent wealth of a nation. No people in history have made substantial progress in civilization, the arts and sciences, and have remained long prosperous, if they neglected agriculture. It is the most universal of all arts, the parent of manufactures and commerce, and the basis of all other industries, and without which all others must decay and perish."

—Hon. H. G. Davis, U. S. Senator from West Va.



Ex-Governor W. D. Hoard, Ft. Atkinson, President Wisconsin Board of Managers, Louisiana Purchase Exposition, St. Louis, Mo., 1904.

WISCONSIN FARMERS' INSTITUTES

A Hand Book of Agriculture.

Bulletin No. 18.
1904.

A Report of the Eighteenth Annual Closing Farmers' Institute held at Kaukauna, March 15, 16 and 17, 1904.

"I know of no pursuit in which more real and important service can be rendered to any country than by improving its agriculture and its breed of useful animals."—George Washington.

Edited by GEO. McKERROW, Superintendent



1910
1904
6

SIXTY THOUSAND COPIES ISSUED.

Stenographic Report by Mrs. A. L. Kelly, Chicago, Ill.

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MILWAUKEE, WIS.

DEMOCRAT PRINTING CO.,
PRINTER,
MADISON, WIS.

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JUL 17 1942



E. L. Aderhold, N. E. France, L. P. Martiny, Geo. Wyllie, Geo. McKerrow, R. E. Roberts, D. B. Foster, L. E. Scott, Thos. Convey,
 E. Nordman, C. E. Matteson, D. Imrie, Geo. C. Hill, Mrs. A. F. Howie, A. A. Arnold, R. J. Coo, D. Utter, H. M. Culbertson,
 W. C. Bradley, F. H. Scribner, E. C. Jacobs.

Wisconsin Farmers' Institute Workers.

LETTER OF TRANSMITTAL.

HON. GEO. F. MERRILL,

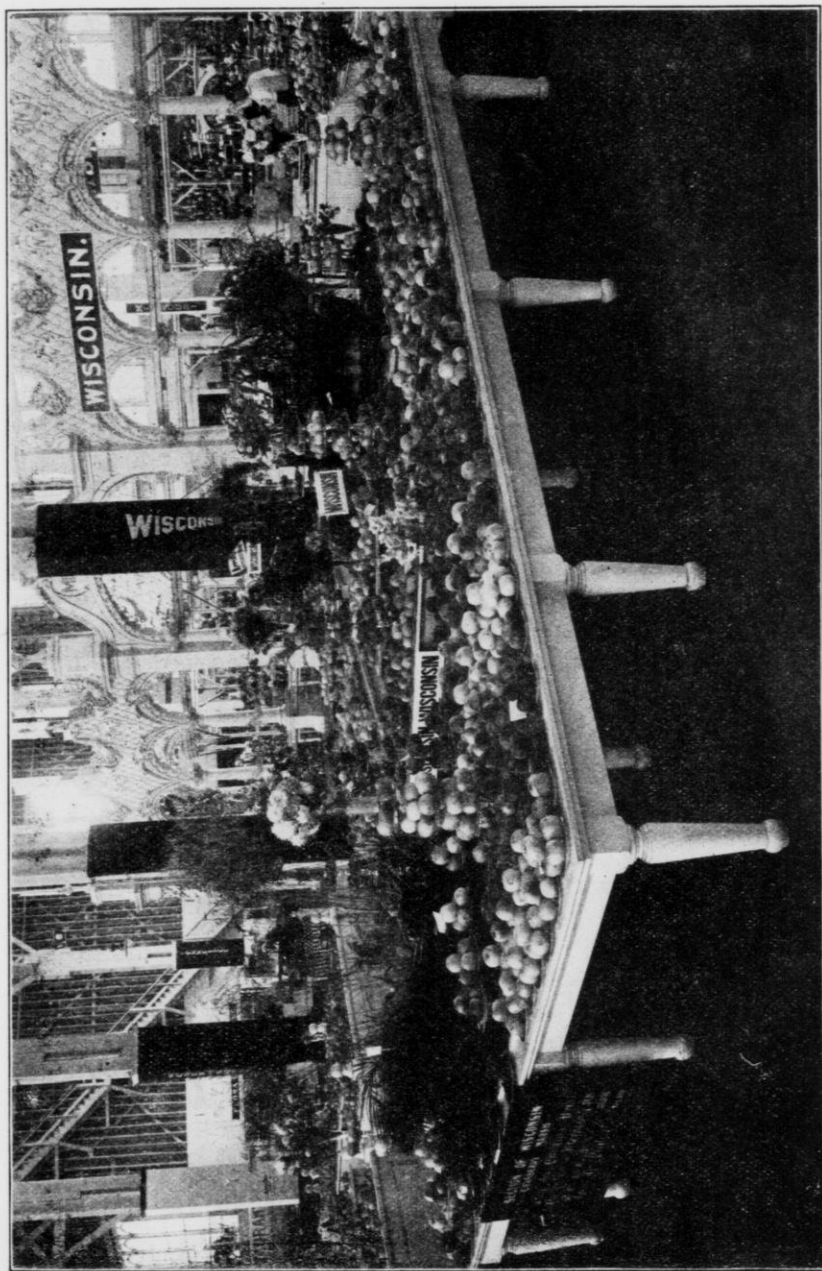
President of the Board of Regents, University of Wisconsin:

SIR:—I have the honor of herewith presenting to you Bulletin No. 18,
of Wisconsin Farmers' Institutes.

Most respectfully yours,

GEORGE MCKERROW, *Superintendent.*

MADISON, WIS., Nov. 1, 1904.



Wisconsin Horticultural Exhibit, World's Fair, St. Louis, 1904.

UNIVERSITY OF WISCONSIN.

Board of Regents.

The President of the University, *ex officio*.

The State Superintendent of Public Instruction, *ex officio*.

State at Large, William F. Vilas.

State at Large, Almah J. Frisby.

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11th District, August J. Myrland.

E. F. Riley, Secretary.

Organization.

The University embraces—

The College of Letters and Science.

The College of Mechanics and Engineering.

The College of Law.

The College of Agriculture.

The Graduate School.

The College of Mechanics and Engineering embraces—

The Civil Engineering Course.

The Sanitary Engineering Course.

The Mechanical Engineering Course.

The Electrical Engineering Course.

The Applied Electrochemistry Course.

The General Engineering Course.

The Mining Engineering Group of Electives.

The College of Letters and Science embraces—

General Courses in Liberal Arts.

Special Courses, which include:

Commerce.

Pre-Medical Studies.

Pharmacy.

Education.

Music.

Home Economics.

The College of Agriculture embraces—

The Experiment Station.

The Long Agricultural Course.

The Short Agricultural Course.

The Dairy Course.

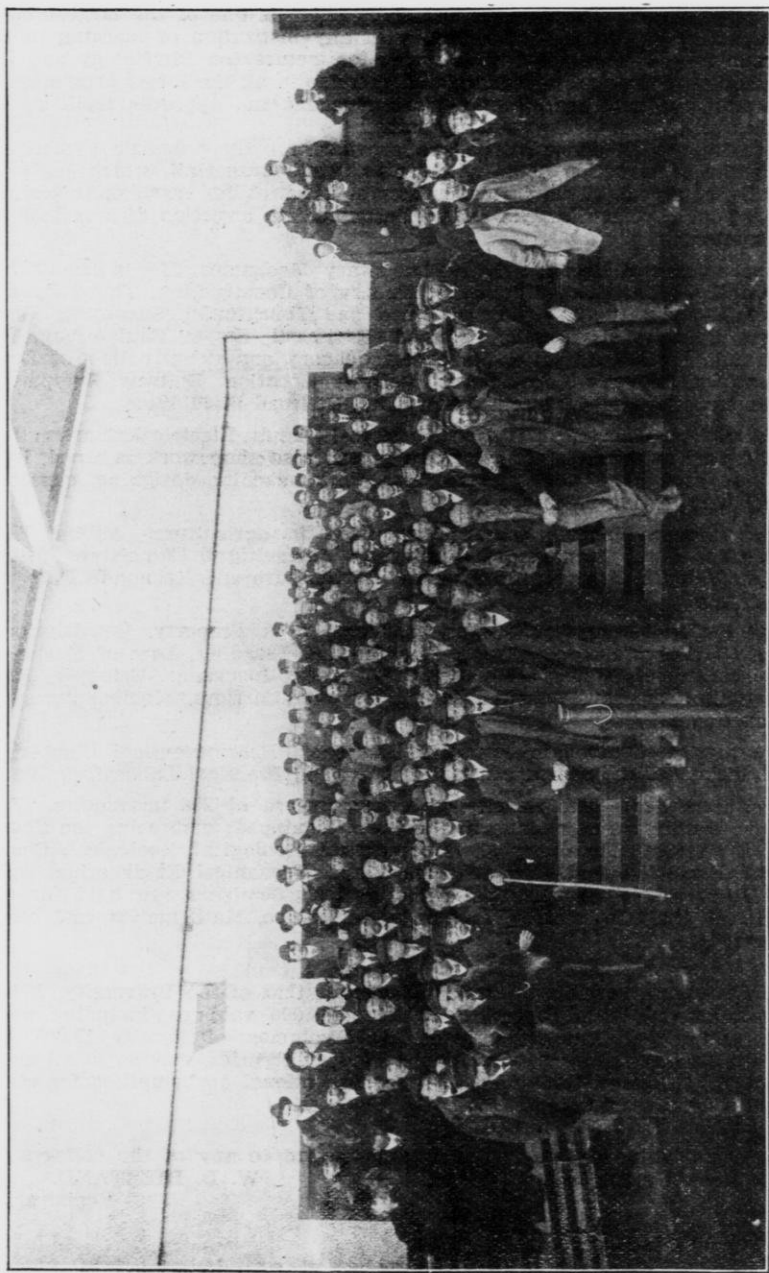
The Farmers' Institutes.

The College of Law embraces—

A Three Years' Course.

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: Eleven languages are taught, viz.: Greek, Latin, Sanscrit, Hebrew, German, Norse, French, Italian, Spanish, Anglo-Saxon and English. In Mathematics there are twenty-six special courses. Under the Sciences there are a large number of courses in each of the following: Astronomy, Physics, Chemistry, Geology, Mineralogy, Zoology, Botany, Bacteriology. In History there are thirty-eight courses; in Civics, twenty-eight; in Economics and Sociology, fifty-four; in Mental Sciences there are twenty-seven, embracing Psychology, Ethics, Aesthetics and Logic. There are sixteen courses in Pedagogics, and eight courses in Music, and two courses each in Military Drill, and Gymnastics.



Farmers' School at Ag'l College in Swine Judging Work Under Direction of N. H. Gentry, Sedalia, Mo.

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.

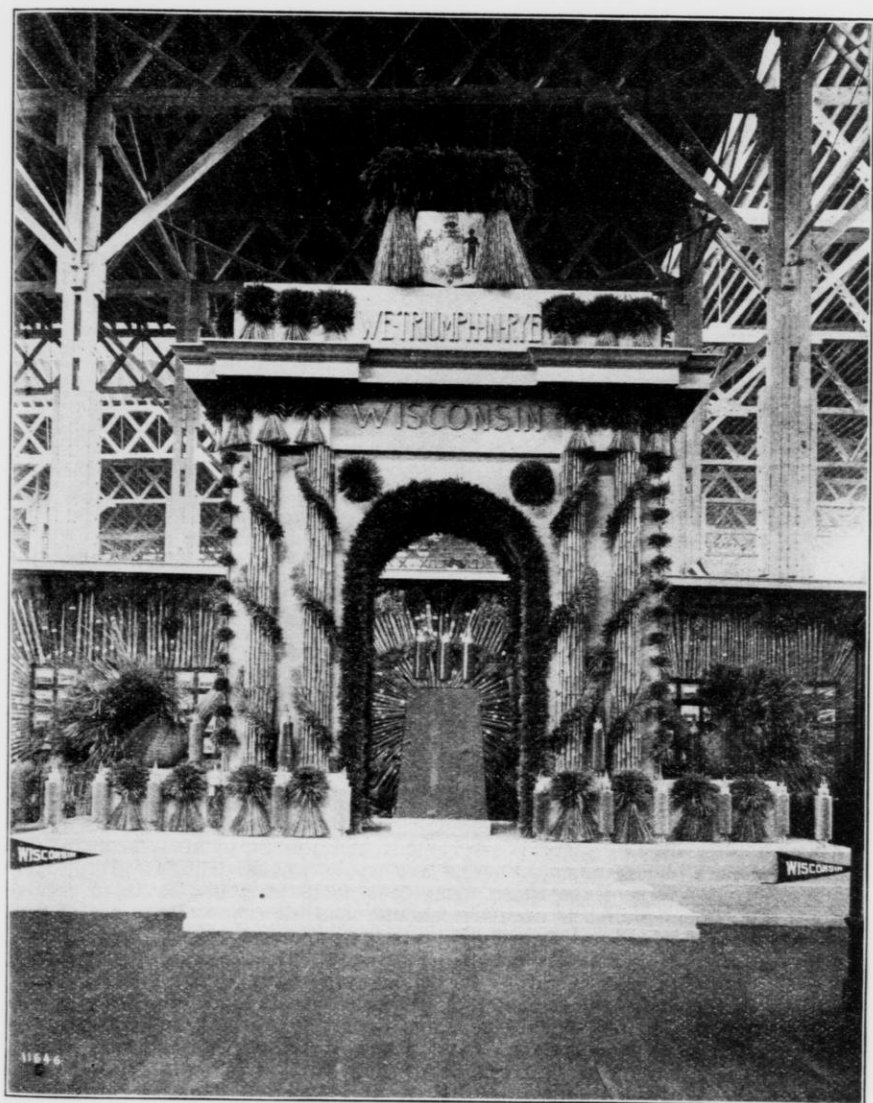
Adequate accommodations are provided for the woman's gymnastics by the construction of an addition to Chadbourne Hall, which has been fully equipped. This furnishes ample facilities for systematic courses for young women, and is under the immediate direction of a trained instructor.

- In Mechanics and Engineering:**—Elementary Mechanics, Mechanics of Material, 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, 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, Veterinary Science, Agricultural Physics, Horticulture and Economic Entomology, 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, etc.
- In Pharmacy:**—Courses in Practical Pharmacy, Pharmaceutical Chemistry, Materia Medica, Pharmaceutical Botany, and Practical Laboratory Work.
- General Facilities:**—The Faculty embraces upward of 226 instructors. 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. Seminars are held for advanced study in History, Language, Literature, Mathematics, and other branches.

The libraries accessible to students embrace that of the University, 86,000 volumes; of the State Historical Society, 248,000 volumes, including pamphlets; of the State Law Department, 38,000 volumes; of the city, 19,000 volumes, besides special professional and technical libraries, making in all more than 391,000 volumes, 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.



Wisconsin Agricultural Exhibit, World's Fair, St. Louis, 1904.

UNIVERSITY OF WISCONSIN.

COLLEGE OF AGRICULTURE.

Committee on College of Agriculture and College of Mechanics and Engineering.

H. C. TAYLOR, Chairman	Orfordville.
J. C. KERWIN	Neenah.
DWIGHT T. PARKER	Fennimore.
MAJOR C. MEAD	Plymouth.
AUGUST J. MYRLAND	Grantsburg.
PRESIDENT VAN HISE	Madison.

Officers and Instructors.

THE PRESIDENT OF THE UNIVERSITY.

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F. W. WOLL	Chemist.
E. P. SANDSTEN	Horticulturist.
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H. L. RUSSELL	Bacteriologist.
E. H. FARRINGTON	Dairy Husbandman.
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L. H. ADAMS	Farm Superintendent.
GEO. A. OLSON	Asst. in Agr. Chemistry.
J. C. BROWN	Asst. in Agr. Chemistry.
A. L. STONE	Asst. in Agronomy.
IDA HERFURTH	Executive Clerk.
MRS. S. M. BRIGGS	Librarian.

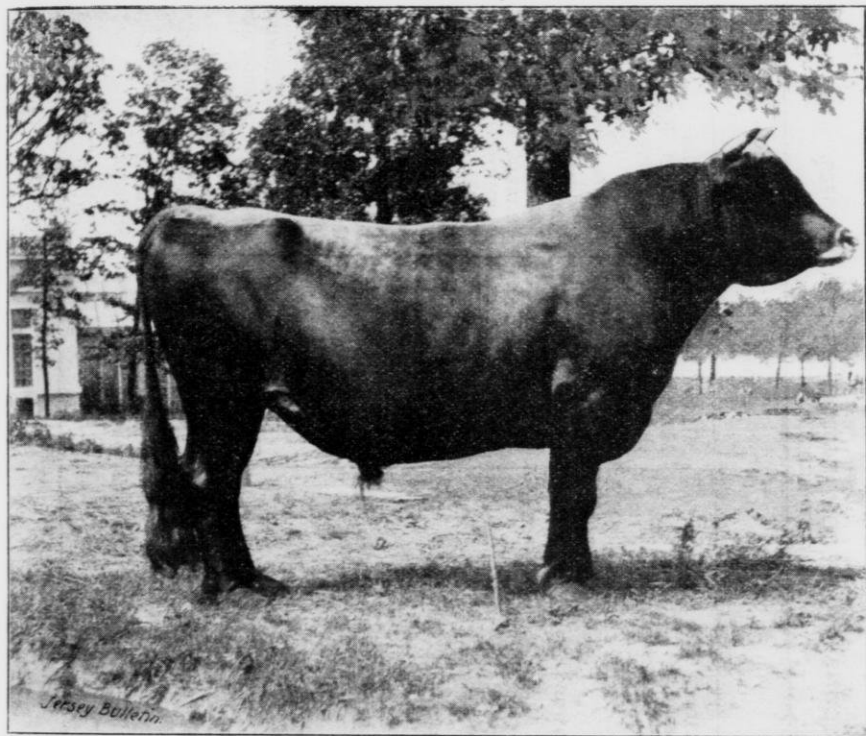
Farmers' Institutes.

GEORGE MCKERROW	Superintendent.
NELLIE E. GRIFFITHS	Clerk and Stenographer.

I. The Agricultural Experiment Station is devoted to a study of problems incident to the agricultural development of our commonwealth. It is supported jointly by the general government and the State of Wisconsin. An annual report and frequent bulletins are issued and distributed gratuitously among the farmers of the State. Any Wisconsin farmer wishing to receive these reports and bulletins regularly should send his request on a postal card addressed to **Agricultural Experiment Station, Madison, Wis.**

II. **Agricultural Instruction at the University.** The College of Agriculture offers instruction in agriculture to college graduates, a four years' course leading to the degree of Bachelor of Science, special instruction to students of mature years, instruction in the Short Course in Agriculture requiring two winter terms of fourteen weeks each, a course in Dairying lasting one term of twelve weeks, and a two-week course for busy farmers. For information concerning these courses address **W. A. Henry, Dean, College of Agriculture, Madison, Wis.**

III. **The Farmers' Institute.** Each year this practical school for the farmer holds more than a hundred two-day meetings in the farming districts of our commonwealth. These meetings are for practical instruction and conference on all matters pertaining to the farm and farm life, and at them 60,000 copies of the Farmers' Institute Bulletin are distributed annually. Any community can secure an institute upon early application to the Superintendent. For further particulars concerning this school for the farmer, write **George McKerrow, Supt., Madison, Wis.**



Merry Maiden's 3d Son, 60,515, Owned by H. C. Taylor, Orfordville, Wis.
Grand Champion, Champion and First Prize in Class for Aged
Jersey Bulls at World's Fair. St. Louis, 1904.

WISCONSIN FARMERS' INSTITUTES FOR 1904-1905.
Arranged by Counties.

County.	County.
Adams.....	Granville.
Barron.....	Cataract, Kendall.
Brown.....	Brookside, Lena.
Buffalo.....	Black Creek.
Calumet.....	Fredonia Station.
Chippewa.....	Pepin.
Clark.....	Martell, Prescott.
Columbia.....	Amery, Centuria.
Crawford.....	Belmont, Nelsonville.
Dane.....	Prentice.
Dodge.....	North Cape.
Door.....	Bloom City, Twin Bluffs.
Dunn.....	Bloom City, Twin Bluffs.
Eau Claire.....	New Richmond.
Fond du Lac.....	LaValle Sandusky.
Grant.....	Hayward.
Gates.....	Wittenberg.
Green.....	Cedar Grove, Franklin.
Green Lake.....	Chelsea.
Iowa.....	Centerville, Strum.
Jackson.....	Ontario, Readstown.
Kenosha.....	East Troy, Genoa Junction.
Kewaunee.....	West Bend.
Lafayette.....	Eagle, Hartland.
Langlade.....	Fremont, Northport.
Manitowoc.....	Pine River.
Marinette.....	Waukau.
Marquette.....	Milladore.
	Millwaukee.....
	Monroe.....
	Oconto.....
	Outagamie.....
	Ozaukee.....
	Pepin.....
	Pierce.....
	Polk.....
	Portage.....
	Price.....
	Racine.....
	Richland.....
	St. Croix.....
	Sauk.....
	Sawyer.....
	Shawano.....
	Sheboygan.....
	Taylor.....
	Trempealeau.....
	Vernon.....
	Walworth.....
	Washington.....
	Waukesha.....
	Waupaca.....
	Wauwasha.....
	Winnebago.....
	Wood.....

INSTITUTES, WITH DATES AND CONDUCTORS.

DATE.	W. C. BEADLEY, Conductor.	L. E. SCOTT, Conductor.	F. H. SCRIBNER, Conductor.	DELBERT UTTER, Conductor.
December.				
6-7	Centuria	Almena	New Richmond	Martell.
8-9	Amery	Cameron	Hayward	Eau Galle.
13-14	Calumetville	Clark's Mills	New Franken	Brookside.
15-16	West Bend	Norman	Institute	Harmony Corners
20-21	Northport	Prentiss	Curtiss	Wittenberg.
22-23	Black Creek	Glen Flora	Chelsea	Antigo.
January.				
3-4	Benton	Arena	Blue River	South Wayne.
5-6	Montfort	Twin Buffs	Bloomington	New Glarus.
10-11	Eagle	Genoa Junction	Sun Prairie	Somers.
12-13	Granville	East Troy	Hartland	North Cape.
17-18	Fremont	Eastman	Dartford	Bloom City.
19-20	Belmont	Mt. Sterling	Pine River	Readstown.
24-25	Prescott*	Alma	Ontario	Sandusky.
26-27	Pepin*	Centerville	Cataract	Kendall.
February.				
14-15	Horicon	Lena*	New Holstein	Cedar Grove.
16-17	Waukau	West De Pere*	Fredonia Station	Franklin.
21-22	Colfax	Nelsonville	Morrisonville*	La Valle.
23-24	Boyd	Strong's Prairie	Avoca*	Millston.
Feb.—March.				
28-1	Strum	Alma Center	Kilbuckn	Markesan.*
2-3	Greenwood	Milladore	Endcavor	Ripon.*

*Cooking School held in connection with Institute.

Nineteenth Annual Closing Institute, Eau Claire, March 7, 8, 9, 1905.
All inquiries relative to Institutes will be promptly answered.

GEO. MCKERROW, Supt.,
Madison, Wis.



First Prize, Champion and Grand Champion Southdown Ram at the World's Fair, St. Louis, Mo., 1904. Owned by Geo. McKerrow & Sons, Pewaukee, Wis.

PROCEEDINGS

OF THE

EIGHTEENTH ANNUAL

Closing Farmers' Institute

HELD AT

KAUKAUNA, WIS., MARCH 15, 16, 17, 1904.

The Meeting was Called to Order by Mr. J. I. Tener.
Mr. Convey Called to the Chair.

Prayer by Rev. CHAS. N. FITCH, of Kaukauna.



Mayor Mulholland.

ADDRESS OF WELCOME.

Mayor H. J. MULHOLLAND.

It is a very pleasant duty which devolves upon me this morning in having the honor on behalf of the citizens and Business Men's Association of our city to extend a hearty welcome to the officers and visitors of this year's Round-up Farmers' Institute. I feel that you have honored our city by selecting it for the Annual Round-up Institute of 1904, for we know that the Farmers' Institutes are productive of much good, both to the city and surrounding country.

From the small number of our citizens present this morning, I take it for granted that they have learned in some way that I was to deliver the opening address of welcome, therefore I will not occupy much of your time, but let me say on behalf of our citizens that we were really very glad when we heard that you had decided to hold this year's Round-up Institute in our

city; we are awake to the benefits to be derived from these Institutes, both to our citizens and to our farmer neighbors.

I am unable, ladies and gentlemen, to deliver to you the keys of our city, because some years ago, owing to a complication of the great water power interests in our city, we lost the keys in the great rapids of the "Lion of the Fox" and only a few weeks ago, I am happy to state, all of the difficulties were settled and Kaukauna's sun has risen again. I have a small wooden wedge which we are using as a substitute for the lost keys and I take great pleasure in handing it over to the chairman and visitors attending this Institute; so gentlemen, and also the ladies, while you are in our city, I extend a hearty welcome and if there is anything within the limits of the city that any of you may want, ask no questions, but take it; you are welcome.

At the close of his address, the mayor presented to Superintendent McKerrow, a wedge, which was received by Mr. McKerrow with the thanks of the visiting members, and who then called upon Mr. C. P. Goodrich, the veteran Institute worker, of Ft. Atkinson, Wis., to respond to the address of welcome.

RESPONSE TO THE ADDRESS OF WELCOME.

C. P. GOODRICH, Fort Atkinson, Wis.

Mr. Chairman, Mr. Mayor, Citizens of Kaukauna, Ladies and Gentlemen and Fellow Farmers:—This wedge which has been turned over to me gives me a peculiar feeling. This is not the first wedge that I have had in my hand since I have been in Wiscon-

sin. Fifty-seven years ago I used a wedge, sometimes as small as this and sometimes a good deal bigger, and I used to drive it with a maul that weighed more than my head did, and the rails were split.

We are highly gratified with this cordial welcome, and we heartily thank you for it. This wedge is certainly a powerful mechanical device; it not only opens the doors to us in Kaukauna, but it opens the doors of our hearts.

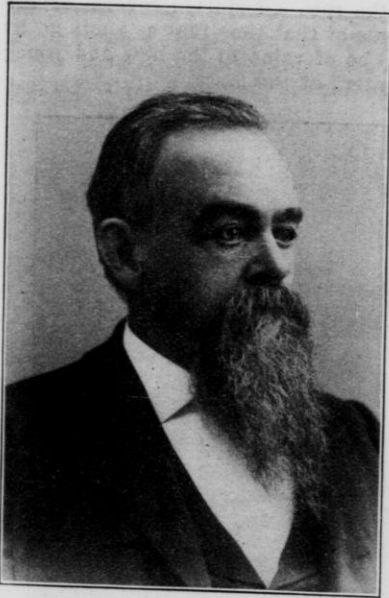
It has been now something like eighteen or nineteen years since the Farmers' Institutes first commenced to work in Wisconsin, and I believe in the Farmers' Institute. I cannot but believe that we have done a great deal of good. I believe we have done a great deal toward stopping the robbing of the soil that commenced before the Farmers' Institutes began, as I find in traveling around in other states than Wisconsin that our soil is better than that of states where they have not had the Farmers' Institutes so long. I have found many places in Michigan and Indiana and other states where they have robbed the soil very badly.

We must blow our own trumpet a little, because we believe in these things. I believe that the domestic animals of Wisconsin are fed better and are more productive and profitable in consequence of the Farmers' Institutes. I believe that the sheep produce more wool; I believe that the cows produce more milk, and I believe that our horses will pull bigger loads, though they may not trot any faster, in consequence of the Farmers' Institutes.

Again, I thank you for this cordial welcome,

THE TRIAL ORCHARDS.

A. J. PHILIPS, West Salem, Wis.



Mr. Philips.

The subject given to me to present for your consideration for a few moments and for you to spend a short time on in discussion, if you so desire, is one that for the past dozen years or more I have taken a great interest in, as it is my firm belief that no crop that grows on our soil is more easily raised, or is more productive of health in the rising generation, more conducive of healthy stomachs and good digestion, in the growing of good and respected citizens, than plenty of apples. A desire for more fruit and varieties that would stand and bear in our cold climate, and more especially in the northern part of our state where many of the settlers are men of limited means, where if in any place the

housewife needs apples to give variety to her bill of fare, was the main reason why our State Horticultural Society, in 1895, at its annual winter meeting, decided to use part of our annual appropriation given by the state to the planting and maintaining of one or more trial orchards for the purpose of trying our old and testing the new varieties of apples, plums and cherries, so that the people might know, if they would put themselves in touch with these orchards, what varieties would be safe for them to plant.

In accordance with this, land has been leased at Wausau, Medford, Eagle River and Poplar, and trees set at the first three places, but for the purposes of this paper, I will speak mostly of the orchard in Marathon county, as the others have not been set so long.

The Marathon County Orchard.

It is located three miles from the thriving city of Wausau, on cut-over timber soil, such as there is thousands of acres of in northern Wisconsin. Our then President, L. G. Kellogg, Prof. E. S. Goff and myself were appointed a committee to locate the same, which we did in the fall of that year. We visited Marshfield, Antigo, Medford, Merrill and Rhinelander before we decided on the present site at Wausau. It is in good fruit soil near the city, on a main traveled road. In the winter of 1896 the Society decided what varieties they would plant in the main orchard, leaving a plot or portion assigned for new varieties of such sort as would be furnished by growers or propagators of the same and for other experiments as might be deemed advisable. We perfected a

lease of the land occupied by a Mr. Ed Single and owned by his mother and were informed by her and other heirs that Mr. Single would be the permanent owner. Our lease read for twenty years, or so long as the land was used by the state for a trial orchard. It consisted of ten acres, for which we were to pay a rental of \$50.00 per year. I, then being Secretary of the State

How the Orchard Was Planted.

The trees planted were mostly from Wisconsin nurseries, with some from Iowa and Minnesota. They were planted in rows thirty feet apart running north and south and twenty feet apart in the row. I started several experiments at that time that as years go by will be of value to the new and young planters of the state.



Wisconsin State Horticultural Society Experimental Station, Wausau, Wis.

Society, was chosen to lay out and plant the same, the greater part of which I did in the spring of 1896. Most of the balance was planted in the spring of 1897, leaving some space for additional planting of new seedlings.

The trees nearly all grew well from the start and have continued to do so, so that in examining it in 1903 I find it to be one of the most promising young orchards I have seen in our state, it having produced some fruit in the past two seasons, though the cold spring and unfavorable weather at blossoming time made the crop light and poor in 1903.

For instance, in planting thirty-six trees, or two rows of one variety, I selected them from four different nurseries to see what effect, if any, the soil and location had where the trees were grown and to be able to answer the question that is so often asked in Institutes and at Horticultural meetings, at what age it is best to transplant apple trees. I planted in the same row two and five-year old trees of same varieties and gave them the same care. I also instituted an experiment which I had been trying in my own orchard for years, as follows. I selected nine

of our most promising varieties and planted in 1896 as follows, six of each. First I planted a three-year old Virginia Crab tree, then sixteen feet away I planted six Wealthy root grafts, intending to leave the best one stand for a tree, then I planted sixteen feet from there a three-year old Wealthy tree, then I repeated this planting, making in all six trees. I then plant-

inches in circumference, and the three-year old tree at time of planting to be twelve feet high and eight and one-half inches in circumference. The others grew about the same, except the Northwestern Greening and Okabena, which grew faster, but the average was about the same, showing conclusively, as it does in my own orchard, that the root graft that is not



Wealthy Orchard, Wis. State Horticultural Experiment Station, Wausau, Wis.

ed the remaining eight varieties the same way. Then in the spring of 1897 I top grafted the Virginia Crab trees with the same varieties as the root grafts and three-year old trees were. Now to save time, I will only give the figures on one variety, the Wealthy, as I found it in the spring of 1903, six years after the grafting and seven years after the planting.

Results of Experiments.

I found the top grafted tree to be twelve feet high and nine inches in circumference; the root graft to be eleven and one-half feet high and six

moved or its roots mutilated is the best and cheapest tree for the young planter, if he will have the patience required to grow it.

In my experiment with the two and five-year old trees, I find the younger trees, not having suffered so much in being moved, with the same care are now about as large and in two years more they will be ahead of the older trees.

In 1897 I did some more planting and in 1898 some more grafting in same line, so that now of the first two years' grafting we have some very fine top worked trees, the growth,

longevity and production of which can be compared with those on their own stocks by people who care to study those things as the years go by.

Varieties Showing Best Growth.

The three new seedlings that are growing the fastest in this orchard originated in three different states, to-wit: the Northwestern Greening of

years, I again took charge of it last season—1903. I planted last spring in the experimental plat six of the McIntosh Red, a Canada seedling, also some of the Burr Sweet and the Sweet Fameuse from Eureka, Wis., also two of the Yahnke, a very promising winter seedling from Minnesota. Another new seedling which has recently been described in the "Wisconsin Agriculturist," to-wit: the Shook or Phillips



McMahon Orchard, Wis. State Hort. Soc. Exp. Sta., Wausau, Wis.

Wisconsin, the Okabena of Minnesota, and the Pattens Greening of Iowa. Of the thirteen varieties planted in the main orchard, only one, the Duchess, was mentioned in our reports prior to 1874, showing conclusively that the growers who have been producing new seedlings have certainly found many varieties that our Society consider preferable for hardiness and productiveness to our older sorts.

Some New Varieties Planted in 1903.

After being absent from this orchard, owing to a change in offices for three

years, I again took charge of it last season—1903. I planted last spring in the experimental plat six of the McIntosh Red, a Canada seedling, also some of the Burr Sweet and the Sweet Fameuse from Eureka, Wis., also two of the Yahnke, a very promising winter seedling from Minnesota. Another new seedling which has recently been described in the "Wisconsin Agriculturist," to-wit: the Shook or Phillips

Increase in Value of Farm Where Orchard is Located.

It was very unfortunate for the success of this orchard that after Mr. Single had learned how to graft and care for it that the farm passed out of his hands and control; also unfortunate that, after we had taken pains to teach the new man that Mr. Kreutzer employed how to do the work, the farm again changed hands in the fall

of 1903, for Mr. Kreutzer took so much interest in it, but I now think that the present owner, Mr. Genzman, is there to stay, as he has bought it for a home and is anxious to learn about it and how to care for it and I have promised him some lessons.

One noticeable fact is the farm has increased in value, the price shows

local Horticultural Societies, State Reports, Institute Bulletins, etc. Right here I want to suggest or offer a resolution that the Superintendent of our Farmers' Institutes be instructed to select three of the best apple growers he knows in the state to go to the Wausau orchard next August and thoroughly examine the same, they to



Duchess Orchard, Wis. State Hort. Soc. Exp. Sta., Wausau, Wis.

from \$6,000.00 to \$12,000.00, since the orchard was planted.

How to Bring the Trial Orchards to the Attention of the People of the State.

I notice one of the greatest drawbacks to the good that this and the other trial orchards in Wisconsin ought to do is to get facts that we learn in them to the people of the state that need the information the most. This is also true of new things we learn in other branches of farming, and this is the mission of the agricultural papers, the Farmers' Institutes,

make a report that will appear in the next Bulletin.

In Conclusion.

Now in conclusion, will say this is the best part of my paper because it is the last, which will be a relief to those who dread a long paper. And here let me advise every one, more especially those who want to raise apples in Northern Wisconsin, to visit this orchard in the bearing season and select about eight varieties that suit you best for summer, fall and winter. Avoid too many kinds. Forty varieties,

STEENBOCK MEMORIAL

so you can make a show at some fair, are a nuisance to the farmer and will hurt your sales, if you raise any to sell.

A list of twelve varieties was sent me recently to choose from for a trial orchard and not a Wealthy, the best fall apple we have found in thirty years search, was on the list. I said, strike out one hundred trees of your fall varieties and substitute the Wealthy. Why fool away time and money with kinds long ago condemned?

Mr. Cranefield has kindly offered to help me get some pictures of this orchard to publish in the Bulletin with this paper and I expect to spend some time and do some judging at the Wausau and other northern fairs next fall and will endeavor to scatter all the information I can among the farmers about this orchard, as I am interested in it, a part of my life has been worked into it. In the meantime will say that the Duchess and No. 20 for summer, the Wealthy, Longfield, Patens Greening and Oakabena for fall and Northwestern Greening, Malinda and Avista for winter are the nine most promising kinds now growing there, while DeSota, Wyant and Surprise plums and early Richmond cherries seem to look well, but so far they have not produced much fruit.

All the foregoing is respectfully submitted to the tree planters and tax payers of Wisconsin.

DISCUSSION.

Mr. Jacobs—Are Wisconsin nursery trees preferable to New York nursery trees?

Mr. Philips—Well, my experience is that they are. The nearer you can get the trees grown to your home and on soil similar to what you have, the better your trees will do.

A Member—Were these Wisconsin trees that you planted?

Mr. Philips—Yes, all except a few from Iowa and Minnesota.

Mr. Scott—What kind of soil was this trial orchard?

Mr. Philips—It is on cut-over timber soil that grew hemlock, maple and pine. Pretty light, pretty good location.

Mr. Scott—And how is the subsoil?

Mr. Philips—Pretty hard, a deep clay subsoil and some stone on the surface.

Mr. Scott—How deeply do the trees root?

Mr. Philips—The trees that I have planted, I have mentioned some of these young trees, do not run so deep as they do in alluvial soil, they incline more to the surface.

Supt. McKerrow—They root much as the timber does on that soil.

Mr. Philips—Yes, you take those pine stumps, they have run clear across thirty feet from the stump.

A Member—Do you consider that soil preferable to a more loamy soil for orchards?

Mr. Philips—Yes, the trees do better, live longer, and are more productive.

Mr. Scott—Is there any advantage in breaking up the subsoil?

Mr. Philips—Oh, I wouldn't think so. That has been recommended, but it is not practical for the farmer. There is no trouble in that kind of soil to dig a good deep hole.

A Member—How deep?

Mr. Philips—Oh, eighteen inches deep is about the way we set those trees, and partially fill it with top soil. We would set the tree about four to six inches deeper than it was in the nursery, set them so they are in firm.

Mr. Utter—You have the soil loosened deeply?

Mr. Philips—Yes, give the tap root a chance to go down deeper if it wants to.

Mr. Scott—How far did you set those trees apart?

Mr. Philips—Thirty feet, in rows.

The rows run north and south and they are twenty feet apart.

Mr. Hill—How close do you trim both top and root?

Mr. Philips—I trim the top to correspond with the root. Those trees were sent by different men from different nurseries in the state, and they would send them with a very good root, better perhaps than they would be in sending to a customer a long distance, because we pay the freight on them. We trimmed them up a little, and I think there were only five out of eight hundred that failed to start right along.

Mr. Imrie—Explain about those trees on the chart. Does that picture represent pruning?

Mr. Philips—No, this one was a Virginia Crab tree, that was set in 1896, and it is grafted, as you see. Here is one that represents the union of the Wealthy with the Crab stock. No. 2 is the Virginia Crab and the top work is the Wealthy. Number 3 is a little root graft six inches long set at the same time this three-year old was. No. 4 is a three-year old Wealthy set at the same time those were put in, and there is only six inches difference now.

Mr. Bradley—Then we are to infer that it is better, rather than to pay for three-year old trees, to plant root grafts?

Mr. Philips—I find in my own orchard that trees that are planted like No. 3, after they have grown and been bearing for years, are much better than trees that are moved even from my own nursery. I took a root from that tree last fall; that was a nine-foot tree.

Supt. McKerrow—You mean to say that a small tree will do better when planted than a large one?

Mr. Philips—Yes, I proved that in the experiment that I made between a two-year old and a five-year old. The two-year has outgrown the five-year old.

Mr. Scott—Have you set any plums in this orchard?

Mr. Philips—Yes, we have a few. They are doing very well. Mr. Crane-field is going to plant more this year, he is a plum man.

Mr. Hill—What is your method of cultivation?

Mr. Philips—We have been cultivating every year, but we propose to sow rye and seed down to clover in the spring. It has not been plowed very deep. We have tried to keep it clear, we mow away from the tree.

Mr. Hill—Do you mean that it has been plowed or cultivated?

Mr. Philips—Cultivated.

A Member—Have you cropped that orchard yet?

Mr. Philips—No.

Mr. Hill—How close do you plow to the trees?

Mr. Philips—Not very close, not near enough to disturb any of the roots or strike the tree with the whiffletree.

Mr. Scott—Is it not a fact that a good many orchards are injured by deep plowing?

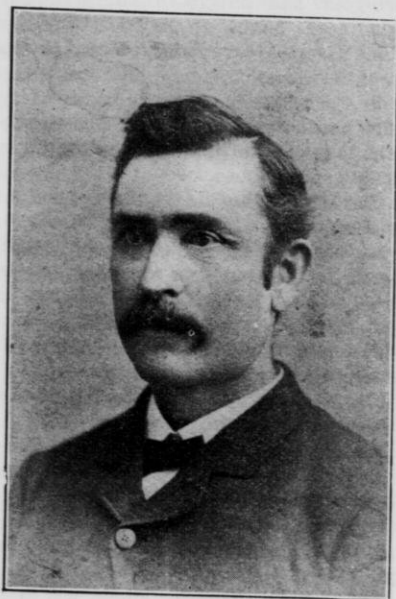
Mr. Philips—Yes, I think so.

Mr. Scott—And especially so in the northern part of the state where the trees root more shallow than they do south.

Mr. Philips—I think so. I can't plow very deep in my orchard without disturbing the roots, it is very shallow.

LAW OF THE ROAD.

ALEX. CALDWELL, Pewaukee, Wis.



Mr. Caldwell.

At a Farmers' Institute, where questions are discussed relating to the interest of the farmer, it is not a departure from that standpoint of discussion to consider and discuss the law governing highways, the purpose for which they were dedicated, the rights and duties as between the town and the traveler, and the rights and duties between travelers towards one another.

Highways Established by Law.

Highways are established by law. The obligation to establish highways and the burden of keeping them in repair is imposed by statute upon the town, city or village in which the highway is located.

Duties of Supervisors Regarding Highways.

The supervisors being the executive officers of a town, it becomes their duty, not only to lay out and establish highways when public necessity demands it, but they must keep those highways clear of encroachments and obstructions and make them safe for public travel.

If the supervisors neglect to keep those highways safe for public travel and some traveler because of such defective highway sustains an injury and is damaged, the town as a matter of law becomes liable to the injured traveler in damages to the amount of the injury.

The law is very plain on this point. Sec. 1339, R. S., provides: If any damage shall happen to any person, his team, carriage or other property, by reason of the insufficiency, or want of repair, of any bridge, sluiceway or road, in any town, city or village, the person sustaining such damage shall have a right to sue for and recover the same against such town, city or village.

Many of you can, no doubt, call to mind several instances where a traveler has sustained injury from an alleged defective highway. In some of those cases where the injury was great, the injured man failed to recover, and in other instances where the defect in the highway appeared small, the town was compelled to pay the damage and you probably wondered why this was so.

As a general rule, towns seldom pay damage caused by an alleged defective highway until they have to. The injured person failing to make a settlement with the supervisors for his dam-

age, and having given due notice to the supervisors within the prescribed time, concerning such injury, and demanding payment therefor, goes to his attorney and states his case. The result is: a summons is served upon the supervisors in which the injured man is plaintiff and the town is the defendant, the supervisors retain an attorney to defend the town in the action. This attorney docketes the case in his office docket, charges up \$25.00 as a retainer against the town, and writes a note to the plaintiff's attorney, stating that he has been retained by the defendant town as its attorney and demands a copy of the plaintiff's complaint.

Within twenty days a copy of the plaintiff's complaint is served upon him, he looks it over carefully in search of a loophole, either in its form or allegation, on which he can demur. If he finds none, he serves upon the plaintiff's attorney, within twenty days, his answer to the plaintiff's complaint. In this answer the defendant invariably sets up and alleges:—That the negligence or carelessness of the plaintiff contributed towards the accident complained of.

Common Law Rule Governing Such Cases.

There is a common law rule that is as old as jurisprudence itself, which still prevails and applies to all cases of this kind. It may be briefly stated in the language of a noted judge in Massachusetts, to-wit: Whenever there is negligence on the part of the plaintiff contributing directly, or as a proximate cause, to the occurrence from which the injury arises, such negligence will prevent the plaintiff from recovery.

In the trial of any civil case, before a jury, either party may demand a special verdict instead of a general verdict. That is, a list of several categorical questions will be written on a sheet of paper and handed to the

jury and they are to answer yes or no to these questions. The judge takes these answers and as a matter of law decides from them which party is entitled to a verdict and renders judgment accordingly.

One of these questions invariably is: Was the plaintiff guilty of carelessness or negligence which contributed to the injury complained of?

If the jury answers yes to this question, it is all off with the plaintiff, no matter how badly he may be injured, no matter how careless the defendant town may be, as a matter of law he cannot recover. The law has no scales to determine in such cases whose wrongdoing weighed most in the compound that occasioned the mischief.

Desire for Revision of the Law by the Judiciary.

Some people hold it as an axiom that most all accidents can be avoided by due caution and care. Such men on a jury may conscientiously bring in a verdict that the plaintiff was guilty of contributory negligence because he did not use due caution and care. The way the law is now interpreted, neither the jury nor the court can put the carelessness of the one as an offset against the carelessness of the other and give judgment against the one contributing the greater amount.

There is now among the judiciary an effort being made to change this rule by statute and at any legislature a bill may be introduced, giving equable power to the court to take the verdict of the jury and weigh the wrongdoing by both parties to the accident, and give judgment against him who is guilty of the greater wrongdoing.

Some Examples of Wrongdoing.

It is important to bear in mind that highways are dedicated for the purpose of travel only, and anybody that interferes and obstructs travel on the highway throughout its whole width, from the line on the one side to the

line on the other, who is not himself a traveler, is a wrong doer, per se, and in case of accident resulting in damage, he is not only barred from recovering for his damage because of his wrongdoing, but he is liable to respond in damage to the other. Under this head may be cited the usual habit of some people of leaving their wagon, a pile of wood, their hay hack, or other truck on the side of the road.

Another instance under this head that might be mentioned is the case where a teamster drives his team up to a hitching post on the side of the street, ties them to a post and goes away and leaves them. At that moment he ceases to be a traveler and is obstructing the highway. Have I not a right, you will ask, to hitch my team to a post and go away and leave them? I would answer, certainly you have, only you must beware of hindering travel—the road was made to travel on and if travelers can get by you, by ordinary diligence, they, nor anyone else, have a right to complain, but, if they can't get by, with ordinary prudence, you are the man to get out of the way, travel on, or suffer the consequence.

I mention this case because I have observed some people in hitching their team to a hitching post, instead of pulling the wagon close up to the curb, to avoid interference with travel, leave the hind wheels far out in the highway. If such a person coming back found both his hind wheels broken, I don't think it would pay him to inquire who broke them.

This principal in the use of the highway is well illustrated in an action that was tried in an eastern state last year. A team of horses attached to a wagon was hitched with an ordinary tie strap to a hitching post. The team got scared from a passing street car, broke the strap and ran down the street and along the sidewalk. Two children were injured by the runaway. One of the children was traveling on

the walk, going somewhere, the other was playing on the walk with no purpose of travel. In an action for damage, the first child collected damage, the second none, the court holding that in the latter case plaintiff was using the sidewalk for a playground and not for the purpose for which it was dedicated. As between travelers, the highway, being dedicated to the public for the purpose of travel, any person can use it for that purpose with any kind of vehicle he pleases.

Duties of Caution Imposed by the Statutes.

In this age of progress, we meet many and various kinds of vehicles on the road. The ox teams are gone, but in their places have come the steam thresher, drill machine, automobile, motor-cycle and bicycle—all traveling on the road. Our statutes have imposed upon the owners or managers of steam engines on the highway certain duties of caution, which they must observe. This statute goes no farther than steam engines; all other vehicles, whether autos, motors, cycles, horses or mules, are governed by the same law.

That law may be briefly expressed as follows: Parties lawfully using a public street, owe to each other the duty of reasonable and ordinary care, and each is justified in assuming that the other will so act, and on this principle it has been held by the courts:— That a person using the highway with a load on his wagon, or with a vehicle naturally calculated to frighten horses, must use more than ordinary care, must, in fact, do all he reasonably can do to save from harm other travelers on the road. If he fails to use this precaution and an accident occurs, resulting in damage to the other traveler, he has no defense in an action for damage, unless he can show that the other man's negligence contributed to the mischief.

The law of the road in this country requires of each traveler in meeting another traveler to turn to the right. This is statutory law. The common law requires of each traveler in meeting another to do all he reasonably can to avoid injury to himself or to the other traveler. If a traveler turns to the left, instead of to the right, and collision occurs, the presumption is that he is in the wrong, and unless the evidence shows that it was the other man's fault and not his, he will be held liable for the damage. But, if the traveler can see that by turning to the left, instead of to the right, he can avoid injury to himself, or to the other traveler, he must do so.

For example, if I am drawing a light wagon or buggy and meet a load of hay on a narrow road, on my right is a ditch close to the traveled track, on my left the road slopes down perfectly safe for my buggy but unsafe for the load of hay, I am obliged, under the rule of doing all I can to avoid injury, to turn to the left onto the slope and save the load of hay from tipping over. Reciprocity applies here as well as in State affairs.

DISCUSSION.

Supt. McKerrow — We understand you that a man running an automobile has the same rights on the road as a man driving a horse, but no more?

Mr. Caldwell—No more, they have just the same rights. The cause of action against an automobile is based on the common law rule that when a man is driving a loaded wagon, an automobile, or anything that is naturally calculated to frighten a horse, he is put upon the duty of doing what he can to avoid injury. That is the common law rule, and it doesn't matter whether it is an automobile or a load on a man's wagon, he must do what he can to save the other man from harm.

Mr. Philips—If a man is driving a

common buggy on the road and meets a bicycle, must he give half the road to it?

Mr. Caldwell—Courtesy has always made that customary here. I do not think there is any statute in regard to it, but I think courtesy has done it so long that it would be held now as a duty.

Mr. Imrie—In meeting an automobile, or if a man is running an automobile on the road, if he meets a team and the team is frightened, is he obliged to slow up?

Mr. Caldwell—Yes. The court has held that because a load scared another man's horse, he should stop and go to help the other man, and the same rule would apply in the case of an automobile.

Mr. Matteson—Does the same rule apply to a bicycle?

Mr. Caldwell—Of course a bicycle is not supposed to be a vehicle that is liable to scare a horse, and the automobile is getting out of that. If a man is driving a horse, and another man with his automobile, seeing the horse is cutting up, doesn't stop his automobile to help and avoid injury, he is liable.

The Chairman—The fact that some automobiles make considerable noise, more than others, will that cast an extra responsibility upon the man running the automobile?

Mr. Caldwell—I should say it would, because it is an additional warning to that man that he has a dangerous vehicle.

Mr. Martiny—You spoke about the law discriminating against threshing machines and engines. If they were placed just outside the road and frightened a team, would the owner be liable for the damage? I mean, not when they are traveling, but when they are placed just off the road to do work.

Mr. Caldwell—That is a different question entirely. It is only when a man is traveling on the road that we

speak of his duties, one toward another. When he is working in a field, I presume he can do as he has a mind to.

Mr. Matteson—They are obstructing travel if they are so close that they scare the horses.

Mr. Caldwell—I should say he has a perfect right to put his engine there, he is doing legitimate work.

Mr. Matteson—I have seen fellows under such circumstances whistle and try to scare horses.

Mr. Caldwell—That again is malicious.

Mr. Chairman—Does a farmer have a right to leave his loaded wagon on the side of the highway?

Mr. Caldwell—No, sir; he may do so, but he is liable.

Mr. Matteson—In case of a breakdown or a tip-over, how long have you a right to hold the highway?

Mr. Caldwell—If you work diligently, you can work all the year, but you must show you are working diligently.

Mr. Scott—If a man has the right to set an engine just inside the road, wouldn't he have a right to put an apiary just outside the road?

Mr. Caldwell—May be so, I don't know about that.

Capt. Arnold—From what you know of the average highways in the state of Wisconsin, shouldn't you think that most towns would be liable by reason of obstructions? You know in a good many places you find rocks or stumps, etc., outside of the track, and if your team happened to get outside of the track, they would be damaged.

Mr. Caldwell—Towns have been held liable in cases like that when you would think they ought not to be. Of course the town is not expected to make the whole three or four rods of road perfectly travelable from one fence to the other, but if they undertake to make say sixteen feet of it travelable, they must not leave an obstruction on that sixteen feet. It must be so that a man can go along in

the night time and calculate that there is no obstruction on it.

Mr. Utter—If the road is made eight feet wide and it is full of ruts and they might have made the road sixteen feet wide and it is worked in that width but it is not a sufficient width, would not the town be liable?

Mr. Caldwell—I should say it would.

Mr. Matteson—In traveling along a road, is there any law as to the distance teams should keep apart?

Mr. Caldwell—There is no rule of law, but a man must use that ordinary caution that good neighborly feeling would require of him. He must keep back far enough so he won't injure the other man's tailboard.

Mr. Bradley—I have noticed roads which I don't think were over three rods wide and a threshing machine within that three rods and it seemed to me it was occupying more of the road than it ought to.

Mr. Caldwell—I think that was the fault of the supervisors. They are the masters of the road and they are responsible if there is not sufficient room.

Mr. Convey—Is there any rule about passing from the rear?

Mr. Caldwell—No, sir. The man that is ahead goes right straight along.

Mr. Convey—Suppose he is requested to stop and he doesn't stop?

Mr. Caldwell—I think then he must show good reason, because courtesy between all parties would require of him to do so.

Capt. Arnold—Does not the statute say that to pass another you must turn to the left in passing teams?

Mr. Caldwell—No, not in any state in the Union are they required to turn either to the left or the right in going by a team. You can take either side you have a mind to, but you take the responsibility of going by without injuring anybody.

Supt. McKerrow—There is this point, the party in front cannot delay the other party.

Mr. Caldwell—They can't use malice. If so, they are liable.

Mr. Matteson—What right have telephone companies to use the roads for their poles?

Mr. Caldwell—They have a statute right. In cities the city council can dictate where they shall put their telephone poles. They must not set their poles so as to injure a person who is living on the side of the road, if they can get out of it. The owner of the property can ask them to move their pole this way or that way so that they can get out of their property, and they can save injuring any person living on the roadside in that way, they must do it.

Mr. Goodrich—Hasn't there been some recent legislation on the subject

of telephone poles in the roads in the country?

Mr. Caldwell—I don't think there has in the last two years.

Mr. Goodrich—I have had something to do with building telephone lines, and we have discovered that if the owner of property will not allow us to set poles in front of his property in a certain way, we cannot do that, unless we can buy the right.

The Chairman—Can't you condemn?

Mr. Goodrich—No, you can't condemn, unless there has been some recent legislation. We have worked a good deal of strategy to get those poles up.

Supt. McKerrow—And you'll get them up just the same, as I understand.

ICE ON THE FARM.

W. C. BRADLEY, Hudson, Wis.

This is a cold, slippery subject and I may need to ask you to keep on your overcoats and mittens in order to warm you up to appreciate its value.

Ice is no longer regarded as a luxury but as a necessity in our modern way of living, for farmers are fast learning to live as well as their city neighbors and the old-time menu of salt pork, corn beef, and potatoes for six months in the year is fast disappearing, for where there is ice, meat can be kept several days and where the butcher wagon does not make regular trips, a lamb or veal can be dressed occasionally and divided between two families and can be kept on ice for further use.

In the harvest time, what is nicer to have than ice water instead of well water, which gets stale after standing awhile. Only those who have had experience in the harvest field can appreciate the value of nice, cold water on a

hot day. Then too, we are all fond of ice cream and iced fruits during the hot weather, and what comes in more handy to the sick man than ice in many cases?

In modern methods of dairying, ice is a prime factor, especially to the shipper of milk or cream and from what the cheese and butter makers tell us, all milk taken to factories should be cooled as soon as possible to produce the best results.

Plan for a Farmer's Ice House.

It is a wise plan for every farmer to have an ice house and if he has more than seven or eight miles to draw ice, a trough could be made from three sixteen-inch planks sixteen feet long, surfaced and jointed on the edge. These are held together by a frame of two by fours fitted with keys and wedges to make it tight; the inside covered with paraffine wax, making it

water-tight. This box can be filled at the well and when frozen solid the keys can be knocked out of the frame, the sides fall off and you have a nice cake of ice to cut into the lengths desired.

In building an ice house, it should be built square, or as nearly so as possible for this reason, the more compact the pile the better it will keep. For the average farmer, a house twelve feet square, with ten-foot studding, would be plenty large enough. It should be built on a stone foundation and if stone is scarce, deeply set posts placed in the ground to keep the building from spreading. The studding should be of two by six, placed sixteen inches apart and sided with good lumber, which should then be painted. Between the studding from plate to sill should be placed a strip of tar paper sixteen inches wide, fastened on the sides with lath. This makes two dead-air spaces. Line the inside with rough boards, put on the roof last of all, which completes our ice house. The best material for a floor would be broken stone or gravel for drainage, about four inches deep, with about six inches of sawdust on the floor, this to freeze deep before filling, as this takes longer time before thawing from the bottom.

Filling the Ice House.

When the ice is from sixteen to eighteen inches thick is the proper time to fill. Try and have it cut as uniform as possible, so that the cakes will fit snugly together, filling all the crevices with dry snow or broken ice. Before putting on the second tier, leave from eight to twelve inches on all sides for sawdust, and when full put twelve inches of the sawdust on top.

DISCUSSION.

Mr. Philips—Would you recommend that a man should take a pail of ice water out to give his men in the har-

vest field on a very hot day, and then when he wanted to give his cows water that he should take the ice out of it? In other words, is it healthy to drink that ice water?

Mr. Bradley—It may not be healthy, but it is a good deal more palatable than warm water. I know that men object to drinking warm water.

Mr. Martiny—Doesn't the question of whether it will do any harm depend upon the individuality of the man?

Mr. Bradley—I don't know. Of course a man ought not to drink a great lot of ice water if he is very hot, and he ought to drink it slowly.

A Member—Isn't it well to look, particularly in the spring before you commence to use the ice and when it commences to thaw out, isn't it well to see that it is closely packed after it has thawed out?

Mr. Bradley—Yes, as soon as it commences to thaw in the spring, the sawdust should be tramped down in the holes that have started.

Mr. Martiny—What would you think of a stone basement for an ice house?

Mr. Bradley—It would be all right, still you would have to leave a space, a few inches anyway, for the sawdust, leave a dead-air space.

Mr. Matteson—Would you recommend crushed ice or snow to fill up the crevices?

Mr. Bradley—I would rather use dry snow, it is more apt to pack in so there will be no place for the air to get down between the blocks of ice. You cannot get it completely air-tight with broken ice.

Mr. Imrie—What kind of sawdust do you use?

Mr. Bradley—Coarse pine sawdust is the best I know of. Hardwood sawdust is too fine, and not so good a non-conductor. In case you have not pine sawdust, I think planer shavings with the hardwood is the next best thing.

Mr. Scott—Is there any ventilation needed in an ice house?

Mr. Bradley—There ought to be a

ventilator in the roof on each end, so as to have some circulation. I would have a small opening right under the gable at each end.

Mr. Goodrich—How can you make it safe against spontaneous combustion? There is no joke about that. We had an ice house burned up at Fort Atkinson.

Mr. Bradley—I was in Delavan four years ago and saw a water tank burn. I don't know whether it was spontaneous combustion.

Capt. Arnold—It seems to me your building is pretty small for a man who has any kind of a dairy, taking out eighteen inches on a side.

Mr. Bradley—I said for the average farmer that would be large enough. For a man with fifteen to twenty cows, using a separator, and cooling his cream only, you will find that will be plenty. If a person was cooling milk from twenty or thirty cows, he would need a larger ice house, but the modern way of dairying on most farms is simply cooling the cream, and we

are not putting up one-third the ice now that we did two years ago when we had to cool all the milk.

Mr. Imrie—Another thing, if the farmer is located right near a pond, he can build as large an ice house as he likes, but if he is living quite a distance from water, he must build a good ice house and as small as possible, because it is a job drawing it. I want to ask if it is practical to freeze your own ice in a box?

Mr. Bradley—Yes, I saw Charley Thorp do that.

Mr. Imrie—How does he prevent it bulging and breaking all to pieces?

Mr. Bradley—The sides are straight and I think it is not a solid box.

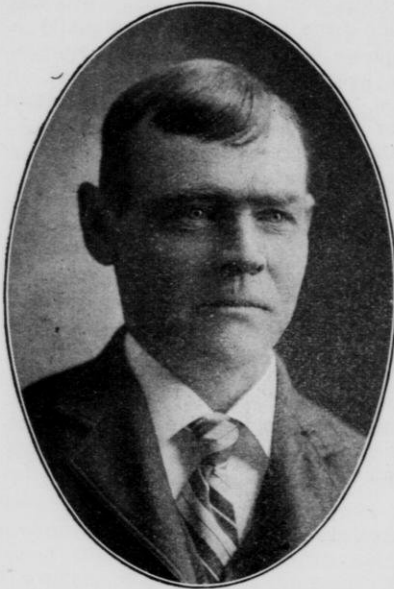
Mr. Scott—And I think he did not fill it all at once, he put in a little at a time.

Mr. Bradley—There is one good thing about Wisconsin, you can always depend on the ice crop if you cannot depend on other crops, especially this winter.



VENTILATION OF BARNs.

H. M. CULBERTSON, Medina, Wis.



Mr. Culbertson.

Each year of our lives we become possessed of some better understanding, some resultant thought, the outgrowth from some experience or conclusive evidence.

Formerly all classes of cattle were considered upon the same general plan as to stabling and care, but today the experienced feeder of beef cattle secures best results when animals have freedom to seek shelter at will, to choose between outdoor and indoor conditions, as their system and comfort dictate.

The opposite methods are found advisable with dairy herds, for these quite closely confined, or well protected from cold and storms, yield largest returns for food consumed. This, how-

ever, brings to our attention the possibilities of disease, unless these animal quarters are well supplied with pure air and a system of ventilation.

Pure Air Imperative for Good Health.

We are told that all the activities of the body are dependent upon the circulation of the blood, because it carries to every extreme and minute part the required elements, in solution, to build and replace worn parts, as nature suggests, at the same time flushing the system and carrying away worn and exhausted tissue and compounds poisonous to the body if permitted to remain. Returning to the heart, the blood is forced to the lungs, where about eighteen times each minute a supply of fresh air by breathing finds its way down the very small air tubes leading to the air cells, whose walls are tissue of an extremely delicate character, crossed and recrossed by countless numbers of tiny blood passages, from which this waste product from the body, called carbonic acid, in quantities one hundred times as great as pure air contains, also large quantities of moisture, finds its way from the blood to these air cells and is exhaled. At the same time the oxygen of pure air necessary to the workings of the vital parts, passes into the blood, causing a very important and necessary transfer, and in about two minutes every portion of the blood is returned to again unload more refuse and be replenished with oxygen of pure air, the generator of wonderful and important activities which the body is absolutely dependent upon, and which both animal and human health no doubt suffers

more for the want of than is generally realized.

It is said that in an animal of 1,000 pounds live weight, about three pints of blood passes with every heart beat

breathe over and over again these impurities, poisonous if taken back into the system, nature cannot do its work, complications arise, and disease is likely to result sooner or later.

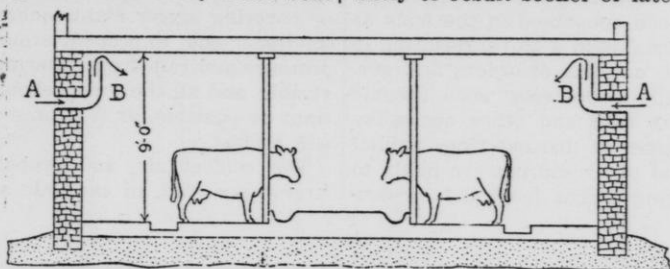


Fig. 1.—Shows simplest method of taking air into stone or basement stable. A B and B A show where the air enters. These flues may be made out of ordinary 5 or 6 inch stove pipe with elbow, or galvanized iron conductor pipe, or the pipe through wall may be ordinary 5 inch drain tile, with stove pipe and elbow on inside, or the flue may be made of 6 inch fencing.*

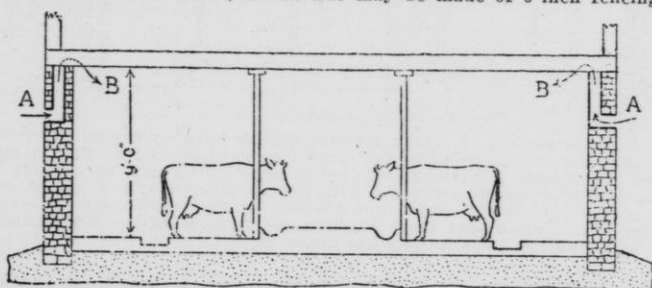


Fig. 2.—Shows a modification of Fig. 1 where on the right a notch is left in the wall when building, so that the flue rises flush with the inside of the wall. While on the left side the flue is shown built in the wall. This may be done by building around 5 inch drain tile or around a box made of fencing.

and there are about fifty beats per minute.

This means that great quantities of blood are being exposed in the lungs for purification and that the activities within the animal, the production of body heat, the digestion and assimilation of new foods, the growth in the young animal, the building of the meaty tissues in the feeder, the replacing of worn material in the laboring animal, and the production of healthy milk in the milk cow, all depend upon the circulation of the blood; therefore, if animals are not constantly replenished with pure air, but continue to

Signs of Improper Ventilation.

One of the first indications of an improperly ventilated room is the accumulation of frost on the walls in cold weather. This is caused by the abundance of moisture being carried in the warm air within and, not being removed by ventilation, returning to water when striking a cold surface, just as steam is caused when warm air carrying moisture strikes the cold air when the door is opened, causing this moisture to show as steam or vapor. This indicates too much moisture in the room for good health.

In occupying a room in which we

*Ventilation System of Prof. F. H. King.

feel that breathing seems to be carried on by an unusual effort, or shortness of breath, and perhaps become in a sweated condition, illustrates a lack of sufficient oxygen in the air, the supply having been consumed in the body as wood or coal is in a stove, resulting in headache, nervous disorders and general debility. Cobwebs soon become laden with dust and other accumulations, germs of disease from animal refuse and other sources are likely to find lodging places here and be con-

the floor, will permit the passage of winds or air currents across the upper end and stimulate a more free passage of upward currents in the ventilating flue. A cap or covering six or eight inches above the upper end, to prevent atmospheric pressure and rain from entering, is advisable, and all the joints should be as tight as possible, or the force of draft will be lost.

The coldest air, and probably the largest per cent. of carbonic acid gas

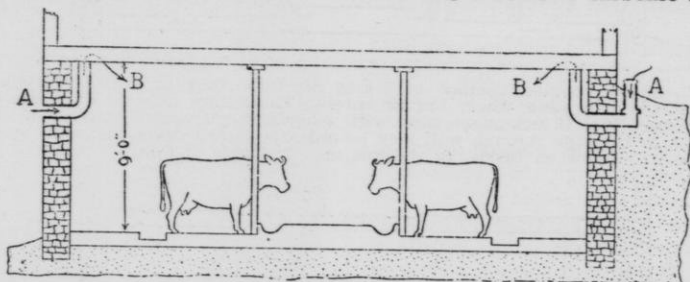


Fig. 3.—Shows a method of taking air into a bank barn on the up-hill or bank side. The air flue is made in the same way as described in Figs. 1 and 2, but on the outside has its end covered as represented at A on the left with a length of 6 or 8 inch sewer tile with its top covered with a cap of coarse wire screen. Drain tile would not answer for the outside exposure at the surface of the ground as frost would cause it to crumble. Wood could be used and replaced after rotting has occurred.

veyed to the weakly tissues and membranes of animals. One disease so contracted and which has become more or less common is tuberculosis.

A Good System of Ventilation.

There is no fixed rule for adoption in ventilation of buildings, but a principle formulated, which can be varied to suit most any barn. You cannot fill a bottle when already full, so the first provision to be made is an outgo flue.

Four twelve inch boards with their edges nailed together their entire length to form a long box, and set upon end, placed at a most convenient location in the stable, and spliced to make it of suitable length to reach out through and higher than the highest extremity of the roof, when placed about eight or ten inches from

in the room, lies nearest the floor, but is still warmer than outside air in winter weather, therefore lighter, and naturally rises in the ventilating flue, encouraged by the winds moving across the top, so when the outgo flue is placed near the floor, the outward draft carrying cold air impurities and moisture will cause a vacuum to be filled with warmer air coming from the top of the room, also where the supply of pure air is admitted, giving a more uniform temperature in the stable.

To supply a draft for this outgo flue and to secure pure air containing oxygen in the room, be governed by the following:

If the building is a wooden structure with inside and outside boarding, make an opening in the inside boarding, just below the overhead ceiling, four by

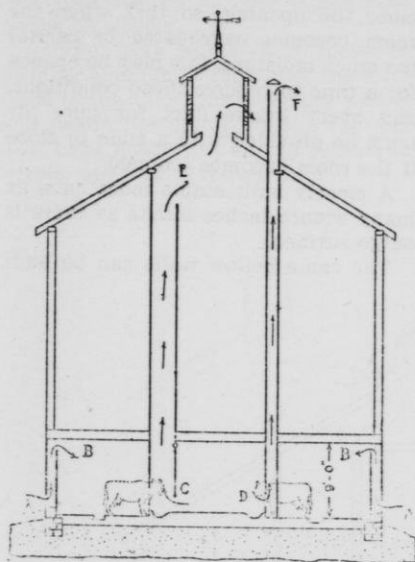


Fig. 4.

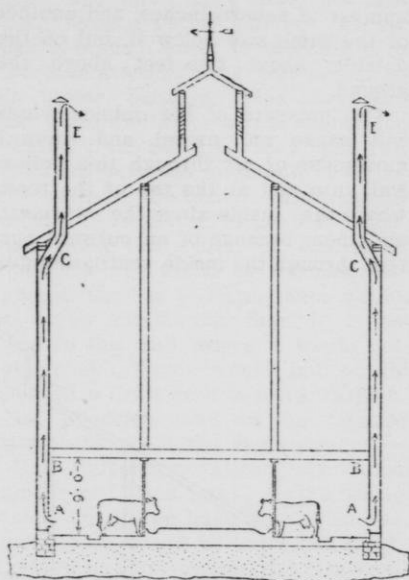


Fig. 5.

Fig. 4.—Shows two methods of ventilating a dairy barn. On the left the ventilating flue D F rises straight from the floor, passing out through the roof and rising above the ridge. One, two, or three of these would be used according to number of cattle. The flues should be to one or the other side of the cupola rather than behind it. On the left C E represents how a hay chute may be used also for ventilating flue. In each of these cases the ventilating flue would take the place of one cow. This method would give the best ventilation but has the objection of occupying valuable space. C, in the feed chute, is a door which swings out when hay is being thrown down, but is closed when used as a ventilator, the door not reaching quite to the floor, as represented in the other figures, and passes out through one or more ventilators rising against the side of the barn and passing out through the roof, as represented at A C E. To make these flues if the barn is a balloon frame, the best method would be to secure the lightest galvanized iron in eight or ten foot lengths, and place the studding where the flues are to be, the right distance apart, so that a width of a metal covers the space between two studs. Sheets of this metal nailed on opposite faces of the stud would make an air-tight flue. On the outside, this metal would be covered with the siding. On the inside, with the sheathing, but in the barn above nothing would be needed except perhaps an occasional shield to prevent the hay from crushing it in. If it is not desired to carry the flues through the roof, they may end just below the plate, and the air pass out through the cupola. The method represented, however, would give the strongest draft. The width of studding used for the flue would vary with the number of animals to be provided for.

Fig. 5.—Shows the second best method of ventilating an ordinary barn. The air comes in as described in the other figures, and passes out through one or more ventilators rising against the side of the barn and passing out through the roof, as represented at A C E. To make these flues if the barn is a balloon frame, the best method would be to secure the lightest galvanized iron in eight or ten foot lengths, and place the studding where the flues are to be, the right distance apart, so that a width of a metal covers the space between two studs. Sheets of this metal nailed on opposite faces of the stud would make an air-tight flue. On the outside, this metal would be covered with the siding. On the inside, with the sheathing, but in the barn above nothing would be needed except perhaps an occasional shield to prevent the hay from crushing it in. If it is not desired to carry the flues through the roof, they may end just below the plate, and the air pass out through the cupola. The method represented, however, would give the strongest draft. The width of studding used for the flue would vary with the number of animals to be provided for.

twelve inches, or one of about an equal number of square inches, and another of the same size below it, but on the outside, about two feet above the ground.

The pressure of the outside winds will cause an inward and upward movement of air through this hollow wall into and at the top of the room where the inside air is the warmest, and then, because of an outward current through the inside ventilating flue.

the room with a damper or slide to close the opening, so that when the room becomes overheated or carries too much moisture, this may be opened for a time to remove these conditions, and every intake duct for pure air must be provided with a slide to close if the room becomes too cold.

A closely built stable must have as many square inches intake as there is outgo surface.

The same hollow walls can be built

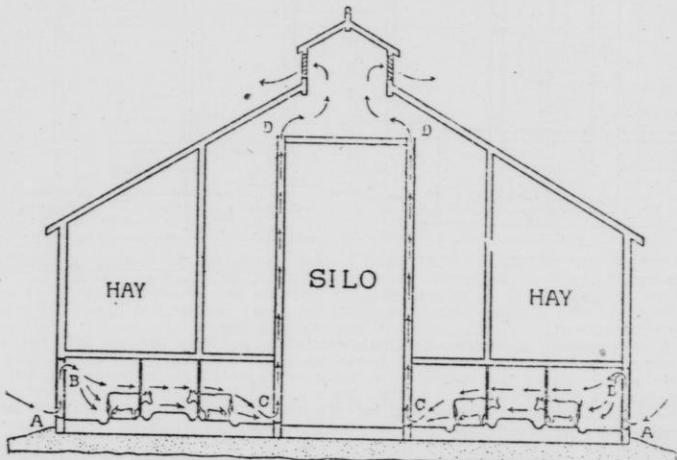


Fig. 6—Represents the method of ventilating a barn where a silo or granary occupies the central portion. The air enters at A B and the ventilating flues are the spaces between the studding which form the walls of the silo, or other structure. The air entering at C in openings left all around the silo, and passing out at D at the top.

at the floor, the intake of pure air will pass downward to replace the outgo, changing the air in all portions of the room, providing these intake ducts for pure air are located about every fifteen feet apart on all sides of the barn, and an outgo ventilating flue one foot square for every five or six animals, or one of proportional dimensions corresponding with the number of animals, for with less than this thorough work cannot be done.

One additional feature will be necessary, which is a large opening to be made in the outgo flue at the top of

when constructing stone wall stables, and to secure the same desirable conditions where stone walls are already built, if there is an opening through the wall at the ground, as some have for cats to pass in and out, construct a wooden box of suitable size for an intake duct, with an elbow at one end, and on the inside of the stable insert the elbow into the opening in the wall, raising the other end to the top of the room, and plaster closely so there will be no opening at the bottom, except through the inserted duct. The same form of intake duct may be attached

to the inside of a swing door and perform the desired purpose if the door jambs fit closely.

Another plan would be to make an opening through at the top of the wall, close to the sill of the structure above, and insert the elbow, letting the box duct hang downward on the outside to within two feet of the earth.

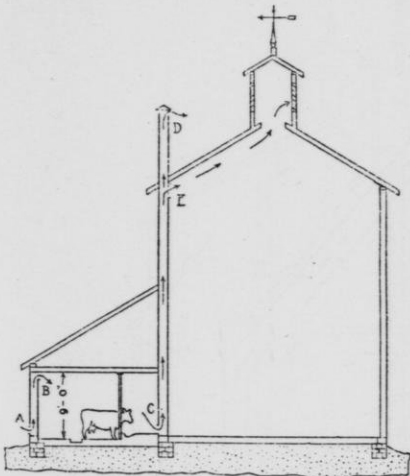


Fig. 7.—Shows one method of ventilating a lean-to stable. The air enters as represented by the arrows at A B and passes out through a flue built on the inside of the upright or main barn. This flue may rise directly through the roof, or it may end at E, as shown in the figure, the air passing through a cupola. If the upright barn has a balloon frame, then the space between the studding could be used as ventilating flues in the same manner as described in Fig. 6. These flues could be made tighter by covering inside and out on the studding, with the lightest galvanized iron.

DISCUSSION.

Mr. Goodrich—How large should the outgo flue be, for, say, ten head of cattle?

Mr. Culbertson—Well, the proportions given us in this system furnished by Prof. King can be easily figured out. I spoke about a ventilating flue a foot square for only five or six animals, that would be the proportion. Perhaps one foot by two would be the neces-

sary outgo for ten or twelve head of cattle, and one large flue perhaps would have a better current of air than two small ones. Preferably it is placed somewhere near the center of the stable, because, being near the side, there would not be the chance for drawing from all directions, and you would not have the same flow of air as if it was near the center. Then again, perhaps it is better to have it somewhere near the center of the room where the flue would be warmest, because if the box is warm there would be better circulation than if it be close to the wall where it would get very cold. There would not be so much of a draft as if it were warmer.

Mr. Goodrich—And do the intakes want to be about the same size?

Mr. Culbertson—About the same number of inches intake in the whole stable, but if you have that all in one place, there would be too much draft, it would be like opening the windows.

Mr. Goodrich—It is better to have a good many of them, so that they will altogether take in about the same amount.

Mr. Brady—Where you have a number of outgoes, isn't there danger of the wind blowing up some and down some?

Mr. Culbertson—I do not think so, unless they are very large. A high or long flue with no angles and extending well above the barn ridge should have no downward current. This is one of the essentials. A short flue extending up a few feet on the outside of the barn is usually worthless, so is any outgo flue, unless there is sufficient intake to create a draft. The outgo flue not extending as high as the roof peak will be likely to have many downward currents, but full height, with a metal cap to reduce atmospheric pressure, and this supported by four small standards eight inches above the flue, so that winds can pass across freely, should work successfully.

Mr. Goodrich—Of course you under-

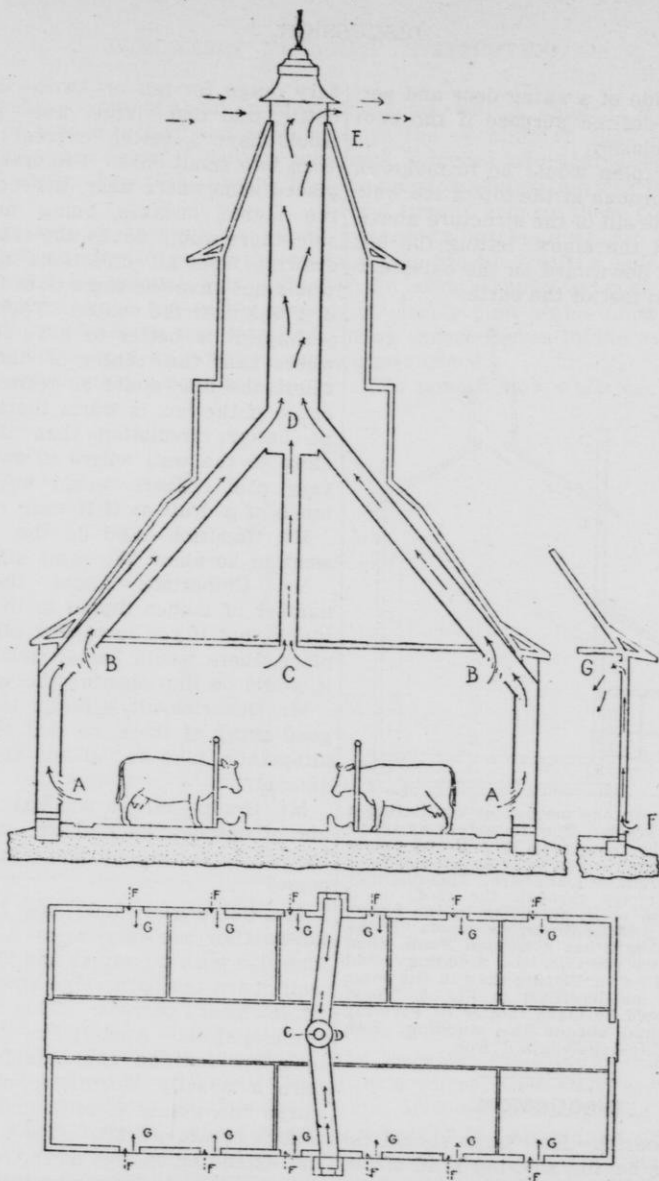


Fig. 8.—Is a section of the cow stable of the dairy barn at the Experiment/ Station. A single ventilating flue D E rises above the roof of the main barn, and is divided below the roof into two arms A B D, which terminate at near the level of the stable floor at A A. These openings are provided with ordinary registers, with valves, to be opened and closed when desired. Two other ventilators are placed at D B, to be used when the stable is too warm, but are provided with valves to be closed at other times. C is a direct 12 inch ventilator leading into the main shaft, and opening from the ceiling, so as to admit a current of warm air at all times to the main shaft to help force the draft. This ventilating shaft is made of galvanized iron, the upper portion being 3 ft. in diameter. The covering on the outside is simply for architectural effect. The air enters the stable at various points as shown in the plan at F G, and in the vertical section by arrows at F G.

stand all the hay chutes should be closed.

Mr. Hill—We have this system in our barn, and I have observed a good many times about this and I have never seen a downward current there. Some of our ventilating flues are eighteen inches square and some are

carry it up the flue.

Mr. Caldwell—Will those flues make the temperature of your stable colder?

Mr. Culbertson—Yes, but the intakes should be placed on all sides, with a means of closing, so that if the outside winds are excessive they may be closed wholly or in part on one side and still

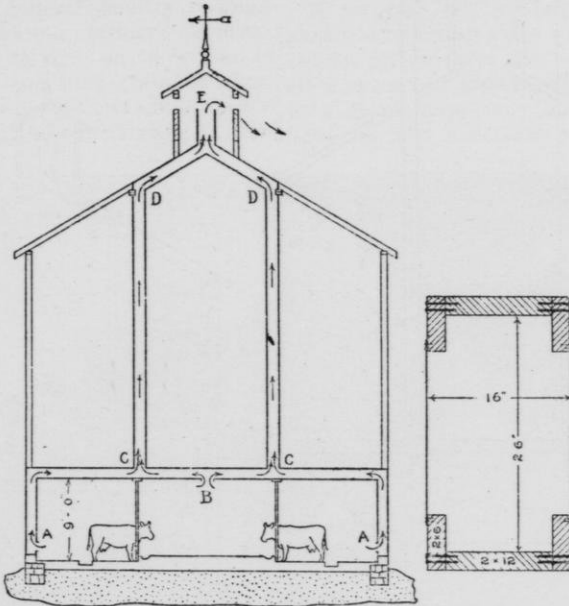


Fig. 9.—Shows method of ventilating an ordinary barn, where the air is taken out of the stable through flues built between the studding and between the joist of the ceiling. The air then rising, through ventilating shafts, made against or as a part of one or more of the purline posts. The air enters at A A and B, following the arrows and passing out along the lines C D E. These ventilators, if desired, can be carried out straight through the roof, or may be terminated inside under the purline plate, or as represented in the figure. The cross section at the right shows how 2x12's and 2x6's may be nailed together and placed so as to constitute a purline post, and at the same time a ventilating flue. The two sides of the purline post or ventilating flue are represented closed with sheets of galvanized iron. They may also be closed with well seasoned matched flooring. The number of bends necessary in this plan is an objection, as they interfere with the draft more or less.

wide and thin, made between the studding. We have three in one stable in different places conveniently located.

Mr. Culbertson—You will find a certain amount of draft in most of those flues. If you will hold your handkerchief there, you will see it will nearly

have enough so the whole inside atmosphere may be changed often to keep the air good.

Mr. Convey—Which would you prefer, a high temperature and bad air, or a lower temperature and the purer air?

Mr. Culbertson—The lower temperature would be better in every case. | have the floor tight in this system?
 Mr. Culbertson—Yes, the whole
 Mr. Convey—Isn't it necessary to | building must be tight.

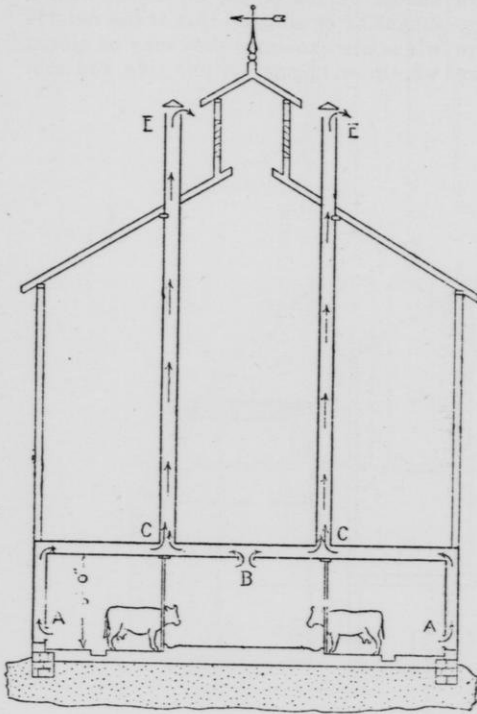


Fig. 10.

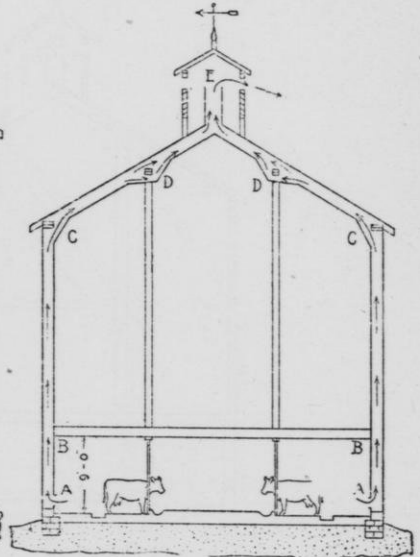


Fig. 11.

Fig. 10—Shows a modification of Fig. 9, where the air passes straight out through the roof, instead of being carried in and out through the ridge of the roof. This method would give a stronger current than Fig. 9, unless Fig. 9 were modified so that the ventilator passes straight down to the floor between the cows, as represented in Fig. 4.

Fig. 11.—Represents a method of carrying the flues up the sides and then along under the roof between the rafters, so as to reach the ridge either under the cupola, or at other places on either side. Such a flue could be made very tight, by nailing the light galvanized iron on the outside and inside of studding, and rafters, having a sufficient width to give the proper capacity for the ventilating flues, and such a system of ventilation would work fairly well but could not be expected to do as effective service as the methods shown in Figs. 4, 5, 6 and 7.

WINTER EGGS.

C. E. MATTESON, Pewaukee, Wis.

Winter egg farming is just as far ahead of the general poultry farming as practiced by our farmers as scientific dairying carried on in winter is ahead of the old time grain farming. I know very well that more failures are recorded from the egg farming in win-

Early Start Necessary for Success.

If we will just prepare ourselves ahead by starting early to get out our chicks, giving them the very best possible chance of growth, and not think, as a great many do, that after they have reached a certain age they can



Home of C. E. Matteson, Pewaukee, Wis.

ter than from dairying in winter, but this is to be expected when we consider that the opportunity for getting information along this line is not so great as it is on dairying, but I know that if a little preparation is made in advance of the time that we wish to put our eggs on the market, it is just as easy to place eggs on the market in winter as it is in summer, and far more profitable.

shift for themselves, paying little or no attention to the growth of the chicks, and then ask them to give us a high-priced product when the conditions of the weather are such that they have all they can do to sustain themselves. Right here is where most of our people make a mistake.

It should be well understood by all, that, besides getting the greatest growth of muscle and bone, we want

feathers also, which I consider to be of equal, if not of greater importance than the first two. In order to get this growth of feathers, see to it that your pullets are not allowed to sit in piles at night during the heated season of the year, but make some provision

the time comes in the fall to get your stock in they will not be neglected and be overtaken with winter. They should be taken in just as they first commence to lay, which is usually early in October with me, and then give them the best of care, so as to

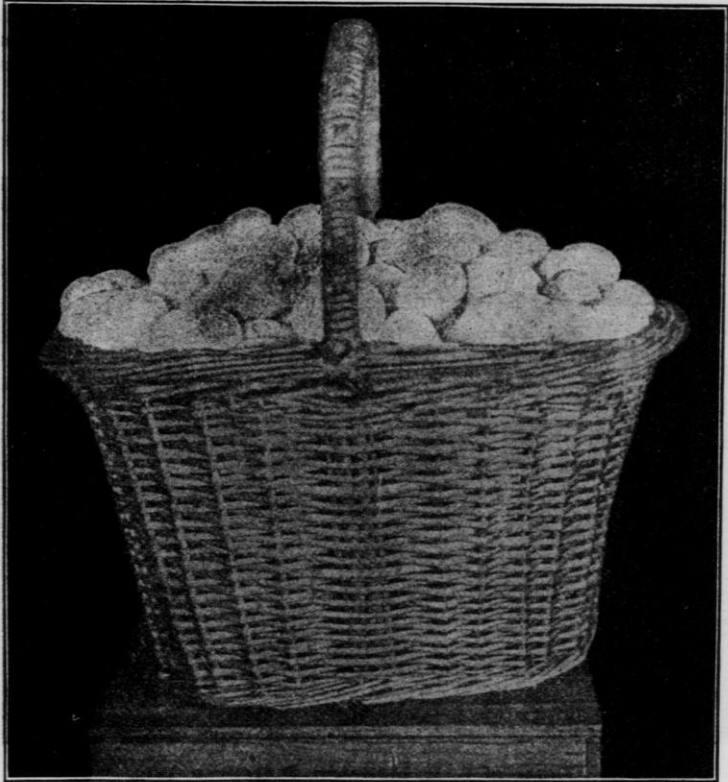


Fig 1. Represents the Per cent. of Profit From the Pullets.

for perches and see that they get onto them, and in this way, if properly fed, you will get the heavy overcoat of feathers they need to keep them warm during our rigorous winters.

Quarters.

See that their house is cleaned up sometime during the summer, so when

keep them laying the entire winter.

The houses should be light and roomy, with a floor of earth covered with litter of some kind, such as straw or cut corn stalks, and all grain should be fed in this litter, so as to keep the fowls busy the entire winter. Do not neglect this, for it is the most important part of the whole affair.

Keep Fowls Working.

Never expect your fowls to thoroughly digest their food unless you first see that they have an endless supply of grit and are fed in such a way that they are hungry and will work in the latter all day long. Many people make a mistake by thinking that it is best to warm up the fowls each morning

Grain and Green Food.

During the day I feed the different classes of grain, such as barley, wheat, oats and corn, alternating one with the other each day, which gives a variety, so far as the grain goes, but I am not content with this alone, but aim to always furnish green food of some kind as an appetizer and to balance up and

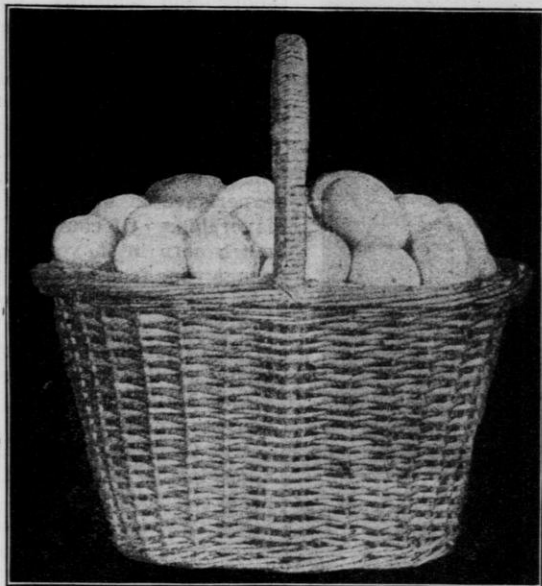


Fig. 2. Represents the Per cent. of Profit from Year-old Hens.

with a pail of soft, hot feed. I have heard it claimed that food fed in that state was easier of assimilation. That may be so for just a few feedings, but sooner or later it is sure to induce sluggishness and when a fowl is in that state she is only going to digest a small portion of the food given her.

My experience shows that, no matter what you feed, it is best to not feed any soft feed in the morning, but instead to scatter a little fine grain of some kind in the litter and get them to work at daylight. This gets their blood into circulation, just what is needed after a cold, severe night.

furnish the protein that goes to make up the major portion of the egg.

Animal Food Essential.

I always aim to feed some kind of animal food. This is an absolute necessity. It is not best to feed too great a quantity, but some should always be fed. I have used various kinds, such as meat meals, beef scraps, meat, cut-bone, and milk, and can say any of them are good if properly fed. The soft food, if properly formulated, will aid to a certain extent in balancing up the whole grain diet, but it is not far-reaching enough, hence my reason for

saying fowls should always have a small portion of animal food each day.

I am not only very careful about feeding too much of the soft food, but also defer feeding it until the last feed of the day, and only every other day at that, specially when we are using the eggs for incubating purposes.

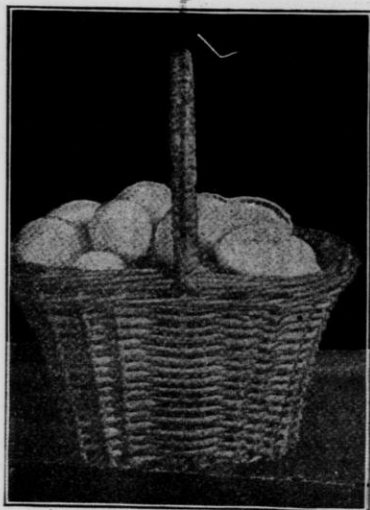


Fig. 3. Represents the Per cent. of Profit from Old Hens.

Results.

If these few rules are carefully adhered to and we know just why we are adhering to them, eggs will come just as easy in the winter as in the summer and the profits will probably be about four times as great.

DISCUSSION.

Mr. Jacobs—Do you let hens out of the henhouse in the winter?

Mr. Matteson—If the winter is not too cold. I don't think I would let them out when it is below zero, but when the weather is warm and the sun shines, I would let them out, if possible.

A Member—You have a scratching shed, haven't you?

Mr. Matteson—On all my houses, except one, and I like it very much. They are in the sheds each day, no matter what the weather is, come out early in the morning. Of course it is not the open front scratching shed, they are really not practical in Wisconsin, they should be closed in with doors and windows, and when the weather is such as to permit it, open the doors and windows and make them as much of a shed as possible.

A Member—Do you think ensilage would be good to feed to chickens?

Mr. Matteson—I do. I am not using it, because I haven't a silo, but my experience in using ensilage is very favorable. Of course, if there is too much corn in it, you would have to gauge your food accordingly, the quantity you would give them during the day.

Mr. Goodrich—Have your hens been laying all this last winter?

Mr. Matteson—Yes—I won't say hens, my pullets have.

Mr. Goodrich—You can't get eggs much in the winter from two-year old hens, can you?

Mr. Matteson—These photos were taken from an illustration of an actual experiment carried on at the Utah Experiment Station. The fowls used were high grade Leghorns. All received the same care and treatment; there could be no difference as to treatment, the only difference there was, was the fact that part were pullets, part were yearlings, and part two-year olds, with the result that the baskets illustrates. The larger basket is supposed to show twelve dozen eggs, which was about the average profit received from the pullets. The second basket is supposed to show six dozen eggs, which was the profit received from the one-year olds, and the smaller basket is supposed to show three dozen eggs, or all the profit they could get from the two-year olds.

First it will be seen that the profits from the pullets would be easily eight times that of the two-year olds, simply because their eggs were sold during early winter when prices were high, while with the two-year olds most of their eggs went to market when prices were way down, hence the reason why I say the profits were eight times greater. These baskets of eggs represent what eggs were left to the profit of each hen after she had paid for her board for the entire year.

Capt. Arnold—Does it freeze in your henhouses?

Mr. Matteson—Yes, it does when the thermometer goes below zero.

Capt. Arnold—Do they lay their eggs in that temperature; that kind of weather?

Mr. Matteson—All nests are arranged in roosting room where the temperature is always several degrees warmer than in the scratching shed.

A Member—What is the percentage of fertility?

Mr. Matteson—This year the percentage of fertility was not quite so great as some other winters when we can let our pullets out of doors more. About fifty per cent. has been the result with eggs I have sold this winter.

Mr. Brady—Are pullets' eggs first-class for hatching?

Mr. Matteson— I would say not, if you speak of the first eggs laid by the pullet, but when we consider that these pullets are hatched very early in the spring and then lay in the fall, they are pretty nearly old pullets by the time we want to use their eggs for incubating purposes, still one and two-year olds are preferable where they have not laid very heavily during the winter.

Mr. Imrie—How large a number of chickens would you advise in one coop?

Mr. Matteson—I would say not over fifteen or eighteen, but my houses are so constructed that we put in thirty-

five and forty in a colony, placing two males with each colony. I think if I was going to build all over new, I would only allow fifteen or eighteen fowls in a colony. You see if any bad habit starts, as is liable to happen, eating eggs, for instance, in a large colony, you have your entire flock to handle in this respect.

Capt. Arnold—My houses are sixteen by thirty-two and I keep about one hundred hens and divide the house into three parts with a wire netting between.

Mr. Matteson—Yes, you keep them right in the house with a corresponding yard outside.

Capt. Arnold—Yes, with a scratching shed, and they don't lay at all.

Mr. Matteson—I am not going to blame the hens. In the first place, I will say if they are hens you can't expect them to lay. If you haven't any pullets, it is your fault. Old fowls never do any winter laying.

A Member—For cold storage, isn't it better to use non-fertilized eggs?

Mr. Matteson—We don't want to talk about cold storage at all; we want to discourage that all we can.

A Member—How early do you hatch for winter layers?

Mr. Matteson—It depends on the breeds; the large Asiatics have to be hatched early, not later than the 15th of March. The small breeds can be safely hatched along the last of April, and the first of May, the Mediterraneans.

The Chairman—Does it pay to keep large breeds as egg machines?

Mr. Matteson—Generally speaking, no. Generally speaking, for the farmer, they are not wise.

The Chairman—What do you mean by large breeds?

Mr. Matteson—The Brahmas and the Cochins and the Langshans, the Wyandottes and the different families of the Plymouth Rocks. They are classed in as Americans.

Mr. Perkins—What breed do you keep?

Mr. Matteson—I have Barred Plymouth Rocks entirely.

Mr. Philips—What do you know about the Orpingtons?

Mr. Matteson—I don't know anything about them.

Mr. Hill—About how many pullets would a man want to keep in order to get that three peck basketful of eggs on the chart?

Mr. Matteson—Well, I will say this, a fowl that will give you from thirty to forty per cent egg flow is doing you good work and paying you a good round profit. My fowls averaged in January something like eighteen eggs apiece, that is a little better than I have usually done. But generally speaking, of course, farmers don't get that, that is something like sixty per cent.

A Member—That was while you were out at the Institute work, perhaps that accounts for it.

Mr. Matteson—The work was left entirely to the hired man. I don't believe I could beat that myself.

Mr. Imrie—I have read quite a number of times in poultry papers of contrivances to prevent fowls from eating eggs. What do you know about that, Mr. Matteson?

Mr. Matteson—Generally speaking,

these contrivances, patent egg boxes, trap nests, etc., are no good, they are too complicated to be practical. I like the box for an ordinary sized fowl to be about ten inches one way, fourteen the other, and ten deep, just a common box, open from the top only, with a very little nesting material. That gives you a box of such a size that when the fowl gets on it and tries to reach down, she can't quite reach down to the eggs, and she will jump down in there, cover the entire nest with her body and she can't get at that nest of eggs as well as if she had a larger box.

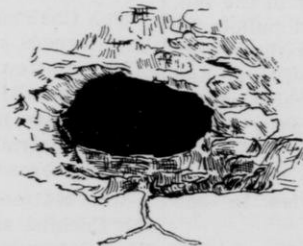
Question—What would you do to prevent that habit?

Mr. Matteson—I would try not to overfeed her. Then to try to cure it, I would throw decoy eggs around different parts of the place, and the fowl will get discouraged in trying to break those and that will break up the habit to a certain degree. I would also gather up the eggs quite often each day.

Mr. Goodrich—The only sure preventive is to use a good hatchef.

Mr. Matteson—Yes, behind the ears. The trouble is to find the right fowl, the one who is teaching the whole flock this bad habit.

Recess till 1:30 P. M. same day.



AFTERNOON SESSION.

The Institute met at 1:30 P. M., Conductor W. C. BRADLEY In the chair.

MAKING A FARM IN THE WOODS.

E. NORDMAN, Polar, Wis.



Mr. Nordman.

I wish to say in the beginning that conditions are so varied in the northern part of the state and men's circumstances are so different, that probably no two farmers in all this region should proceed in exactly the same way to achieve the greatest success. Nevertheless, the men who undertake to carve a farm and a home out of a tract of cut-over land in northern Wisconsin have many problems to work out that are peculiar to this section of

the state, and it is more particularly with these questions that I wish to deal in this paper.

Use Caution in Selecting Location.

To begin with, a person looking for a location in the New North should proceed cautiously, as otherwise he is in danger of being handicapped from the start with poor land, or a poor location. The old adage "A job well begun is half done" applies in this instance with great force. There is much inferior land, badly situated, in northern Wisconsin and the new settler cannot be too careful in making his selection that it is not some of this class of land that he is buying. He should ascertain beyond a question of doubt that the land he is purchasing is of good quality, reasonably free from stone, covered with a vigorous growth of small, hardwood trees, if it is cut-over land, and as near to market as it can be had. Unless he is satisfied as to the reliability of the party with whom he makes the deal, I would advise him, before making a purchase, to take the extra time it will require to learn from people living in the vicinity of the land as to its quality, etc. Within the last five years, many people have been humbugged into buying worthless land at big prices in northern Wisconsin, hence the necessity of this caution.

There are as yet millions of acres of good land to be had in this region that is well located and this, it seems

to me, should be occupied before the rest is taken up.

How to Clear a Farm.

Having bought the land, about the first fact of which the owner will be made aware is that his land is no farm, but simply the raw material from which a farm can be made. He will also soon learn that making a farm out of a forest requires good ability, hard, steady work, and economical living. It is important that these facts be understood, in order that no one be deceived as to the character of the work he undertakes when he starts in to clear up a farm. Many a new settler has failed because he found the work harder and more difficult than his land agent told him it was, and while I know that the northern part of the state has incomparable opportunities for the man with muscle and gumption, yet I nevertheless believe it best for all concerned that the facts be presented without any coloring.

If his land has been selected with good judgment, the settler is ready to go to work. Clearing a farm such as I have advised taking, is a much less difficult undertaking than it was twenty or even ten years ago. The reason for this is that sound timber of all kinds is today a source of revenue to the settler, whereas formerly it was a great burden. Land can now be cleared ready for seeding with the proceeds of the timber growing upon it; this, too, where the work is done by hired men. If the settler does his own work, or does it in conjunction with a hired man, he can clear five or six acres of land every year, put up the necessary farm buildings, build fences, and so on, and the sale of his timber, or rather the material that is cut from it, will enable him to keep out of debt while these improvements are being made. The cut-over land that I am acquainted with, will average a yield of about

fifty dollars worth of merchantable material per acre. This can readily be cut and the brush piled in one week by two men accustomed to this kind of work.

In the winter time, this material can be moved two and one-half miles to market, on sleighs, in about three days by a man and team. It is therefore plain that, besides clearing the land and allowing a liberal amount for the wages of his hired man, the settler has considerable money left from which to live and to apply to his permanent improvements.

In cutting material for the market, the right way for the farmer to do is to cut the timber clean as he goes along. If more land is cut over in this way than can be cleared ready for tilling, it can be sowed to pasture grasses and made useful in this way.

Best Seeding for this Land.

After all of the salable material has been removed from the land, it will be found that not much more work is required to get the land cleared ready for seeding, and this should be done at once whenever it is possible to do so.

Timothy and alsike clover seeded with oats and peas for a nurse crop, make the best seeding for land of this character. The reason for this is that this combination, if handled right, produces a first-class quality of hay, and besides the alsike clover will last longer among the stumps than any of the other clovers.

If stock is kept, as it should be to consume the hay, and the manure from this stock is carefully saved and applied to the meadow lands, these meadows can be made to produce two tons of hay or more per acre each year, until the stumps have decayed sufficiently to admit of their being cheaply removed. It will be found that this will take about seven years.

In the meantime, the grass on these meadows will, of course, have to be cut in the old-fashioned way with a

scythe. This may seem like a hardship to some, but we all know there is a great deal in getting used to anything. Hay can be made in this way for less than two dollars per ton, so there is no great sacrifice after all in the few years it will have to be cut in

Cleared Land Makes Good Pastures.

There is usually a good opportunity for the farmer in this section to make at a small cost an excellent pasture of tame feed for his stock, outside of his cultivated fields. Wherever the timber has been thinned out sufficiently



How Corn Grows on the Farm of E. Nordman, Polar, Wis.

this manner. Besides this, I would not advise any man to ever undertake the clearing up of a new farm if he is afraid of swinging a scythe, for the reason that a new settler has of necessity this and several other kinds of work to do that are rather more tiresome than driving a modern mower over smooth meadow land.

to let the sunlight onto the ground and to admit of a free circulation of air, timothy grass will grow luxuriantly. Grass seed can be sowed broadcast in such places and in others that have been burned over, and if scattered at the rate of about four quarts of seed to the acre late in the fall, or before the snow goes off in the spring, it will

yield a fine pasture from the start. In two or three years, most of the timothy will be crowded out by blue grass and white clover, but the pasture will not suffer because of this fact. Besides furnishing pasture, this method of seeding land helps materially in clearing for cultivation when the farmer

As already stated, the land should be in clover and timothy the first six or seven years after clearing. When the stumps are out, a rotation should begin, consisting of corn the first year, followed by grain the second year, with which the land should again be seeded and allowed to remain for two



Second Crop of Clover on Farm of E. Nordman, Polar, Wis.

gets ready to extend his clearing over the places that have been seeded. Around these places it will be found that the brush has been entirely destroyed by the stock, the stumps rot sooner, and altogether the clearing will be more easily done than where no grass grows.

Grain Raising Detrimental.

Just a word about raising grain among the stumps in northern Wisconsin. This is practiced to an alarming extent in some sections, much to the detriment of the land and without profit to the owner.

years. This makes a four year rotation.

Northern Wisconsin a Dairy and Sheep Section.

Now if a silo is built to take care of the corn crop, I believe there is no place in the world where, taking it one year with another, more cow or sheep feed per acre can be raised than in this section. This fact, I think, should make it plain that northern Wisconsin is preeminently a dairy and sheep section. The new settler who plans his future operations guided by this idea is on the high road to success, because

he is working in harmony with his surroundings.

Importance of Saving a Wood Lot.

One other idea and I must close this paper. I believe every settler in clearing up his farm should plan to have a good sized wood lot. If twenty acres of woods is left on every eighty acre farm and this woods is fenced so the stock cannot get at it, twenty years hence will find this the most profitable part of the farm. The lumberman's axe and forest fires are fast depleting this country of its original timber supply, while practically nothing is being done to create a new source from which timber can be obtained. This makes it certain that timber must constantly raise in value as the years go by, and certain, too, that the farmer who engages intelligently in timber culture in connection with his other lines of farming is laying a sure foundation for a safe and steady income in future years.

The foregoing observations are suggested by twenty years of experience as a farmer in the region of which I write. I have not attempted to cover the whole field, but rather to throw out a few helpful suggestions to some of the beginners of this section who are lacking in this experience, and I hope I have succeeded in this.

DISCUSSION.

The Chairman—If there is any one in this audience that expects to go to northern Wisconsin, he can get a lot of good from Mr. Nordman. I expect there are such, and I hope he will be asked questions.

A Member—In what part of the country do you live?

Mr. Nordman—In Langlade county, up near Antigo.

Prof. Moore—Do you grow a cereal crop the first year when you seed down your land after clearing?

Mr. Nordman—I sow oats and peas

usually after cutting off the timber and seed with that.

Prof. Moore—Will not this grass largely come into tame grasses without any seed being sown when the timber is cleaned out?

Mr. Nordman—It will after awhile, providing the stock is kept on it, but by putting in grass seed right away, you get a pasture right from the beginning; otherwise two or three years elapse before a good pasture gets started.

Mr. Scott—I am going to northern Wisconsin in a few days to do a little work in the woods. Isn't it well to sow this grass seed on just as soon as the cutting is made, as soon as it is brushed?

Mr. Nordman—Yes, if your aim is to make a pasture.

Mr. Scott—Would you wait to clear up, gather up and burn the brush before sowing the grass seed on the land that you intend to pasture?

Mr. Nordman—Wherever there has been an opening made by fire, or where the timber has been cut off sufficiently to admit sunlight on the ground, it is always well to go and scatter seed in those places in order to keep the brush from growing and get the grass started well, and the sooner it is done, the better. The grass will draw the cattle in there, they feed on that grass and destroy all the brush around, and that is very beneficial.

Mr. Scott—I have noticed a great many people taking great pains to chop down and pick up every last chip and stick before they sow on the grass seed, so that they can go over it with a spring tooth harrow, but they do not accomplish enough by working that way. I think it is of most importance to get it into grass and get something out of it in the way of pasture and get our stumps to rotting as soon as possible. Mr. Nordman has stated that in seven years these hardwood stumps can be taken out quite easily. Of course the pine cannot without more

expensive appliances. Mr. Nordman, does pine grow on good land?

Mr. Nordman—Yes, up around Antigo, some of the best soils we have were formerly covered with pine and the stumps are there yet and liable to be for some time. That is the objection to pine land.

Mr. Scott—How is the soil where hemlock grows?

Mr. Nordman—It is apt to be rather lighter than where the other kinds of timber grow, but this is not always the case.

Mr. Goodrich—What can you get from cut-over land to get fifty dollars out of that you said you cut off?

Mr. Nordman—We can get about an average of eight cords of body maple and three or four cords of basswood bolts, five or six cords of hemlock wood pulp, and the balance kiln wood.

Question—Doesn't the value of it depend a good deal on the distance from the railroad.

Mr. Nordman—This would be the value of the railroad.

Mr. Scott—You say that hemlock grows on lighter soils. Would you prefer the heaviest soils in northern Wisconsin, or would you prefer something a little lighter?

Mr. Nordman—I think I would prefer something a little lighter. The lighter soils are quicker, as a rule, and the short seasons up north make it desirable to have a quick soil. It takes better farming to keep it up however.

Mr. Scott—A little sand mixed with the clay would not be objectionable. Now, how about drainage? Would you prefer the rolling land, or flat, or level?

Mr. Nordman—There is a happy medium there. We would want it sufficiently rolling for good drainage. In the section where I live, there is a good under drainage.

A Member—Would you consider a south slope of any advantage on a farm in Northern Wisconsin?

Mr. Nordman—It is some earlier.

In some respects, it is an advantage and in others it is not.

The Chairman—I should think a winter like this it would be of advantage to get a little more sunshine.

Mr. Scott—Would you burn a good deal, or would you leave it lying on the ground to rot?

Mr. Nordman—All that is necessary is to remove enough of the growing timber to let in the sunshine. Grass for pasture will grow readily in the woods up north where the timber is not too dense. Of course hay land has to be cleared sufficiently to admit of the use of the harrow and the hay rake, which means that all of the coarse stuff must be disposed of.

A Member—You could not seed it down with brush and pieces lying on the pasture?

Mr. Nordman—Yes you can, and make a good pasture out of it too. If you wish to till this land after the stumps have rotted, it is then an easy matter to pile up the balance of the old, half-rotted wood and burn it along with the stumps.

Mr. Arnold—I notice you didn't say anything about fencing. You spoke about reserving twenty acres for a wood lot. Now, it seems to me that the farmers in northern Wisconsin are making a mistake in simply fencing off a small pasture. There is great economy in fencing large fields. It seems to me that you ought to run a fence around the entire farm, with the exception of this wood lot, then fence off the small piece where you cultivate. In that way you would be having your stock cleaning up this brush on the entire lot. It is much more economical in proportion to fence sixty acres than ten, and you might as well put your fence around the entire lot.

Mr. Goodrich—I like Mr. Nordman's idea of saving twenty acres for a permanent timber lot, but I would not have that pastured, because although this generation might cut some timber

there, the next would not, and we want to look out for the future. You cannot keep a permanent timber lot and have it pastured.

Mr. Nordman—That is true, as experience in older sections of the country goes to show. If you wish a batch of timber to thrive, fence your stock away from it. If you wish to kill the timber, fence your stock in with it and you will accomplish the purpose.

Mr. Imrie—You simply have the fields which you cultivate fenced and the cattle run at large.

Mr. Nordman—Our cows have a permanent pasture. The young stock and the sheep could run at large if they choose, but they have sufficient pasture made as I have already indicated on our own land outside of the cultivated fields, so they hardly ever leave, and when they do wander off for a few days they soon find their way back again.

A Member—Is it profitable to raise angora goats to put on land that is cleared to keep the brush down?

Mr. Nordman—I think it is, if your goats do not cost you too much, and if your fences are good.

Mr. Goodrich—Can't you get any income from those goats besides the work that they do in clearing the land?

Mr. Nordman—You can get about the same as you can from sheep and where the brush is short I think they do quite as well at killing it as the goats.

Capt. Arnold—Sheep can't climb and goats will.

Mr. Nordman—Goats destroy larger brush than sheep.

Capt. Arnold—It seems to me that the farmers in northern Wisconsin are making a mistake in not keeping enough stock. If you had sufficient stock to utilize this sixty acres, you ought to have feed enough on your own farm to stock it to its capacity and no more.

Mr. Nordman—I have advised in my paper to keep stock enough to consume what is raised, and I believe this to be an important matter.

Mr. Scott—Do you get very much pasture out of the land that has not been brushed.

Mr. Nordman—Very little good pasture, except during the months of May and June, when the leaves are young and tender. During the balance of the summer, the wild feed is too tough to be relished by the stock and tame feed does not grow because of the thick brush.

The Chairman—Then for the first few years, the farmer could not keep much stock?

Mr. Nordman—He can keep all the stock he can raise feed for, because if he keeps the most of his clearing in meadow, as he ought to, he can turn his cattle in on this a part of every day after the leaves get tough and the grass is cut.

Mr. Scott—I think Mr. Arnold is in error regarding the amount of stock kept in northern Wisconsin. I think there is a great deal kept there; according to the facilities they have, rather too much than too little. The difficulty is to get them through the winter; in fact all of the hay and grain we grow there is fed to stock.

Mr. Nordman—It is a fact that many farmers in the northern part of the state, as elsewhere, keep more stock than they have feed for. Where this is the case, farmers do not of course get nearly as much profit out of the feed they raise as they would if they feed it to just the amount of stock it would keep in a thrifty condition.

Capt. Arnold—I believe there is lots of time wasted in working land before it can be put in condition with a reasonable amount of labor. Land can be made to yield good pasture for sheep by simply throwing on grass seed after the brush and trees have been taken off. It seems to me the

early settler should turn his attention more, for the first few years, to getting this land into pasture, depending on the grass to rot the stumps and

thus in a short time make it available for raising crops without too much expense.

CLOVERS.

Supt. GEO. MCKERROW, Madison, Wis.

The clovers are really the most important plants that we can grow upon the Wisconsin farm. Clover is the only crop that will give us a good profit and leave the soil better than it found it.

The clover plant is the nitrogen gatherer; the microbes or germs, or, maybe I had better say the bacilli in the nodules of the roots are partly what give value to the clover plant. They take nitrogen from the air in the soil and feed it into the clover plant, building up nitrogenous food stuff and building up in the roots, and especially in the crowns of these roots, a great amount of nitrogen that is very valuable as a fertilizer, because people who are obliged to buy commercial fertilizer are now paying about sixteen cents a pound for it.

The clover plant also has the ability of going deep for its food stuff, for the potash, the phosphoric acid, the mineral matters, the ash, that it stores up in its body for the growing of bone in your live stock.

Again, clover is a drainage plant, because it runs its roots deep into the hard subsoil, making an opening for the water to get through, and those roots in that way add fertility and add porosity to the soil below.

Clover helps to make poor land rich, and when properly handled, helps to make poor men rich, therefore, we say it is a good crop.

Conditions Most Favorable for Clover Growing.

Now, clovers are adapted in their different forms to different systems of farming and to different kinds of soil, the alsike clover being especially adapted to low land soils lacking drainage to some extent; it seems to thrive best, in this state at least, where soils are a little too moist for other kinds of clover. White clover is of much the same nature.

The medium red clover is a dry land plant, not flourishing well on low land, but flourishing quite well on hard clay soils, on sandy loams, and even on sandy soils, when it gets a start.

Mammoth clover is probably the best of the clovers for very poor and very light soils, making more rapid growth, being able to stand droughts and dry weather and to get a foothold in a dry season, but not as well adapted to making hay when grown upon fairly rich soil, because it grows too rank.

Sweet clover we will not speak of, although it has utility as a fertilizing plant.

Alfalfa.

Alfalfa is a plant that we have not known very much about in Wisconsin until within a few years, and even then only in a few sections and by a few farmers. Alfalfa, I believe, is

one of the plants that has come into Wisconsin to stay, and as our farmers know more about it they will care more for it. It is a deep, strong rooting plant, bringing very much of fertility to the soil, going deeper than any other of this family to gather up fertility. I have a friend in the Platte Valley in Nebraska who says it goes twenty-two feet to the water level through the soil of that valley. I don't vouch for that story, but I heard a bigger one from a gentleman from Michigan, who took part in an alfalfa discussion in a Farmers' Institute in the northeastern part of this state. He said he knew of alfalfa plants where the roots had gone down a hundred and fifty-three feet, but this is a Michigan story and I won't vouch for it. However, it certainly is a deep rooting plant, but I think it would take several years to go down a hundred and fifty-three feet. Therefore when you sow alfalfa, you should sow on a piece of ground where you expect it to remain at least five years or more.

Clovers Valuable as Food for Stock.

Now, granting that these clovers in their place are all very valuable for the fertility they bring to the soil, they are also especially valuable for the good food they give your stock. They belong to that class of food values known as protein foods, or muscle making foods; they are full of ash, and therefore will build the bone of your young growing animals very rapidly, and at the same time give your dairy cows plenty of ash to put into the milk for a balanced food for a young and growing animal.

How to Grow Clover.

The classes of clover that we can grow in Wisconsin cover all that I have named. For me, in a three years rotation when growing clover, I prefer a mixture of the medium red and alsike on an average soil, about two

thirds by measure or weight of the medium red and one-third alsike. In some cases I prefer to put in only one-quarter alsike. You will understand the alsike seed is much smaller in size than the red clover, therefore, when your crop grows you will see much more alsike in proportion to the weight of the seed that you have sown. I like to combine the two, because it grows a finer pasture, and a finer hay, the alsike being very fine clover; besides, if sown alone, it has a weak stem and falls down, while if sown among medium red, it grows up and carries its blossoms up high, is easier cured than if it is alone, and is a better food, the stems or both being eaten up cleaner, because they are finer in this combination.

In the use of clover in a three years rotation, I want to use clear clover. In using it in a four years rotation, where we wish to pasture the clover the third year, I prefer to have a little timothy to fill up the blank spaces when the clovers kill out, as they will the second winter more or less, then you have the timothy there to fill in, giving you a fairly good pasture for the second year of the rotation, or the third year of the life of this clover plant.

In sowing alfalfa, you must sow it alone without any mixture with clovers or other grasses, if you would have it remain with you for a period of time. It should be sown on a well cultivated piece of ground, as free from weeds as possible, free from white clover seed, or other grass seed. That is, it should be a clean piece of ground that has been cultivated for two or three years until the weeds and these other grasses are all cleaned out. If the land is not clean, or it runs naturally to white clover and other grasses, it will only be three or four years till they grow in there and damage your alfalfa crop very much.

In sowing alsike clover alone, I prefer to sow about six pounds to the acre.

In this mixture of alsike and red clover, I prefer to sow at least eight pounds to the acre. In mammoth red, I prefer to sow from ten to twelve pounds to the acre, so that it may be pretty thick, and therefore not grow quite so rank, and thus make a finer hay than it otherwise would. In sowing alfalfa, I like to sow twenty pounds to the acre. Some advise thirty pounds, and some go as low as fifteen, but in our experience we have had better satisfaction in sowing about twenty pounds to the acre as early in the spring as it can be sown; in fact, all clovers should be sown just as early in the spring as you can sow them.

With the common clovers, I prefer to sow a nurse crop, like the beardless barley, and then cut it off for hay when it gets to the dough stage. With us the weeds will grow and I would rather have a crop of beardless barley to mow down, because it will be ready to mow for hay just as early in the season as your crop of weeds, and you will get something for your labor and help to keep the weeds down. If I were growing a nurse crop to mature, I would prefer winter wheat, because it does not grow as strong as rye, not covering and shading the ground as much, and not carrying such a rank crop of straw, and not taking so much moisture from the soil in a dry season. In clay soils, clover seed may be sown in the spring before the final freezing and thawing, and in that way will become imbedded enough in the clay soil to get a start, but in case your soil is light, I would prefer to wait until the soil is dry enough to harrow, then as soon as it is dry enough to harrow, sow this clover seed, then harrow. On some classes of soils, this works very well, but where you sow with a grain crop, then I would say sow as early in the spring as the soil will work, and next to the beardless barley crop, I would take the spring wheat

crop, and next to that a mixture of wheat and oats, at least one-third being wheat, and it would be better to have it one-half wheat, but, as a rule, we cannot depend, in most portions of Wisconsin, upon a sure clover crop that we sow with a nurse crop that we are going to allow to ripen, and, therefore, I would recommend that we sow it with beardless barley, or something we are going to cut off for hay.

In sowing alfalfa, you sow alone on clean soil, because we expect to have made this soil pretty clean by cultivation, possibly by the growing of a crop of sugar beets on it and getting all the weeds out of the way. Harrow as early as it will work in the spring; sow twenty pounds of alfalfa seed to the acre, and watch it grow. When it is up, two, three, four or six inches high, if you see the leaves turning yellow from rust, put your mower on and cut it down close, let it grow again, and when you see it start to rust again, put your mower on and mow it off again. Do that three, four or five times, if necessary, although three or four times are usually sufficient the first season.

If you grow beardless barley as a nurse crop, mow that when it is coming into the dough stage, and make it into hay, after that whenever you see your alfalfa rusting, mow it down, and leave it on the ground as a mulch.

DISCUSSION.

A Member—What do you think about raising clover for seed?

Supt. McKerrow—When you have a good crop of clover blossoming well it will pay to leave it for seed, if you haven't any use for it for feeding. A good crop of seed clover is a very paying crop. A good many seasons it doesn't seed well, and if you find it is not seeding well, then you can cut it for hay, or turn your stock on and feed it off.

A Member—I sowed some alfalfa

with barley and got a very good stand.

Supt. McKerrow—How many are there in this audience who have tried alfalfa? I see quite a number of hands, a good showing.

A Member—I had alfalfa long ago; I mowed it one year for hay and liked it first rate, but it winter killed the next winter.

Supt. McKerrow—As a rule, we expect alfalfa to grow stronger from the first year on to the third or fourth year.

A Member—I cut it three times the first year. The last crop was up eighteen inches, and I thought I would not cut it, I would leave it for the covering, but it died.

A Member—I cut my first crop, and the second crop I soiled last year. I don't know yet how it has wintered.

Mr. McCormick—What is the value of alfalfa as against the other clovers as a fertilizer?

Supt. McKerrow—Alfalfa is richer as a fertilizer, perhaps, because it is richer in protein or nitrogen, therefore, its roots are more valuable. It has those nodules with the bacilli in them drawing always from the soil and the air. It makes better hay than the clovers, because it is richer as to nitrogen. It is a hay that, when properly made, will take the place of bran. Always cut early when you are cutting for hay, cut it when the blossoms first appear, say, when one-tenth of the blossoms are out.

Mr. Convey—There seems to be a difference of opinion as to the necessity of having the bacteriological ferment in the soil.

Supt. McKerrow—It has grown on our farm without the introduction of any special bacteria. Down in Illinois, they are sending out inoculated soil by the bucketful and barrelful to be put upon the fields. I understand the scientists have determined that the bacteria that promotes the growth of the sweet clover is the same bacteria that promotes the growth of the alfal-

fa. Sweet clover grows all over this country, so I am inclined to think it is safe to say that where sweet clover will grow alfalfa will grow.

A Member—Did you have any trouble with common white clover crowding it out the first year?

Supt. McKerrow—Yes; last season was a very wet season and we sowed one ten-acre field. Our soil is very full of white clover and blue grass, because we have had continued rotation for a great many years, and have encouraged the white clover and blue grass, and last season, during that wet time, we sowed a ten-acre field, and got a grand, good catch of alfalfa, but late last summer the white clover was a great deal thicker than the alfalfa. It has crowded the alfalfa in some places on our farm so much that we have had to plow it up the fourth or fifth year.

Mr. Goodrich—Will not heavy seeding help to keep the alfalfa in and the white clover out?

Supt. McKerrow—I rather think not. One of our pieces had thirty pounds to the acre and while it was thicker there at first apparently, yet the white clover was in just as bad last fall, and the alfalfa looked just as thin there as it did elsewhere. The reason I don't like to sow thirty pounds of alfalfa to the acre is this, I have found that the bigger the root the better, and if I sow it so thick the roots will be smaller, they don't get to be as big and strong plants so early in life, and have not given me as good satisfaction. Twenty pounds to the acre makes it pretty thick.

A Member—Did you ever plow any of that?

Supt. McKerrow—No, I didn't. I got the plow good and sharp, told our best man to take the heaviest team that weighed about 3,400 pounds, and plow that alfalfa, then I went away from home, and when I came back he said it was a pretty tough job. I asked him

if he swore, and he said, no, but he thought some bad things.

A Member—Can you kill sweet clover by plowing?

Supt. McKerrow—Yes, by plowing or by mowing, if you mow it at the right time.

The Member—I have tried mowing it every two or three weeks for two or three years and can't kill it.

Mr. Goodrich—Is sweet clover a perennial, a biennial, or annual?

Supt. McKerrow—An annual, I believe.

Mr. Goodrich—That is what I understand. Then it will die of itself. What time would you cut it to kill it, Mr. McKerrow?

Supt. McKerrow—Just when it is coming into blossom, before any seed is formed. I will tell you what we have done. We had some get into the fields and it was growing very rank, so we herded our sheep on it, they ate it off before it got any seeds on it, and it has never reappeared.

Mr. Philips—Two years ago I had a chance to investigate alfalfa a little up in Minnesota. I made my headquarters on a farm where a man had eighty acres, and he had had a piece of that land in alfalfa twenty-two years, and that is as far north as St. Paul. I think there is a secret in growing alfalfa successfully. In moving from one farm to another, I saw alfalfa growing along the highway, the same as sweet clover does down in Walworth county. The people up there say it was seed brought over from the old country a great many years ago. I think the secret of their success up there is that they have got that alfalfa seed in at an early date and they have kept sowing it continuously until it has become acclimated, as corn is here; it grows better each year; the roots are large and strong. That was down near Minnetonka. I

want to ask Mr. McKerrow, are there any different varieties of alfalfa?

Supt. McKerrow—Yes, we know of just two varieties; there is what we call the "common" alfalfa and the "Turkestan" alfalfa.

The Chairman—Can you tell them apart?

Supt. McKerrow—I don't know. I talked with the experts down in Washington and they told me they couldn't get all the Turkestan seed they wanted in the department, and the seedsmen told me that the Turkestan has been easier to get this last year than in other years.

Mr. Convey—The kind of alfalfa grown in Minnesota is what they call the "Grimm" alfalfa, it was discovered some years ago.

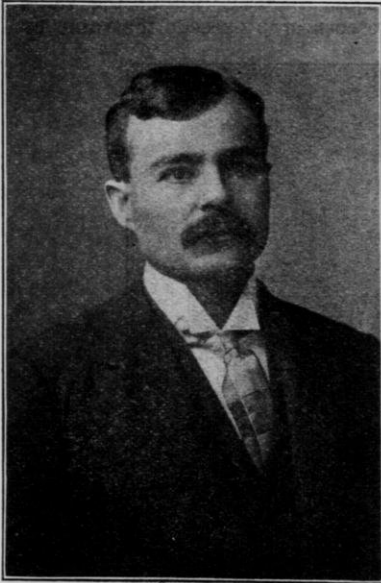
Mr. Goodrich—I have seen two kinds of alfalfa growing side by side, and if there is any Turkestan alfalfa in the country one of them must have been it, because it was gotten direct from Washington, but I can't tell any difference in the looks of it, and I haven't seen anybody that can tell the difference, but the parties growing it told me that the Turkestan seed had made a little better stand. It made six tons of hay to the acre in four cuttings two years ago last summer, the very hottest, driest season we ever had in southern Wisconsin. It yielded more that year than it did the year before and more than it has any year since. It seems to me to be a dry weather plant, dry weather makes it better than moist, cool weather.

A Member—What is the clover that the seedsmen send out as Wisconsin alsike?

Supt. McKerrow—Wisconsin has been growing alsike for a great many years, it is probably Wisconsin seed. We think a good deal of it is mixed with red clover.

CORN JUDGING.

Prof. R. A. MOORE, Madison, Wis.



Prof. Moore.

No one great agricultural product has so sadly been neglected in Wisconsin as corn and we hope by systematic breeding to be able in a few years to establish varieties in various sections of the state that will far surpass in yield of corn and forage those varieties now grown.

Early History.

Corn is a native of America and was first seen by Europeans at the time of the discovery of the islands off the main coast of America by Columbus. The natives grew corn and used the same for food. Later when Mexico and Peru were conquered by the Spaniards, corn was found to be one of the principal crops of the natives. It was

not only used as a food, but was held in reverence by the Indians of South America, who buried quantities of corn with their friends who had passed away.

The French explorers in the early days on ascending the St. Lawrence river in and about where Montreal now stands, found that corn was grown there by the Indians. The New England colonists also found that natives grew corn as a food and learned the preparation of several dishes of corn, such as samp, hominy, succotash, etc.

It seems quite probable that corn originated in Mexico or Central America from a native plant known as teosinte. The corn plant readily adjusts itself to environments, changing its form and habits of growth to suit the soil and climatic conditions where grown. Under the primitive culture of the various tribes in America, very little if any improvement was made, the corn was very poor at the best. It remained for the intelligent farmers of the United States to note its possibilities and to bring this great plant to the attention of the entire world.

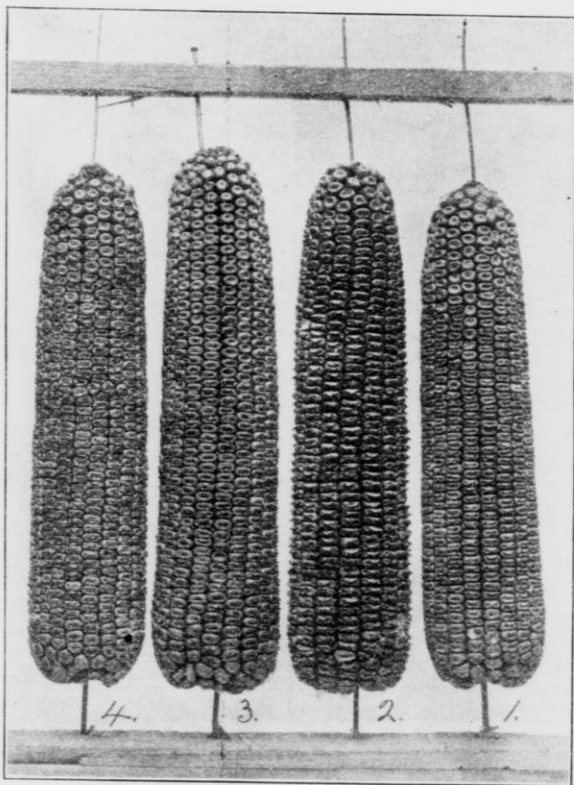
The Different Families or Breeds of Corn.

There are several families of corn, each having many varieties. Among the breeds we may note the antiquated pod corn, the Peruvian soft corn, the sweet corn, the popcorn, the flint and the dent corn.

Some special farmers have devoted considerable time and attention to growing popcorn and by securing proper markets have been able to make considerable money. The mar-

ket gardener has in like manner been able to grow sweet corn for the supply of city trade. Some flint corn is grown in northern latitudes also, but the corn that attracts our attention at the present time and commands the consideration of the entire world is the great American dent corn.

find that all cereal crops produced in 1902 were valued at \$1,840,000,000. The corn alone was valued at \$1,017,000,000. Thus we see that the corn crop amounts to approximately 60 per cent of the valuation of all cereals grown. In other words, the value of the corn crop exceeds the value by 10



Types of Good Ears. Photo from Iowa Exp. Station.

Importance of the Corn Crop.

Let us take in comparison for a moment the cereal crops of the United States. We find that, according to the Year Book of 1902, the cereal acreage of the United States for that year was 176,000,000, and of that number of acres 94,000,000 acres were into corn. In comparing valuations we

per cent of wheat, oats, rye, peas, rice, buckwheat, etc., combined. We, therefore, feel that Wisconsin is justified in putting forth considerable effort in perfecting this most wonderful plant.

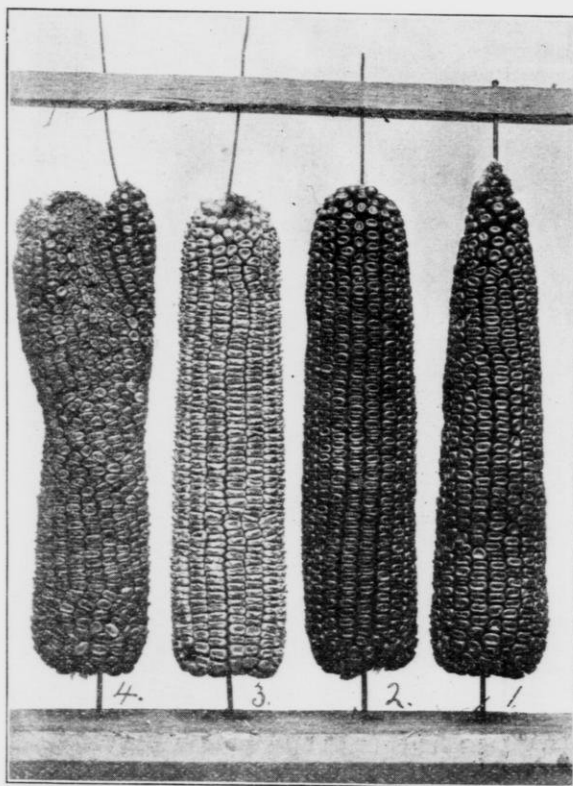
Corn Investigations in Other States.

Illinois has been the state to take the lead in scientific corn improvement

and we owe much to our sister state for the great good she has accomplished. Illinois started the improvement of her corn crop several years ago, and during the past five years the legislature has appropriated \$10,000 an-

varieties have been selected because of their fixed characteristics, made prominent by many years of careful selection.

The Leaming corn has been grown without a cross for seventy-eight years



Good and poor tips. The two ears in the center 2 and 3 have what we consider fairly good tips. The ears on right and left, 1 and 4, are very poor tips. Photo from Iowa Exp. Station.

nally for the study of the corn plant. Through the cooperation of corn breeders, seven standard varieties of corn have been established, viz., the Ried's Yellow Dent, the Leaming, the Golden Eagle and Riley's Favorite, of the yellow varieties, and Boone Co. White, Iowa Silver Mine, and White Superior of the white varieties. These

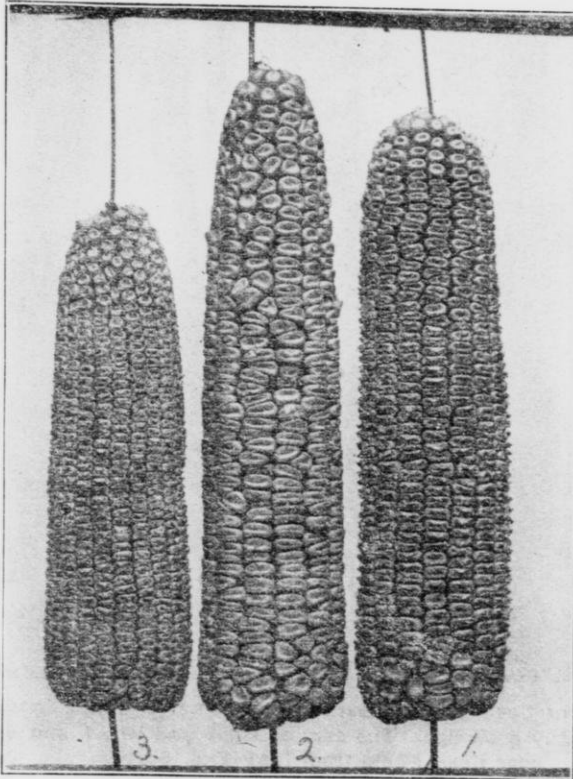
and Ried's Yellow dent for fifty-seven years, hence their stable characteristics.

Through a series of careful experiments, the Illinois Experiment Station has demonstrated that the yield of corn cannot only be increased by the selection of seed, but the quality can be materially bettered as well.

The live stock breeders are interested in a corn of the highest feeding value. To increase the value of corn from the feeder's standpoint, we should increase the protein and oil content, as these are the elements of the most value in corn. This improvement can readily be accomplished by the grower in selecting seed that is high in protein and oil.

percentage of the constituents of field corn is as follows:

Starch	70.
Water	11.4
Protein	10.5
Oil	4.5
Fiber	2.2
Ash	1.4
	100.



Variation in Size of Kernels Undesirable in Seed Corn. Photo from Iowa Exp. Station.

One need not be a chemist to do this, the average farmer, after receiving a few suggestions, with no apparatus except a jackknife, can make the necessary determinations.

From many thousand analyses made by the Chicago Glucose factory, the

Of the above, we need only consider the starch, protein and oil.

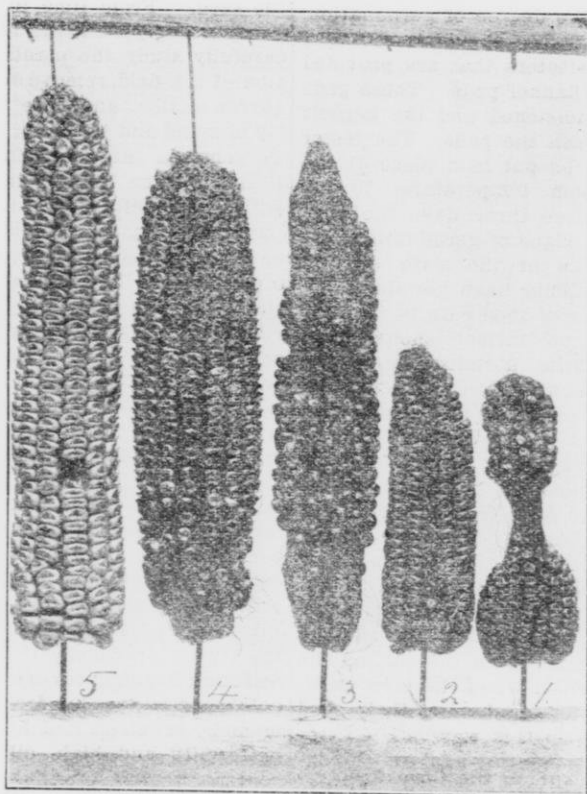
There is very little variation in the chemical constituents of kernels of the same ear, but a wide variation in the kernels of different ears.

For all practical purposes, we may

consider one kernel a fair index of the quality of the entire ear.

Eighty-five per cent of all oil found in the entire kernel is found in the germ, hence we have but to select for large germs to secure ears the kernels

ing a high-grade feeding corn, we have but to select for seed ears the kernels of which show large germs and a relative large amount of horny matter. In corn that is very high in protein only a moderate amount of the white



Scrub Ears and Nubbins. Photo from Iowa Exp. Station.

of which are high in oil content. Selecting for protein is a little more difficult and we find it necessary to dissect the kernel. This can be done by cutting from tip to crown with a sharp knife. The larger part of the protein is found in the hard, horny portion which constitutes the shell, as we may term it, of the kernel, a goodly supply is also found in the germ. For grow-

starchy matter is noticeable and this is nearly all found in the crown.

When we consider that one bushel of corn will plant about six acres and we realize the great change that can be brought about by intelligent selection of the seed, we will then feel that our time is not misspent if we devote several hours to the selection of a single bushel of seed.

The Importance of Having Seed Corn in the Ear.

Save ear corn and not shelled corn for seed and shortly before planting make the selection of ears for high oil and high protein content. One kernel at least should be saved from each ear to test the degree of germination. The kernels saved should be put into simple plate-testers that are provided with cotton flannel pads. These pads should be moistened and the kernels placed between the pads. The tester should then be put in a place at the ordinary room temperature, 70 degrees F. After three days the corn should show signs of germination. At the expiration of the sixth day all good seed should have germinated.

The testing of seed corn is very important and no farmer should plant seed of doubtful germinating quality. Good seed should give a test of ninety-five per cent or above and show vigorous germination. When purchasing seed corn, the farmer should insist on its being shipped in the ear. It may be difficult to get it from our seedsmen at this time, but they must be educated to the fact that the scoop-shovel method of selecting seed corn is not the method desired by farmers. Practically all the seed corn will soon be put on the market in the ear, as the time has arrived when the corn growers will insist on having their seed corn shipped in this way.

Improvement in the Corn Crop.

The greatest immediate improvement in the corn crop will probably be brought about by grading up promising varieties already grown within our state. By testing other varieties that seem especially adapted to our soil and climate, we may secure some standard varieties that will be of great value to our farmers a few years hence.

The greatest advancement in corn growing in other states has been brought about by the individual farmer planting from year to year the same

variety of corn and practicing rigid selection of seed ears. It seems advisable for the farmer to have a portion of the corn field for his seed patch. This may be one or several acres, but must be that portion where extra care has been exercised in the selection of the seed. From time to time during the growing period, the farmer should carefully study the plants of this portion of the field, remove or detassel the barren stalks, and note the uniformity of stand and character of the plants in general. At the time the husks begin to turn yellow, if the farmer will occasionally go through his seed patch, and by tying a string around each ear he desires, he can select ears of early maturity and at the same time study the character of the stalk and mark ears only that grow upon vigorous stalks with medium shanks and having other desirable characteristics. He may desire to grow a good fodder corn, as well as a grain producing corn, hence should pay considerable attention to the leafiness of the plant. Some farmers make a mistake by going into the field and picking the early ears and retaining them for seed. The ear should merely be marked and then left until fully ripened. It can then be distinguished from the other ears by the string previously tied to it. By selecting each year from our seed patch one or two hundred ears in this manner, supplemented by the test for uniformity and high oil and protein content, we will have valuable corn for our seed patch the following year. The corn for the general crop should be also selected from that portion of the field that has been planted with this carefully selected seed, but we do not need to spend as much time on the selection of that seed as on that which we desire to plant for our special seed patch.

Curing Seed Corn.

Proper attention should be given to curing seed corn, for if not cured

properly all the time and attention paid to proper cultivation and selection would be of little value. A very convenient place is often in the upper part of the corn crib, where it can be piled up in tiers on boards or strung on wires or cord. Wherever placed, it must have free circulation of air in order to cure properly. A small amount

jured by freezing. It is only when corn has an over abundance of moisture that it is severely injured in the crib or elsewhere by hard freezing weather.

Planting Corn.

Where the desire is to get the largest yield of grain, corn should be checked rowed at the usual distance



Farmers' Corn Judging Class at the Wisconsin College of Agriculture.

of corn placed in a large room where there is not constant circulation of air will soon be ruined as seed corn.

Where a large amount of seed corn is to be cured annually, corn racks should be arranged in some building in which there can be had free circulation of air. A stove in which to build a fire for a few times to aid in the drying out of the corn is very essential. A shield of tin or sheet iron should be placed around the stove, so that the corn near by will not receive too much direct heat.

After corn is properly cured, there is very little danger of it being in-

jured by freezing. It is only when corn has an over abundance of moisture that it is severely injured in the crib or elsewhere by hard freezing weather.

Where the desire is to get the largest yield of grain, corn should be checked rowed at the usual distance

apart for which the corn planter is adjusted (forty-two inches). The aim should then be to get the same number of kernels in each hill. Three is the desired number and our seed corn should be selected for uniformity of kernels. The planter should then be tested until we have the proper plate that will drop the desired number of kernels. Much depends on the uniformity of stand, consequently the farmer is amply repaid for energy expended in that direction. In selecting the seed, reject the butt and tip kernels, as they are not the same size as the other kernels and require a longer

period for germination. They are also more liable to be cross bred than the kernels on the body of the ear.

The corn work at the College of Agriculture has for its object the training of farmers in the study of this important plant from various standpoints. We feel that by becoming acquainted with the importance of the plant and the rare possibilities of rapid improvement, that the corn area can be greatly widened and many farmers materially benefited thereby.

By learning systematic corn judging, the farmer is able to select intelligently the ears of corn that contain the essential characteristics for producing the best possible crop, quantity and quality considered. This knowledge, supplemented by other facts, will make the growing of corn one of the very interesting and profitable lines of agriculture followed by the farmers of our commonwealth.

DISCUSSION.

A Member—Which of these seven varieties that you have named is considered early?

Prof. Moore—Riley's Favorite is considered quite early; Riley's Favorite, Ried's Yellow Dent, and the Leaming have all been grown in southern Wisconsin.

Question—Do you think any of those varieties you have named would be suitable for this locality?

Prof. Moore—I don't think so. I have here a couple of samples of Illinois corn, which they consider the very best varieties of the yellow corn. This is Ried's Yellow Dent, which has had fifty-eight years of pure breeding, without a cross. Note the cylindrical ear; note the depth of the kernel. This has matured in nearly all portions of the state of Illinois and, where given special advantages, did fairly well at the Wisconsin Experiment Station. The other I have not as yet tried, it is called the Leaming, which has seventy-

eight years of pure breeding, without a cross, except accidentally perhaps by the blowing of the pollen from adjoining fields. This is an excellent variety of corn and gives a yield on Funk Brothers' farm of seventy-five to one hundred bushels per acre.

Supt. McKerrow—What corn would you recommend for the soil surrounding Kaukauna, a pretty heavy clay soil rather moist and cool, not a very rapid growing soil?

Prof. Moore—Up to the present time, Wisconsin has no standard varieties of corn. We are putting forth every effort to determine those varieties which will be of the most possible advantage to the farmers of our state. We may for a few years have to content ourselves in some portions of the state with the Flint corn until we can get some varieties of Dent that are sufficiently early to do well in this locality. At St. Paul Prof. Hayes has a corn known as Minnesota 13. I show you a sample here, and you can see that it is a compact ear, having from sixteen to eighteen rows, and has a nice stalk. If you will practice seed selection of the variety you are now growing for five or six years, you will develop your own variety. They did it up at St. Paul, and there is no reason why we cannot do equally as well. I look forward with a great deal of pleasure to the improvement of corn in our state, because we have a class of farmers that take better care of their corn crop than in any of the so-called corn growing states. The farmers of Illinois and Iowa do not pay the careful attention to the corn crop that we do in Wisconsin, as far as taking care of it is concerned. The farmers of Wisconsin have been dependent upon the seedsmen for their seed supply and have had sent them from year to year southern varieties of corn which are not able to mature. It will not be until we can grow our own seed that we can look for rapid improvement in

the development of good, choice varieties of corn that will mature in the counties where we wish to grow it. You notice one point about our corn. This corn (holding up sample) is rapidly turning into Flint. You see the wide furrows in there and I think we would find that the kernel would not be as deep as in the Minnesota corn.

The Chairman—Is it not true that corn grown on these clay soils grows more and more flinty?

Prof. Moore—Yes.

A Member—I have found that to be so. After two or three years it always gets more flinty.

Prof. Moore—Our Dent corn will turn into Flint corn by growing it north and our Flint corn will turn into Dent by carrying it south. That can be overcome in a measure by selecting seed and I think that we can select a Dent corn that will hold to its original type, but we have got to do it by growing that corn right here. We cannot send south and bring corn up and grow it to maturity, because it will not mature and it will begin to revert back.

Mr. Imrie—I don't like to differ with the Professor, but we have grown corn called Amber Dent for seventeen years, and I think it is as good a Dent as when we got it first. But as you say in picking the Flint corn, it would grow more flinty. This has been grown mostly in Buffalo county.

The Chairman—Is that a clay soil?

Mr. Imrie—Yes, it is this clay loam.

Mr. Nordman—I think in Mr. Imrie's locality, they have as good a corn country as they have down at Milwaukee. He lives out where the climate is adapted to growing corn.

Prof. Moore—I do not wish to convey the idea that we cannot grow good corn in Wisconsin, because I know we can. Here I have a sample of corn grown in Wisconsin, practically pure bred for twenty-eight years, grown in Walworth county. That is a beautiful ear of corn, it compares favorably, if

it is not better than the Minnesota corn. I think there is a greater proportion of corn to the cob, I tried some of this and found it went eighty-seven per cent to the cob. This was grown by J. D. Clark, a former agricultural student.

The Chairman—I think you will find in many sections corn that has been grown a great many years in some locality, though they may not have given it any particular name.

Prof. Moore—In order to get a line on Wisconsin corn, I sent out circulars and letters to all those coming in to the College of Agriculture as second year students, and all those coming in as farm students, requesting them to bring in samples of corn, and I have samples of corn from nearly every county in Wisconsin, and I think it is a grand thing, because I am able with those samples to get a line on Wisconsin corn. There are several varieties I like very much, and we are going to try these in different localities of the state. We have this year three or four hundred members of the Experiment Association that are going to grow these varieties of corn, and we hope within a short time to be able to help the farmers of the state of Wisconsin to get good seed corn.

A Member—You do not intend to take that from the south? Don't you think that seed taken from Minnesota, or even in northern Wisconsin, would be all right here? We have got a pretty good corn state, but, as the gentleman says, I think the fault is a good deal in not planting our own seed. You send even to Iowa, select your seed carefully, or to St. Paul, and you will get seed corn in pretty nearly the same condition.

Prof. Moore—I will tell you what was done with the Minnesota 13. Funk Brothers thought by taking this Minnesota 13 down to Bloomington, they could develop a corn that would surpass the corn that was growing there. I had the pleasure of visiting the Funk Brothers' great corn breeding farms

last fall and among other things they showed me this Minnesota 13 corn. I spent a half hour in getting a good sample, and this is what I got, it is just a respectable nubbin. I got that in Illinois, grown on Funk Brothers' seed farm. It is evident that northern corn deteriorates when it is taken south as much as southern corn taken north.

A Member—Don't you think if the farmer selects his own corn, taking it in the right time, he could grow pretty good seed corn here?

Prof. Moore—I think he will be more apt to get a good corn by going either east or west than looking for seed that has been grown north or south, but I look for the greatest improvement with corn grown in our own locality, supplemented by years of careful selection. We are going to get the most improvement from corn grown

right in our own locality and not with corn the seed of which has been grown hundreds of miles away.

A Member—I sent down to Milwaukee for a bushel of seed a year ago, and I didn't get much corn. I will not name the seed firm I got it from, because there might have been some kind of a mistake.

Prof. Moore—The seedsmen are not entirely to blame, they cannot get good seed corn, they will be able to get it in the next five or six years. They are probably sending the best they have.

A Member—Wouldn't it be a good thing to go to work on a farm and try to raise seed corn and do it as those men did in Iowa and Minnesota?

Prof. Moore—I expect to grow thirty acres of it the coming year and many members of the Experiment Association will grow several acres each.

CURING MEATS.

THOS. CONVEY, Ridgeway, Wis.

There are a great many farmers who find it difficult to cure a supply of meat for summer use. It is a very simple matter to have a supply of cured pork at all times of the year. We cure and sell some every year, when prices are at their best, during midsummer months. We prefer dry salting, when done during cool weather. It will not do for warm weather, as brine salting would be the best in that case, and it is doubtful if it can be kept in good condition then in farm curing.

Some Essential Conditions in Curing Meat.

There are some conditions I consider indisputable in curing meat. First, hogs should be bled right; they should not be chased around the pen before sticking. The less excitement

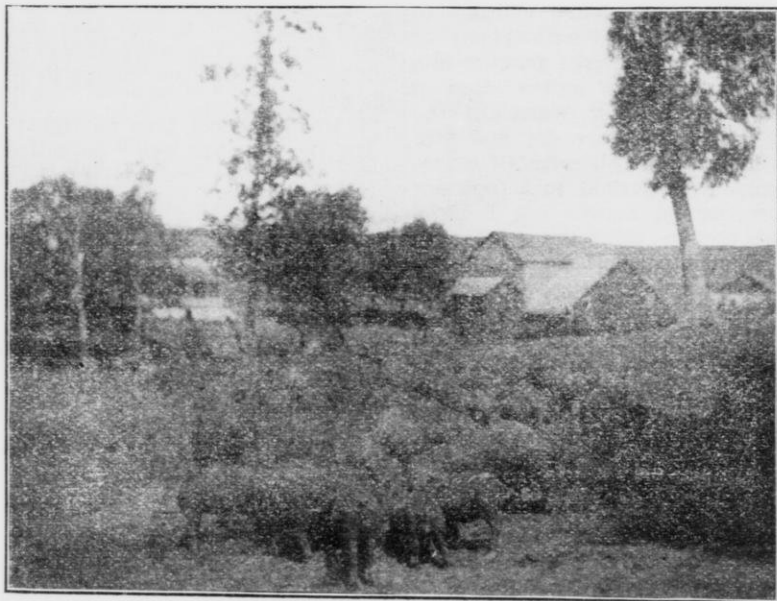
and worrying the animals get, the better results. They should not be stuck too deep, as the blood will settle inside in that case. Good bleeding and perfect cleaning are absolutely necessary to secure best results.

In curing, meat must be cooled thoroughly before packing, and this is best done by hanging from one to two days where it will cool without freezing. Hams are most difficult to cool; many cases of spoiled hams are due to imperfect cooling. The animal heat must be taken out. I may be mistaken, but I think freezing injures the meat. All bloody parts should be cut from the carcass and go with the scrap meat. In cutting up the carcass, care should be taken to saw rather than chop and splinter bones. I believe a better job can be done by cutting

through the ribs on both sides of the backbone from the inside, and on the outside make a single cut through meat on center line of back; in this way the backbone may be removed without difficulty and more lean meat be left on the sides. All cuts should be as smooth as possible.

in contact with. For this reason, it does not do to store it where it will take up odors from a vegetable cellar, or where it will come in contact with an off-flavored barrel.

The second day, the meat may be salted. Use sufficient to cover the flesh side after rubbing in. We pack



The Meat Producers on Convey's Farm Getting Ready for the Curing.

We cut the body into six parts, leaving the side full size. Many prefer to cut the sides into strips, but it is easier to handle uncut.

First sprinkle with sugar on flesh side, using a small amount. Sprinkle lightly with saltpetre finely pulverized, from a perforated can. In all receipts for curing meat, saltpetre is recommended. If too much is used, it makes a hard fiber in the meat, it also intensifies the red color of the muscle, so do not use too much. If you like the flavor of pepper, put in any kind you wish. Fresh meat readily takes up any flavor it comes

on a table like a carpenter's bench, first putting a layer of salt on the table. The object is to let all moisture drain away, and we pile the meat as high as necessary. After a week or ten days, overhaul, use more salt if necessary, being sure to get plenty around the bones in hams and shoulders and in the ends of shanks. It may be left about a month, where it will not freeze, then ought to be ready to dry and smoke, and we smoke it just as much to dry it thoroughly as for any other reason. See that it is firm and dry before putting away.

It is sometimes recommended to

leave in smoke-house throughout the season, but salt meat will take up moisture every damp day, and we find it a great deal easier to pack it away in clean oats, being careful to pack on a dry day, that is one with a clear atmosphere. Do not allow two pieces to come in contact with each other. It is best not to pack too much together. We have found it safer to put hams in barrels with plenty of oats than to pack a large quantity in a box. Examine after a few days of warm, moist weather, especially the hams, and if they are dry and firm everything will be all right. Of course they should be packed in a cool, dry place.

Most people think the more salt used the better, but too much salt makes a hard fiber and poor flavor, for that reason I do not like meat packed in dry salt. Do not let meat get mouldy, even a dry mould will spoil the flavor. If meat begins to mould, hang up in a dark place to dry out, rub in more salt, and repack. Hams are safer packed or wrapped in paper, but we can keep them all summer without. Plenty of fine pepper will keep flies away.

Best Pork for Curing.

Young hogs, weighing from 150 to 200 pounds, make the nicest meat and pigs fed on a variety of food with sufficient protein in it are very much better than corn fed hogs, where corn is fed exclusively. Most people think a thick-fleshed or broad-backed hog is of necessity a lard hog, but hogs grown on the right kind of pasture, and that must be a continuous one during the growing, always feeding grain during pasture season, and then finished on the balanced ration, and this kept up for generations, can be lean as well as thick-fleshed hogs. This is true of cattle and sheep, and why not also of hogs? We have fed largely on skim milk, peas and oats, in connection with corn and ample pastur-

age, and know we can have a thick-fleshed hog that will make nice meat, especially when not too old.

DISCUSSION.

Mr. Imrie—How would it do to pack that meat in dry salt instead of oats?

Mr. Convey—Meat that takes up too much salt makes a hard fiber and a poor flavor. You want just enough salt to cure it, and not enough to spoil the flavor.

A Member—Isn't bran all right?

Mr. Convey—Not quite so satisfactory. It is more inclined to take up moisture and stick to the meat.

Mr. Culbertson—We wrap it in tissue paper first.

Mr. Convey—Yes, you can make sacks for your hams, or wrap them in paper. At any rate, it is always well when the damp, warm weather comes on to examine your meat, you want to see that it does not mould. Hang it up in a dry, cool place and let it dry off, if it has moulded, put a little more salt on it and pack it away again.

Mr. Matteson—What kind of sugar do you use to rub on?

Mr. Convey—It is immaterial. Of course, brown sugar is the cheapest. Molasses might do, but I would not recommend the glucose syrup. We put the sugar on first, and then sprinkle with salt.

A Member—What kind of salt do you use?

Mr. Convey—Pulverized rock salt is the purest salt and better for curing meat than common salt.

Mr. Culbertson—When you cut up your hams, what do you do with the trimmings?

Mr. Convey—There is no trouble getting rid of the trimmings. They are usually more desirable than the meat itself, especially when they are fresh. We cut off the shanks and other parts. Be careful about cutting smooth, having them real smooth on the outside.

Mr. Culbertson—How are we going to know when we get enough salt on?

Mr. Convey—We rub on about salt enough to rub in thoroughly and cover the meat, and then we pack away one piece on top of another.

A Member—Would not anyone not accustomed to your method be likely to make a better success by putting it in brine?

Mr. Convey—Of course some people who pay strict attention to putting it away in brine so it will keep all right will save it very nicely, but in many cases they put in too much salt, or it gets a foul scum and you have trouble. I have known lots of parties who had good success with dry salt, who would have no success with brine salt. Many farmers make a mistake in cutting up their meat too quick. It should not be cut under from one to two days.

Capt. Arnold—I have tried that dry salting and made some mistakes, so I have gone back to salting in brine, and I make the brine so it will bear a potato half out of water, an ounce of saltpetre to twenty pounds of ham, and I never had any trouble and find it the easier way; it doesn't take so much brains as to do it your way, nor so much time.

Mr. Convey—We think it is the other way.

Capt. Arnold—In a barrel of hams, we will put in about six or eight pounds of sugar. You have not said anything about salt pork. As I understand, this meat you speak of is all smoked.

Mr. Convey—We smoke all our meat. I suppose we could dry it without smoking it if we wished to, but it must be perfectly dry.

Capt. Arnold—Do you smoke the entire carcass?

Mr. Convey—Certainly, the whole thing. It may be somewhat too smoky after smoking a week or ten days, but it loses that smoke flavor, so there is little trace of smoke in it.

A Member—From your experience

in traveling through the state, do you think it would be safe to hang meat out one or two days in the northeastern part of the state?

Mr. Convey—It is perfectly safe in our country.

A Member—Do you pack all your meat in oats?

Mr. Convey—Yes, we pack everything, hams, sides and everything; pack them separately, of course. We make bacon of the sides.

A Member—I suppose the sugar that the Kaukauna Sugar company makes would do?

Mr. Convey—Yes, that is good enough for anybody. Let me say that if you erect a temporary structure for curing your meat, it is handy to have one end higher than the other.

Question—How long do you let it stand before you smoke it?

Mr. Convey—We like to kill about this time of the year, early March, so we have plenty of cold weather, and we let it stand a month.

Question—Do you put this meat in the cellar or somewhere upstairs?

Mr. Convey—We put it in the cellar.

Question—In keeping pork, does it make any difference what time of the question asked before.

Mr. Convey—We don't pay any attention to that. I never heard that question asked before.

Mr. Jacobs—Do you kill your year's supply all at one time?

Mr. Convey—Yes, we have killed and dressed fifteen hogs in that way.

Mr. Jacobs—What do you do with all the surplus heads and feet and all those things?

Mr. Convey—We run quite a boarding house down at our place, although it is simply our own family. We don't have to call in the neighbors to eat up scraps.

The Chairman—Eighteen Conveys will take care of a good many scraps.

Mr. Convey—We live down there, we eat meat.

Mr. Jacobs—We think it is more

satisfactory to kill one or two small pigs at a time and the ham and shoulders will be put down for spring smoking.

Mr. Convey—In this state I notice there is a great deal of outside meat sold in the city markets. In fact, in nearly all of the small towns and cities of Wisconsin they get this packers' meat, they buy shoulders trimmed down to look like hams. We like to have good meat for ourselves, and still have quite a surplus to sell during the heat of summer when prices are good. I have known farmers to sell hogs at \$3.50 a hundred and

buy the meat back at fifteen cents up there in the summer time, and that is the class of people that I like to accommodate.

Care should be taken in butchering animals that they are not overheated, excited, or driven long distances before killing. The stiffening of muscles, called "rigor mortis," takes place soon after death. In a heated animal, where it occurs early, it passes off soon and putrefaction begins. If an animal has a leg broken, butcher immediately, as excessive pain will get animal out of condition.

SMALL GRAINS.

GEO. C. HILL, Rosendale, Wis.

There is a place for small grain crops in a good system of farm management in Wisconsin. The best systems include live stock of some kind, and some of the small grain crops, grown in rotation with corn and clover, are useful to furnish a variety of feeding stuffs, to supply straw for bedding, to furnish a nurse crop for the young clovers and grasses, and may be a profitable market crop, when grown in a conservative way. As a rule, small grains should not be grown more than one year on the same ground. Experience has shown that where crops of small grain are grown consecutively, weeds, fungous diseases and chinch bugs increase, quality becomes poorer and quantity decreases. It is believed that in the long run as much grain is produced in one crop grown in a good rotation as would be secured if the same land were planted with the crop every year. Experiments in England and America have proved this.

Best Soil for Grain Growing.

The best soils for grain growing are clay, the loams of the prairie, and oak openings. In Fond du Lac county, the best spring wheat is grown on the red clay soils. Compact soils give the best crops. Light soils should be fall plowed. In fact, all lands to be planted to small grains should be plowed in the fall. This gives an opportunity for early sowing. This is important. Small grains thrive best in cool weather.

The Best Time to Sow the Grain.

The earliest sown grain stands the best chance; so also the early varieties, other things being equal. In my experience, winter wheat produces five bushels per acre more than spring wheat, but is less salable. Winter grains are better to sow the clover and grasses with than the spring crops. Spring rye is grown quite extensively, being a good producer and fairly good nurse crop.

Some Good Varieties.

Hard white Fife is a good variety of spring wheat. I believe it best to get fresh seed wheat occasionally from northwest Canada. At the Minnesota Station, a great amount of labor has been expended in the past ten or twelve years to produce new varieties of spring wheat. Two hundred varieties were produced. The methods were mostly by hybridizing, using the best Fife and Blue-stem varieties for parents. These varieties were put through tests for yield, stiffness of straw, rust resistance, milling qualities and the baker's test. The list was soon cut down to eight, and these again to four. These were found to be better than the varieties commonly grown in the northwest and have been disseminated. It would be well for Wisconsin farmers to try some of these new wheats. I have no faith in change of seed from the same locality as a means of improvement; there is a liability of bringing in weeds and trash. Grains do not run out, if properly selected and grown. If there is deterioration, improvement may be brought about by the same rule.

The Oat Crop an Important One.

The oat crop is the most important small grain crop grown in Wisconsin. Some varieties are better than others. An early rust-resisting, productive variety should be grown. There are many new kinds advertised, or old ones with new names, said to be marvelously productive. Better not waste any money or time on new varieties warranted to produce 200 bushels or more per acre. On our farm no variety has yet been tried giving as good results as the old white Shoenen.

Barley.

I have had no experience in growing barley, either for feed or drink.

Seed.

Clean, plump grain should be used for seed. I have seen a marked difference in the growth of the crop in favor of plump seed. Experiments at the Kansas Station gave a yield of 33.3 bushels of oats from very light seed and 45.1 bushels from the heaviest seed. The heaviest produced 40 per cent. more stalks than the light seed. All seed grain should be treated to kill the smut, at least as often as necessary.

Preparation of the Soil and Planting.

A fine seed bed should be prepared, leaving the under portion compact. Some rich corn lands which are to grow oats give the best results by not plowing.

I believe the drill is the proper tool to seed with. The depth of planting can be regulated. No seed need be wasted by too deep or too shallow planting, consequently less seed is required when a drill is used. Kansas experiments covering a period of seven years with oats, gave from broadcast seeding twenty-six and one-fourth bushels; from seed drilled, thirty-one and one-half bushels. Usually the roller should follow the drill. This will give quicker and more even germination. The seeding should be finished with a light harrow.

A good share of the wheat is grown mixed with oats. Wheat so grown is quite free from rust, having a plump, light-colored grain. There are fanning mills for separating the grain.

Wisconsin Adapted to Grain Growing.

Wisconsin has a soil and climate adapted to grain growing, but our farmers ought to improve their methods and get better crops. Our lands are capable of producing twenty-five bushels of wheat, while the average production for ten years past was 15.5. The oat crop is scarcely as good, probably because more poor and wet lands

are used for this crop. The oat crop for 1902 was 95,000,000 bushels, worth nearly \$30,000,000. The yield was forty bushels, but the yield for ten years was nearly 33.5 bushels. Our lands ought to produce fifty bushels per acre. Many farms produce sixty bushels and often more. The wheat crop in England has averaged about thirty bushels for many years and other crops in proportion, and these on lands that have been in cultivation for generations.

Summary.

Do not make a speciality of grain growing. Grow in rotation. Grow mostly for stock food. Plant good seed of the best varieties. Seed with a drill in a thoroughly prepared soil that is fertile and well drained. Grow a paying crop.

DISCUSSION.

Mr. Convey—Mr. Hill stated that he thought fall plowing was better for small grain. I am satisfied that simply discing is better.

The Chairman—Don't you think it makes a difference in different locations of the state?

Mr. Convey—I think not.

The Chairman—It certainly does in our county. You couldn't begin to raise as good a crop on disced land in our county as if you fall-plowed it.

Mr. Convey—They have tested that matter in the North Dakota Station, and in the majority of cases they got forty-five bushels to the acre. In my experience, discing is much preferable.

Mr. Hill—I said in my paper that there were corn lands that would raise better crops if they were not plowed.

Mr. Convey—Discing is preferable in dry climates, but in every case insist on thorough discing and rolling.

A Member—On clay land it is pretty hard to thoroughly disc. I went over mine four times.

The Chairman—I am quite sure that it depends a good deal on the locality and the condition of the soil as to which we had better do, disc or plow our corn land.

A Member—I think it makes a difference, too, whether the discing is done by a small gang plow or by a disc harrow when you are working two or three inches deep.

Mr. Hill—The supposition is that the disc does not go as deep as the plow.

A Member—It seems to me it makes little difference whether you work the ground with a disc harrow three inches deep or with a small plow three inches deep; if it is thoroughly done it is all the same.

A Member—I understand that Mr. Convey means he prefers to plow corn stubble.

Mr. Convey—No, we disc our corn ground and work it up thoroughly in a very nice condition. We first get on the corn rows and throw them out, then we double disc it and keep it level. In our case, it is a mellow soil. We get down two or three inches and it is the nicest kind of preparation for the grain crop.

Mr. Hill—I think if Mr. Convey was farming on our clay soils, he would probably plow his land.

A Member—When would you harvest this wheat, Mr. Hill? Would you wait until the grain is thoroughly hard and ripe?

Mr. Hill—Yes. If I could cut it all just in the right time, I would. If I had a good deal to cut, probably I would begin while it was a little green. But I do not believe in cutting any kind of a crop before it is ripe, unless it is clover.

Supt. McKerrow—The question is, when is wheat ripe?

Mr. Hill—When the whole plant is beginning to dry, so that there is no more sap or food passing up the straw into the berry. The kernel then

would be getting out of the dough state.

A Member—Take it right here where the farmer has about eighty acres, or less, and there are a great many in the dairy business, would you advise them to sow wheat and how much on an eighty-acre farm, at the present market price of wheat and the prices as they have been?

Mr. Hill—I couldn't tell, but I should certainly follow a rotation. With eighty acres, all in cultivation, about one-third of that should be in clovers and grasses, about one-third in corn, and the other third should be divided between oats and wheat.

Supt. McKerrow—I think Mr. Hill's idea in sowing some wheat every year is simply to get a clover catch.

Mr. Hill—Yes, our rotation would be divided, not into three, but into four years; that would be a quarter in corn, a quarter in clovers and grasses, a quarter in oats and a quarter in wheat. The wheat would come last and would be the place for the clovers and grasses to be seeded.

A Member—Prof. Henry comes up here once in a while, and he tells us to sow no wheat at all, but to leave California and Argentine and other places to grow the wheat and we go into the stock business. What are the farmers going to do when you come along and tell them to sow wheat?

Mr. Hill—You had better listen to Prof. Henry. He is a much greater man. We do not grow wheat because it is a profitable market crop, as a usual thing. If it is a dollar a bushel and we get twenty or twenty-five bushels, it does very well, but we keep wheat in our rotation simply because we want to be sure to get a clover crop and we get it surest with wheat.

Supt. McKerrow—When Prof. Henry says not to grow wheat, he means not to grow wheat in competition with the far west, growing it for a busi-

ness. Mr. Hill simply grows wheat because it is a good crop, to secure a catch of clover. He grows it in rotation, not for the sake of the wheat, but to get the clover, because he has found that upon his soil he can grow wheat and get a catch of clover.

Mr. Hill—A great deal of the wheat in our section is raised mixed with oats, succotash they call it, and that is a very good way to grow the two crops and a very good place then to plant the clovers and the grasses, growing the grains together and separating them afterwards.

A Member—Isn't barley a good crop to grow as a nurse crop?

Mr. Hill—I presume it is; I have had no experience.

A Member—Don't you think that where the farmers have gone in where it was a light soil, say, up by Wausau, and then sowed rye in there and got ready for clover, all kinds of clovers, don't you think they can get just as good a catch with rye as with wheat?

Mr. Hill—I said in my paper winter grains were better generally.

Mr. White—We have had good success sowing with rye.

A Member—What has your experience been with sub-soiling heavy grounds for grain?

Mr. Hill—I have had no experience. Our lands are all high, dry lands.

Capt. Arnold—You seem to be prejudiced against raising barley, you want to raise wheat in order to have a good nurse crop. Did you ever try seeding with early oats, sowing with a drill, running your drill north and south and sowing a bushel and a half to the acre, and rolling it after you have run your drill, then dragging it after you have rolled it? I have had no trouble at all in getting a good catch of clover after oats, notwithstanding it is the poorest nurse crop,—if I had an early variety of oats.

Adjourned to 7:30 P. M.

EVENING SESSION.

The Institute met at 7:30 o'clock. Conductor L. E. SCOTT in the chair.
Music, Mill and Nugent Orchestra.

SOCIAL RIGHTS AND DUTIES OF FARMERS.

Mrs. J. W. BATES, Broad Ripple, Ind.



Mrs. Bates.

Garfield said: "It is not so much at what school you were educated, but how you were educated." Influence, education and opportunity are the principal factors in the broadening and expanding of liberality and equality among the leading people—the farmers. Farmers are the solid men of the country; they pay about one-half of all the taxes collected, and

rightfully should be consulted on all questions of vital importance to themselves and families. Philosophers and teachers have wrestled with the movement of systematic co-operation, until some of the deepest thinkers have given up in despair. That the farmer is the most lax in this movement is truthfully portrayed each year; you, as a class of citizens, are the most law-abiding people of the land; your mercantile pursuits are among the most honest men; your sons and daughters have utmost confidence in your counsel and advice, and your women are the purest of the nation. As a consequence you have not given your time to the momentous influence you daily exert over the social world. Perchance you have been in a lethargy; you have not heard the countless number demanding light and information; you have not heard the cry for freedom from the restraint of social formalities, but when we see the seething whirlpool, dashing against the crumbling rocks, and hear the voices eloquent and pathetic, pleading and earnest, we, the farmers, must man the life-boat and out to their rescue.

We do not realize the influence we sway in the daily pursuit of the aggrandizement of wealth; we are prone to lose sight of the influence of greed. In this mad race we do not

hear the wail of the orphan, nor see the tear of the widow, nor feel the pangs of hunger as the gambler's wife pleads for alms; we do not directly feel the throb and surge of Wall street; we are not directly under the influence of Tammany Hall; we are not risking our all on the Chicago wheat market, but, if this is true, what sound was ever uttered but it

your information of technology, put it in such a way that the mothers and children can understand it and the babes can lisp it, and you have achieved a victory.

When you prune your young orchard, no one is allowed to cut the tender twigs but some one who is thoroughly acquainted with the art. If you hire a hand to sow the wheat,



Scene on "Creekwood Farm," Owned by Mrs. J. W. Bates, Broad Ripple, Ind.

echoed back from the distant hills? What tide ever went out, but in course of time came back? What act was ever committed, but in after years we reaped according to the sowing? Knowing these things, there is no excuse from forming the foundation for the greatest emancipation of man that has ever been achieved.

Reforms Must Begin in the Home.

The farmer's home is the place to educate the public, and the place to begin is around the fireside. Strip

to plow the corn, you request some recommendation as to his qualifications as a farm hand, and you insist if he is kind to the horses. If you have a young horse you wish trained for a family driver, you do not trust your disinterested neighbor to train him, but you guide him with tender hands until he is perfectly gentle and fears nothing. But when the children are sent to school, do you inquire if their teacher is kind and thoughtful, if you would be willing that she should mould your child's life, or if

she is thoroughly in sympathy with child life? No, you trust to the trustee for that information. It is right you should have confidence in that official, but which is of more importance, the pruning of tender trees, the securing of a man of work, the training of horses, or the training of your children? We are surrounding our children with influences and environments that have tendencies to dwarf and narrow their mental conceptions. When we see the little, pinched, dwarfed faces dodge the policeman on the alley, and hear the shrill falsetto voices shrieking in fiendish delight at some supposed pugilistic attack, inwardly we wonder where as many noble young men as we have come from.

I heard a mother say to her young son, who was of a nervous temperament, restless and impetuous, as he played around her as she prepared the evening meal, "You are the meanest kid that ever lived." No doubt she was tired with the day's work, but that was no excuse for her to bruise the feelings of the child in that manner. I never heard her speak of her child in any other manner; it was served to him morning, noon and night; it was the little prayer at his bedside at the evening hour. In fancy I could see little Paul, as he climbed the old stairway in his night robe, without a good night kiss, and when in the old trundle bed, he wondered who it was that smiled at him so kindly as the stars shone through the window, and the next morning he would creep up to her and say, "Mother, an angel kissed me last night." This is no idle fancy of an artist's brain to be placed on canvas and hung in an art gallery and gazed at by the idle throng that passes by, but it is an actuality and a reality, and is being enacted in thousands of our homes today.

Do you realize that the reform

schools are full of boys whose home training has been just as the one described? There they are placed with different temperaments, of different nationalities and different characteristics, from the shrewd, snarleyed boy who cheats from his first game of marbles, to the boy who steals the rosy-cheeked apples from the merchant's barrel on the sidewalk. Sometimes it is a query in my mind as to which is the greater evil, for the boy to commit the theft, or for the man to place the temptation before the child. The will power to overcome temptation must be cultivated the same as all other virtues, therefore now can you expect to cultivate those virtues without the necessary encouragement?

When Garfield went to Williams College, he wrote to a friend it was to be under the influence of that marvelous personality, Mark Hopkins. He felt the need of personal contact with a character of such value. Frozen music may charm the eye, but it thrills no chord of sympathy in the soul; petrified religion may satisfy our pride in the dim cathedral halls, but it sends a death chill to the dying gladiator. The world does not need beauties of form, but ministries of love.

Society is responsible to a great measure for so many criminals. They drink the froth and foam of evil gossip, and do not consider the full value of true manhood and womanhood. We have petted and fondled our society idols until they are dwarfed in stature and brains, and our English cousins recognize a fun brother in the American dude. In years past my little girl was commenting on the Brownies in the "Ladies' Home Journal." When she inquired, "What was a dude?" I will confess I never had words in my English vocabulary to express my opinion of that individual, but the other girl looked up in her childish

simplicity and said, "Sister, I can tell you. He is a man that wears a coat split way—way up the back and a hat way up in the air."

If these evil tendencies that are manifesting themselves so strongly among our people are to be checked and the glory of our ancestors is to be preserved, the result must be accomplished through the influence of education and home rule. We cannot expect government rule to exist when home rule is so lax. Not the rule of the rod of iron, but of love and kindness. Those who go forth from our farm homes must show by their living and integrity, by the estimate of energy which they display in the pursuit of the higher and nobler objects of desire and daily living, and of the power to do good service to the world, by a contempt of all things that have a tendency to demoralize and wreck the manhood and womanhood of our country.

Need of Higher Ideals.

What the farmer needs is not to be made contented with the present social conditions, but made to think, to look out and ahead, grasp all good, and give freely, for much has been given you and much is expected of you. The Golden Age is yet to be. Man has not fallen, he is rising. Misery and evil are not phantom pictures, but first must be understood before they can be eliminated. The harmony of the universe still has a great amount of work for you to achieve, and never will your ideal be made real by lazily sitting back in your chair of rest and ease, with the belief that all is bound to end well.

Let your ideals be so high you can never reach them. The person who reaches his ideals at the age of thirty-three is an entire failure. The men that dream dreams, that see visions, that build castles in the air, are the

ones that most help forward the world.

'It is they

Who utter wisdom from the central deep,
And, listening to the inner floor of things,
Speak to the age out of eternity."

Behind every great popular movement of our history and every cause that has made its way, there has been some finer sentiment to inspire men's purposes and fire their imaginations. Difficulties, afflictions and discouragements have been the key by which the greater number of successes have been unlocked. "The Last Hope" could never have been composed unless Gottschalk had sorrowed and suffered; Byron needed his beloved Mary to complete his life, but without her he became famous; Phoebe Cary sings her songs of inspiration by faith, as she never beheld the beauties of the world; Milton's "Paradise Regained" was written with the hope of regaining his vision in another world; we would never have enjoyed "David Harum" if the author had not been sent to the mountains to regain his health; Gray was seven years writing the "Elegy of the Country Churchyard;" George Eliot read nearly one thousand books before she wrote "Middlemarch;" Webster was forty years in compiling the Dictionary; Lyman Abbott's most famous sermon was delivered after forty years' preparation; Bryant wrote "Thanatopsis" one hundred times and wept bitter tears because it was not better.

Some may think these are great achievements, but true greatness means to do all the good you can find around you and to do it well. When was Garfield the greatest? Was it when he was in Congress, or leading his soldiers to victory? Was it when he was inaugurated among the fluttering flags and peals of happy bells, and

hailed and blessed by the millions of lusty voices? No, he was greatest after he had closed his famous inaugural speech and turned and kissed his aged mother.

All honor to the man whose feet have echoed to the music of "My Country, 'Tis of Thee," whose shroud is "Old Glory," whose pillow is "Mother Earth;" bring your garlands and revere his memory, but far more honor to the farm that yields such lights of true living as Bayard Taylor, Horace Greeley, Daniel Webster, George Washington, Robert Burns and Francis Willard.

Several years ago there was a storm on Lake Michigan. A number of students were in a pleasure boat; the small craft was capsized; several of the old seamen feared to brave the fierce gale, when one brave lad, recognizing his fellow friends, secured a rope to his waist, and amid glare and gleam and mad-tossed billows, he rescued three. Just as he was near the shore with the last one he was injured by a piece of wreckage; he was hurried to the hospital. The next morning a fellow student rushed into his room with a newspaper giving glowing accounts of his bravery. "Look, Tom, look; you are a hero, a hero!" he shouted. Tom, all bruised and bandaged, replied: "Tell me, Dick, did I do my best? If I didn't, don't tell me I am a hero!"

Are we doing our best to "make two blades of grass grow in the place of one;" to enrich the whitened slopes; to advance agriculture to a higher plane, and to educate our children to

the broad and liberal-minded citizens?

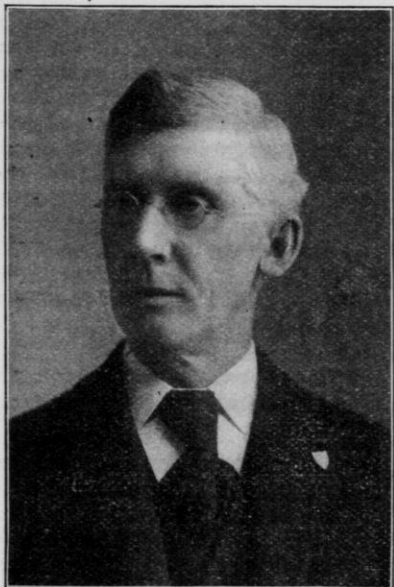
It is your right to be an American, but it is your duty to stand by the teachings of Americanism. Then put your ear to the great storehouse of human nature, pick and clean the rough nuggets that come in your life, and success is yours. Liberty is never so sweet as when the criminal stands behind the prison bars and kisses his babe good-by. Character is never so appreciated as when by a thoughtless step it passes us as a golden age. Life is never so precious as when we annually pass each milestone and see the shadows growing thick and fast, and, as we "nightly pitch our moving tents one day's march nearer home," we realize the meaning of living near the ideals of integrity, honesty and purity, above all other men.

The value of human life is beyond the comprehension of the brain, beyond the limit of space, beyond the calculation of time. Oh, weary not in the pursuit of higher attainments!

"O! flower on the breast of the river!
O! marvel of beauty and grace!
Did you fall right down from Heaven
From out the most beautiful place?
Your heart is as pure as an angel,
Your face is steeped in the sun.
Did you grow in the radiant city,
My pure and holy one?
"Nay! nay!" said the lily,
"None gave me saintly white.
I grew in the darkness
Down in the dreariest night.
From the ooze of the slimy river,
I won my glory and grace.
White souls fall not, O my poet!
They rise to the highest place!"

WHAT FARMERS' INSTITUTES HAVE DONE FOR FARMERS OF THE UNITED STATES.

Prof. JOHN HAMILTON, Farmers' Institute Specialist, Department of Agriculture, Washington, D. C.



Prof. Hamilton.

Your Superintendent has requested me to speak this evening about what the "Farmers' Institutes Have Done for the Farmers of the United States."

We have over 10,000,000 farmers in the United States; 10,381,765, as the census gives it, who are actively engaged in cultivating the soil. Added to these workers are their families, numbering some 17,000,000 more, so that there were at the taking of the census in 1890 between 26,000,000 and 27,000,000 as the total agricultural population of this country, by far the largest number of our citizens engaged in any single occupation. The census tells us that of those over ten

years of age who are engaged in gainful occupation, there were in professional service 1,258,739; in domestic and personal service 5,580,657; engaged in trade and transportation 4,766,964; in manufacturing and mechanical pursuits 7,085,992, and in agriculture, as has been stated, 10,381,765.

The agricultural workers represent an invested capital of \$20,514,001,838, and in addition to supplying the needs of 80,000,000 of our population here at home, they sent abroad in the year ended June 30, 1902, \$851,465,622 worth of surplus products, or 62.83 per cent. of the entire exports of the country for that year. It, therefore, without question, is our most important industry, both as respects the number of those engaged in it and in the amount of wealth which it creates.

Before taking up the discussion of "What the Farmers' Institutes Have Done for the Farmers of the United States," it may be well to first call attention to the Institute organization as it now exists.

The Wide Spread of the Institute Movement.

Although it is only about twenty years since the Institute movement began in this country, Institutes are now organized in all of the states excepting three, and in all of the territories excepting Alaska, Porto Rico and Indian Territory. The State Directors last year employed a teaching force of over 900 lecturers, who gave instruction to almost 1,000,000 farming people. In addition to this large

force in state employ, there were fully 3,000 other persons who read papers, delivered lectures, or gave instruction in the Institutes by invitation of the local managers. The Institute was organized to cover a field in public instruction that had not been occupied by any other educational institution, and it came into existence in response to a demand by farming people for accurate scientific information that could be applied in increasing the production of their farms. A large amount of agricultural information has been accumulating during the past fifteen or twenty years. The agricultural experiment stations which were organized in 1887, have been engaged with a force that now numbers about 700 workers, conducting experiments in agriculture and in carrying on investigations for the discovery of the principles that underlie crop production and the breeding and rearing of domestic animals. The results of their investigations have been collected from time to time and published in reports and bulletins and distributed for the benefit of farmers.

Lack of Interest in Literature on Agriculture.

The National Department of Agriculture at Washington has also been at work with a force of 4,200 men and women collecting agricultural information from all quarters of the globe, and publishing it for the benefit of the farmers of the United States. Last year over 900 different books and pamphlets were issued by its Division of Publications, comprising 45,000 pages, the equivalent of forty-five volumes of agricultural literature of a thousand pages each. There were printed for distribution 11,600,000 copies of these documents and over 6,600,000 were bulletins specially prepared for farmers.

It has been discovered that notwithstanding the vast amount of agricul-

tural literature that has been prepared and published, many farmers fail to profit by it. Many do not even know of its existence. Repeated tests made in Farmers' Institute meetings show that the majority of the farming people do not read the station bulletins or those that the Department of Agriculture at Washington sends out. The situation is not unlike that in which the authorities of a city construct a vast reservoir and go to great expense to furnish it with an abundance of pure water, and then neglect to provide adequate mains and distribution pipes to carry it into the households of the citizens; or that of a manufacturer of agricultural implements who stacks his warehouses full of valuable machines and then fails to provide a corps of agents to distribute them among the farmers.

Farmers' Institutes to Disseminate Information Relating to Agricultural Literature.

Agricultural literature has been accumulating, as I have stated, literature containing information of extreme importance to the tillers of the soil. The dissemination of this information among the people who do not read is the distinctive work that the Farmers' Institutes have been organized to carry on. They are, to continue the figure, the distribution pipes of the great reservoir of agricultural knowledge, the agents of the agricultural experiment stations, the agricultural colleges, and the National Department of Agriculture at Washington for carrying the information which they have on hand to those who need it. Their specific work is to distribute, not to investigate or experiment for the discovery of agricultural truth, but rather to take that which is already known and has been thoroughly tested, and bring it to the attention of farmers.

And now, Mr. President, what have

the Institutes done to justify their existence? This is the question of the evening.

Farmers' Institutes Have Awakened Farmers.

We live in an eminently practical age. The first question that is put to an applicant for any position in business is, "What valuable thing have you done?" Unless this can be satisfactorily shown, the individual is compelled to prove his worth before he can expect the recognition which a well-known qualified expert receives. After twenty years of life and work, this same question is put to the Farmers' Institutes: "What have you done for the farmers of the United States?"

It can be said in reply that the Institutes have done at least one thing, and if they had done no other, this alone would justify all they have cost. They have awakened farmers to a realization of the possibilities of agriculture. They have accomplished this by certifying to examples of success, by showing what well qualified men have been able to accomplish in the rearing of animals and in the growing of crops. The Institutes have shown that much more can be produced upon an acre than the average farmer is accustomed to grow. They have called attention to the fact that 254 bushels and forty-nine pounds of shelled corn have been produced upon a single acre; that in some sections sixty bushels of wheat per acre is not an uncommon crop, and that one hundred have been grown; that thirty tons of corn silage per acre have been produced; sixteen tons of cured Pearl millet have been harvested, and that twelve tons of hay per acre have been cut; that 806 pounds have been added to the weight of a beef animal in eleven months; that 1,028 pounds of butter have been produced by a dairy cow in twelve months, and that another in

the same time gave 30,318 pounds of milk. Four and one-third bales of cotton have been picked per acre, and 300 bushels of potatoes have been grown on a similar area; 250 eggs per hen have been recorded, and that a crop valued at \$8,000 per acre has been grown. The crop was carnations. That \$900 worth of celery has been produced per acre; that \$15,000 have been cleared from 160 acres of peaches in a single year, and that 300 bushels of strawberries have been grown per acre. Sixteen per cent of protein have been produced in corn, whereas the usual amount is eight or nine. Fifteen per cent of dry gluten have been produced in wheat, when flour ordinarily used in bread-making contains but ten or eleven. Ninety per cent of the apples of an orchard have been grown fit for market, sound, of proper size, free from scab, symmetrical in shape, and well colored. One-half of an acre of land has kept a cow through an entire year. Three hundred and twenty-eight pounds of pork have been put upon a pig in 259 days, and 143½ pounds have been added to a sheep in eight months.

The Farmers' Institutes have called attention to the great possibilities in production that lie before the American farmer by holding up examples of results obtained, and explaining how these results were reached. In many instances they have brought the men who have grown these special crops before farmers' meetings to explain the methods that they pursued. The Institutes are showing farmers that their failure to secure abundant crops, or superior animals, and to make farming a profitable business is chiefly in themselves; that thousands have succeeded and multitudes are now succeeding, are increasing their income sufficiently to insure financial independence, and in many instances have secured more than ordinary wealth.

Farmers Have Been Brought to Appreciate Value of Science to Agriculture.

The Institutes have also brought farmers to appreciate the value of science to agriculture. We are in the midst of what may be termed the agricultural renaissance; between the old agriculture, which was purely mechanical, and the new in which farming is a scientific occupation,—the period when any one could farm, and that in which only capable men can succeed in this calling. The Institute has made it clear that the modern farmer must make use of scientific methods and the results of scientific discovery if he is to succeed in even moderate degree. That the modern farmer must think; that he must know; and that ignorance of the truths that science reveals respecting his calling will not protect him against failure. The legal maxim that "ignorance of the law excuses no man" is not only true in civil affairs, but applies with still greater force to the inexorable laws that nature has fixed. Farmers are coming to understand that no amount of complaining will cause these laws to swerve from their purpose a single hair's breadth; that they must work in harmony with them, study their character, and aim to utilize their forces in accomplishing the results they seek. Many who once despised the teachings of science in agricultural affairs have through Institute teaching come to depend implicitly upon scientific men for counsel when in doubt. What does science say? is the inquiry that most frequently finds its way into the Institute question box when men of experience disagree in regard to the proper method to be pursued. Science has come to be regarded the arbiter in agricultural disputes, as well as the court of last resort. Public opinion has been completely changed within twenty years in its attitude toward

scientific institutions and scientific men. Both have come to be respected, and their advice and co-operation earnestly desired.

The Institute has been largely responsible for this change. It has taken scientific men before audiences of practical farmers and has given both the opportunity of becoming acquainted and of interchanging views on subjects upon which they were interested. The result has been that farmers have come to see that science is not the visionary and impractical individual that they had once supposed, and scientific men have also been brought to realize that practical farmers have information of the greatest value to those who are pursuing investigations along scientific lines. The work, therefore, which the Institute has done in bringing about this mutual appreciation is another justification for the creation, support, and continued existence of the Institute movement.

Farmers Brought to Realize Importance of Agricultural Colleges and Experiment Stations.

The Institute has brought many to realize that the hope of agriculture is in the agricultural colleges and experiment stations; that education in agricultural affairs is as necessary to success as education in law, or medicine, or mechanics; and that there can be no true progress in the agricultural industry unless there is being continually added to the stock of knowledge information secured through investigations by men trained to observe and faithful in reporting results. The land grant colleges in the several states are annually furnishing a large body of educated agricultural workers and the experiment stations are yearly adding to the information already secured, new and still more valuable facts for the use of farmers.

The old idea that mental culture is

all that is needed to prepare a man for any kind of work, has been effectually disproved during recent years. Special schools in mining, mechanical, electrical, and civil engineering, indeed, upon almost all technical subjects, have arisen and fill an important place in the industrial system of the country. That the agriculturist also needs such a special school to fit him for his profession is illustrated in the agriculture of the south. The southern planter of years ago was usually an educated man, well equipped for succeeding in any of the so-called learned professions of that time, in either law, or medicine, or as a Christian minister, and yet under his management the plantations of the south gradually became exhausted of their original fertility, until in many instances they had to be abandoned as no longer sufficiently productive to justify their continued cultivation. Today men who have been trained in the scientific schools of agriculture are taking up these lands and restoring them in large degree to their original productiveness through the use of the means that modern science has placed within their reach. Men educated in the science of agriculture are succeeding where the scholars of the schools of fifty years ago entirely failed.

The progress of modern agriculture dates from 1887, when the agricultural experiment stations began investigation for the solution of the problems that the old-time farmer was unable to understand. The agricultural colleges had been preparing men since 1862 by giving them instruction which would specially equip them for conducting scientific investigations, and when the experiment stations were created many of the graduates of the land grant colleges were ready to take up the work that the stations were organized to conduct.

The Institutes have brought the

farming community to see the great advantage that a properly educated man has over the farmer who has nothing except the traditions and experience of his locality to guide him. They have thereby performed a service that no other institution could possibly have rendered, and thus have proven themselves worthy of the support and co-operation of the colleges and stations on the one hand, and of the farming population upon the other.

Institutes Have Taught Farmers Self-Respect.

The Institutes also have done another thing that farmers as a class have needed more perhaps than any other. They have taught them self-respect. The first effort in the improvement of any man or woman must be made in this direction. Self-respect is largely due to the consciousness of equality with others. Men are rated by all right-thinking people according to what they know, to the valuable and useful character of the knowledge which they possess.

The acquiring, therefore, of information that equips a man for the better performance of his work, that widens his knowledge, or that makes him an authority upon at least one or two branches of his profession, is promotive of confidence in his ability to accomplish results, and to that extent increases his respect for himself. He exercises toward himself the same feeling that he has for any other who has shown himself capable and well informed. Farming people have habitually depreciated themselves, and consequently have not taken the place in business and social life to which they are entitled.

The Institutes have been exciting inquiry respecting the foundation truths of agriculture, and have been spreading information of a most valuable kind through rural communities

until many farmers have been brought to read and investigate for themselves, and have become well informed with regard to the particular specialty that they pursue, all of which has resulted in a consciousness of enlarged ability, and increase of self-respect.

One element in creating self-respect is to have the respect of others. Farmers have invited criticism by reason of their carelessness in dress; have made themselves conspicuous upon the streets of towns and cities through unbrushed or ill-fitting clothes, and slouchy gait, and the term hay-seeu nas often not been inappropriately applied. The Institutes have brought to the attention of rural people the importance of tidiness in dress. They have shown that high moral qualities and sterling manhood are often discounted because the personal appearance shows neglect, and the man is consequently unfavorably regarded by the passer-by, who can only judge by what he sees, when a little attention to dress or person would have avoided conveying a false impression. It costs but little to black one's boots, to have a cleanly shaven face, or neatly trimmed beard, to have one's hair cut according to the prevailing style, to put on clean cuffs and collar, and wear a suit of clothes that is not conspicuous, either because of its display of the extreme of fashion in being over-fine, or because of its disregard of the customs of the day. The up-to-date farmer now appears upon the streets of his native town, or in the hotel corridors of a city, and is not distinguished by dress, or act, or speech from those who make these centers their homes. The Institutes have also called attention to the appearance of thrift that there is in having harness in good repair, clean and well fitted to the horse; in having a buggy that is free from mud and that may be used without injury to holiday clothes; that

there is an air of respectability that comes from having a straight whale-bone whip in the buggy socket that is wholly wanting when its place is taken by a rudely trimmed water sprout out from a locust tree. In snort, the Farmers' Institutes have been teaching farmers to respect themselves, and that this involves attention to personal habits in dress and cleanliness, as well as to the furnishing of their minds with valuable information.

Institutes Have Increased Respect for Farming.

The Institutes have also brought farmers to respect their occupation. There is an old saying that it is a "dirty bird that fouls its own nest," and yet we have had agricultural orators, many of whom posed as leaders of agricultural thought, whose only title to recognition was that they belittled their own profession. A favorite phrase with these funereal speakers was to refer to agricultural people as the "poor farmer," drawing out the adjective so as to convey the impression that those whom they addressed are the most oppressed people upon the face of the earth. The Farmers' Institutes have driven these demagogues out of business. The agriculture which the Institute lecturer proclaims is one of hope, the gospel that he preaches is one of good news, and the message that he brings is a message full of inspiration, encouragement and joy. These lecturers are showing that agriculture today is the best occupation that exists; more profitable than any other, enriches more men than any other, provides more comforts for more people than any other, is less exacting in its requirements than any other, gives more leisure and purer joys than any other, and is the only occupation in which absolute and unqualified independence exists. Instead of being menial and

beneath the dignity of cultivated men and women, it is the only occupation which requires the highest attainments in science and art for its proper pursuit, and which provides unlimited opportunities for the study of natural things and for contact with the living, growing, and ever-changing forces that abound in rural life.

No dyspeptic should be permitted to be upon the Institute lecture force. He may be as eloquent as Clay, as learned as Gladstone, and as forcible in presentation as Webster, and yet these qualities may make him the more dangerous if his breakfast sours on his stomach and he is only able to behold the affairs of life through jaundiced eyes. Healthy, strong, vigorous men with good digestion are needed in Institutes, who believe in their profession and preach it as a gospel of salvation to farming people. The Farmers' Institutes have gradually weeded out the weaklings and cranks, and now are employing only those who have a message that is likely to be of use and who proclaim it in sincerity and truth.

Have Shown Importance of Unity of Action in Public Affairs.

The Farmers' Institutes have performed another service that has been most valuable in the development of the agricultural industry. They have shown farmers the importance and value of unity of action in public affairs. All other industries have organized for self-improvement and for protection against encroachment by those whose only purpose is to rob. The Institutes have pointed out a way by which country people can act together, and can come to a common understanding and agreement by means of discussions in Farmers' Institute meetings, of important questions that affect their interests. The equitable adjustment of taxation; the proper distribution of the public funds; the

control of corporate interests so as to prevent imposition and extortion, are some of the directions in which the influence of the Institutes has been exerted to the great advantage of the farming public.

To Summarize.

The reply, therefore, to the inquiry as to what Farmers' Institutes have done for the farmers of the United States, may be summed up in the points that have been presented.

First. They have awakened farmers to the realization of the possibilities of agriculture.

Second. They have brought farmers to appreciate the value of science to agriculture.

Third. The Institute has brought many farmers to realize that the hope of progress in their profession lies in the work and development of the agricultural colleges and experiment stations.

Fourth. The Institutes have taught farmers to respect themselves.

Fifth. They have brought farming people to respect their occupation.

Sixth. They have shown farmers the importance and value of unity of action in dealing with public affairs.

These all are general benefits which the Institutes have conferred.

There have also been improvements due to the influence of the Institutes that are specific and marked. Among these have been the improvement of the country roads, the securing of better rural schools through centralization, and the introduction of classification of studies. They have improved country homes inside and out. They have introduced science and system into country housekeeping. They have improved the live stock of the United States—animals for beef, for the dairy, for draft, and for all other purposes. They have effected improvement in the growing of crops, in cereals, in forage crops, and the

staples, such as rice, cotton, sugar cane, and tobacco. They have brought into fruit culture spraying apparatus; have taught farmers how to fertilize, pick, sort, store, ship and sell their products. They have taught market gardeners improved methods of growing vegetables and protecting them from insect enemies and fungous diseases. They have disseminated information with regard to the effects of cultivation upon soils for the conservation of moisture for increasing their fertility, and also have shown the importance of adapting the crop to the particular kind of soil upon which it is to be grown.

The Institutes have not done all of these things for each state, but they have done one or more in every state. They have not reached the entire 27,000,000 of farming people, but they have given instruction to about

1,000,000 of this number scattered through all the communities of the United States. The work that remains for the Institutes before the limit of their usefulness is reached is very great, and will require that the force of workers shall be many times increased and that the money that is now expended in Institute work shall be much more abundantly supplied than heretofore, and that the organization of the Institutes shall be more systematic, so that the best results possible may be secured and the most economical use of men and money be had. Many years will doubtless elapse before all of the people of the United States shall have been reached, but the phenomenal growth of the Institute system during the last twenty years gives promise of the ultimate accomplishment of this desirable end.

Adjourned until 9 o'clock next day.

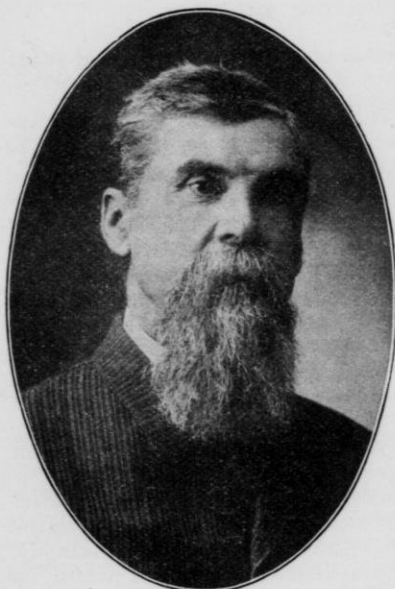


SECOND DAY.

The Institute met at 9 a. m., Conductor F. H. SCRIBNER in the Chair.

HOME SURROUNDINGS.

DELBERT UTTER, Caldwell, Wis.



Mr. Utter.

Our reputations as individuals or as communities as regards thrift, culture and character depend largely upon our home surroundings. The passer-by, be he neighbor or stranger, forms his opinion of us by observing how well our roads are constructed and maintained; how well our fields are fenced and cultivated, and how well our live stock are bred and housed. He notes with particular interest how

our buildings are located and arranged and our manner of planning and caring for our home grounds.

Influence of Surroundings on Character.

The influence of good home surroundings, as it pertains to exterior as well as interior conditions, has an appreciable effect upon our lives and has much to do with forming the habits and moulding the character of our boys and girls. The boy or girl brought up where thrift, order and refinement are noticeable on every hand, will be more likely to choose farming as an occupation than where conditions are the opposite, and the boy or girl who chooses some other occupation, as many of them must, will leave the farm with a better training and with a love for the home that will make them stronger and better men and women and they will look upon the old homestead as the dearest spot on earth.

The Financial Side.

Financially considered, the improvement of the appearance of our home is a good investment, as the prospective purchaser of a farm will be attracted to a locality where there is an appearance of thrift and the home grounds are well laid out and kept in a neat and tidy manner, and

he will pay more for a farm than he would where such conditions do not exist.

The farmer is largely a creature of circumstances, he is seldom a chooser of his home; he may be heir to the old homestead or may be obliged to purchase according to his ability to pay. As a consequence, buildings have been located and built by others, often with little regard to appearance, and many times with little attention to convenience.

The early settler had little thought towards beautifying his home; his whole intent and purpose was in making the land available for the growing of crops; his whole energy and strength was applied to the destruction of the forests, every tree seemed an enemy and he ruthlessly cut it down and as a consequence he had not a love and appreciation of what nature had done to beautify his home. The result is a barrenness about some of our Wisconsin homes that gives the traveler a very bad impression of farm life. The generation that follows the pioneer has more time and should have more wealth and culture and, what is better, inclination and taste to make his home surroundings as beautiful as can be afforded.

Artistic Rules Should be Followed.

It is not so much a matter of expenditure of money, as it is of planning and arranging buildings, fences, drives, trees and shrubs, so they will harmonize with the natural surroundings. Our plan should be the same as that of the artist, as landscape gardening is picture building and we follow the same scheme to improve our home grounds; our fences, hedges and trees are the frame and background; the house, barns and out-buildings are the principal objects and should be made prominent or obscured, according to the importance or appearance. The house should be the main figure

and should be in the foreground, while the barns, out-buildings, etc., should be in the rear.

Trees and shrubbery should be so placed as to give protection from coldest winds, generally on north and west sides are where they are most needed, and the next object is to place them where they will afford shade and add to our general plan of improvement. Sheds, out-buildings, barnyard and parts of residence that are displeasing to the eye, may be made less conspicuous by planting trees and shrubbery or covering with vines.

Choice of Trees and Manner of Planting Important.

The choice of trees is of much importance, as well as the manner of planting. Evergreens should not be left out, as they are the best for shelter and as specimen trees are very ornamental. The Norway Spruce is well adapted for windbreak, while Blue Spruce, Austrian Pine and Siberian Arbor vitae are fine for lawn. A well grown and well trimmed hedge of white cedar is always admired and is useful as a screen to hide barnyard or fence.

For deciduous trees, the hard or sugar maple is a favorite, as it is clean in its habits and less subject to insect pests than many other varieties. The elm is said to be stately, but the maple is noble and nobility is to be preferred to stateliness. The box elder is not to be despised; it grows well anywhere, is a fast grower, holds its foliage until late and is shapely if kept well trimmed while young.

The arrangement of trees should be planned to harmonize with natural surroundings. If we have hills and trees in the background, we choose our trees and so place them that they will appear to have grown there naturally, while if our location is bare and nearly level, our plan may be more

formal and we may plant a row of evergreen on west and north sides and fill in at back and sides of house with trees and shrubbery. Hedges along side of yard give a good effect if well cared for.

Use Care in Selecting Paints.

The color scheme is the first thought of the artist and so it should be to the home builder. How often is the eye offended in observing the too glaring or too sombre colors that are used to decorate our farm buildings. We can choose a white, pearl, gray or green for our house and if we must use the red mineral paints for our barns they can be toned down to brown or some other neutral tint, making them harmonize with the natural colors.

Neatness First Requisite in Improvement.

While the farmer cannot be a landscape gardener, or afford to employ one, he may by study and observation learn how to improve his grounds. We say improve, for there are very few who have had a chance to plan them, as that has been done by others.

When we speak of the home grounds, we do not mean the front yard alone, but the back yard, the barnyard, the garden, the roadside, and the adjoining fields as well. Neatness is the first requisite in our improvements and is as necessary outside as inside our homes. Outdoor improvement clubs have been organized in our cities with the object of improvement of home surroundings, in which each member agrees to plant at least one tree and spend one day in cleaning up, repairing or removing old fences, renewing walks and drives, planting shrubs and vines and adding as much as possible to the attractiveness of their homes.

The farmer's wife has her day of cleaning the dooryard, and she should

be seconded in her efforts by the men folks, and the whole premises should be cleared of debris that has been accumulating these many years. There is that old brush heap you left last spring or the year before and that you intended to burn the next day; there is the old wagon box, the old hay rack, perhaps a wood rack and the old crate in which the pig was shipped, all thought to be too good for fire wood or kindling, but now too rotten for that purpose and only good for a bonfire. Perhaps there is little time to spare at this busy season, but if care is taken to keep things cleanly, much of this yearly work will be avoided.

The general appearance of town and country is improved by this organized effort and the influence upon others is of importance.

The Lawn.

The lawn should not be a combination of flower garden, orchard and nursery. A few trees that are neat in habit of growth may be grown in front and at sides of house, but a good expanse of lawn should be in view from drive and street. The lawn mower should be used often and rubbish picked up; hedges trimmed in their season; vines trained and trees watched for vermin. This care, while it takes time, causes us to study nature's laws in growth of branch and leaf, gives us a better appreciation of country life and we are encouraged by the expressions of commendation of friends and travelers.

Drives.

Good drives should be made by excavating six or more inches, according to the physical condition of soil, filling first with cinders or coarse gravel, finishing with screened gravel or crushed stone, and the edges kept straight by drawing line and cutting with spade or hoe.

Flowers.

We should not forget the flowers, for a taste for flowers should be encouraged in every household. It has been said that a person that loves flowers cannot be really bad. Flowers, like children, thrive best when loved and given the care and watchfulness that goes with love. Flower beds may be at the side, or in the back yard, while for cut flowers, those are better grown in the garden. There is more pleasure in growing flowers in the back yard than elsewhere, for they are within view of the busy housewife and are nearer a water supply and are more certain to receive frequent attention.

Results Greater than Cost.

Anything that is worth having costs money and labor and this is true in beautifying our homes, but I think it is well expended and it is our duty to expend all we can afford for the conveniences and some of the luxuries that make farm life enjoyable.

With the modern methods of heating and lighting our houses; with free rural delivery of mail, bringing daily papers to our door; with telephone connection with town and country and electric railroads reaching every hamlet, our position will be indeed enviable.

DISCUSSION.

Mr. Imrie—How soon after planting would you begin to trim the white cedar hedge and the arbor vitae?

Mr. Utter—Just as young as possible. It is as well to buy your young trees that have been transplanted two or three times, and it is well to set them in the garden to remain two years. This insures a good growth. They should be set about four feet apart, on land that has been cultivated and well manured the previous season. They should be set carefully and

mulched, so that the grass will not grow around them; then they need trimming each year in June or August. There are two seasons of growth, June and August.

Mr. Imrie—How large a tree would you buy?

Mr. Utter—A tree that has been transplanted two or three times, fifteen or twenty inches high.

Mr. Imrie—I have already set a hedge, they were termed saplings, I think taken right out of the forest around the swamps, and many of them died. Afterwards I got plants transplanted twice from the nursery, nearly two hundred, and they all lived. We took a plow and removed the sod entirely and filled the space about three feet wide with earth, brought in good, rich ground, and they are looking nice.

Mr. Utter—Another object of setting them in the garden is, if there are some that have not grown freely, you can select so as to have your trees even. Another thing is that you will be more apt to have a specially prepared place for them, which is necessary. You must get rid of all the June grass and white clover.

A Member—What do you use for a mulch?

Mr. Utter—Half rotted straw is the best mulch.

Mr. Hill—I am pleased with all the hints in that paper with one exception, and that is, I never plant a box elder for ornament, or any other purpose. I have planted a good many, and for awhile they grow fast and make a nice tree, but later they grow to be very unsightly.

Mr. Utter—I think if they are well trimmed, they are a beautiful tree. I have two of them which are admired by everyone. They have a wider spread than any other tree on my grounds; one has a spread of nearly fifty feet.

Mr. Foster—What would you recom-

mend for a hedge that would grow more quickly than white cedar?

Mr. Utter—I know of nothing that will grow quicker; in five or six years you have a slightly hedge.

Mr. Imrie—Some of ours this year, the second year after planting, have grown from twenty to thirty inches.

Capt. Arnold—You don't speak about basswood. I think that is one of the most beautiful trees we have.

Mr. Utter—I think perhaps it is in the localities where it is natural for it to grow. Where you have elms, a basswood looks very well.

A Member—Is white birch a hard tree to transplant?

Mr. Utter—I think not, when it is bought from the nursery and where it has been given plenty of room to make a good root growth, but taken from the forest, I should think perhaps it would be. The only way to get a tree to grow well from the forest is to get one quite young and then trim back, leaving just the body of the tree.

Mr. Imrie—Don't you think, Mr. Utter, that as a rule it is more economical to buy, especially evergreens, from a nursery after they have been transplanted, rather than to try and take them from the woods?

Mr. Utter—I think it is, certainly. Never plant a tree unless it is well formed. One that is grown spindling, better be thrown away.

Capt. Arnold—I have always trimmed my hedge early in June. This year I trimmed it in August. Will it be necessary to trim it again?

Mr. Utter—Not necessarily, it will keep its shape until next June. If we trim in August, it is best to trim early enough so as to allow it to make a little more growth.

Capt. Arnold—I had an idea that trimming in August was a bad thing. You know you cut brush in August, and it is more liable to kill the brush than any other season of the year,

and if you once cut the outside leaves of this arbor vitae, you have destroyed the plant. You must exercise care to trim in August.

Mr. Utter—You should not trim close enough to make it look bare. The habit of growth is different from any other tree, because it makes a second growth in August, and I want it to make some growth after trimming. There is no doubt that it is much better to buy trees from the nursery. You will see the result of that in the prairie states. I made a trip last fall from Chicago to Omaha by daylight, and I saw some of the most beautiful homes in a strictly prairie country. Those people saw the necessity of providing trees, and there is the finest tree growth and the best arranged grounds that I have ever seen anywhere, while up in some of our northern and central counties they have neglected saving any of the forest trees, and few have been planted. Take Barron county, it is rightly named. It seems pitiful the conditions we see here.

A Member—In setting out a white cedar hedge, would you put manure in the bottom of the holes?

Mr. Utter—Yes, if well rotted and mixed with soil. The soil must be rich, and the more manure you get in there the better you can conserve moisture, and they need all the moisture that can be saved.

Prof. Hamilton—I noticed you omitted to mention California privet. Was that intentional?

Mr. Utter—I have had no experience with it, and I question whether it would be hardy in this latitude.

A Member—Have you had experience with nut trees?

Mr. Utter—I have not, except the horse chestnut, and that is a very pretty tree.

The Chairman—Will Prof. Hamilton tell us something about the tree he mentioned?

Prof. Hamilton—It is simply a hedge plant, a very beautiful plant, makes a splendid hedge, is easily controlled. It is not altogether an evergreen, but the leaves stay on until late in the winter, and it is a very popular hedge plant. I have four kinds of hedges around my yard, one is a thorn hedge, another is osage orange, another is honey locust, and still another is the California privet, and it makes a very beautiful hedge.

A Member—What tree do you prefer for a windbreak, Mr. Utter?

Mr. Utter—I think a Norway spruce.

Question—Doesn't it take a long time to grow?

Mr. Utter—They grow from two to four feet each year on my soil, sandy loam.

The Member—Mine are spruce of some kind, I don't know whether they are Norway, but I don't think they have grown four feet in the last eight years.

Mr. Utter—Are they cultivated?

The Member—No.

Mr. Utter—They should be cultivated and the grass never allowed to grow around them. They should be mulched until the lower branches cover the ground and shade it.

Capt. Arnold—I think the medium white pine excels all other evergreens,

it is a very hardy tree. The Norway spruce very often dies, I notice.

Mr. Church—Maybe it was owing to too close planting that the evergreens died.

Mr. Imrie—Capt. Arnold suggests white pine; that does not make the same kind of a windbreak that Norway spruce does. White pine has quite a body of limbs which are high, whereas the Norway spruce makes the foliage right down to the ground.

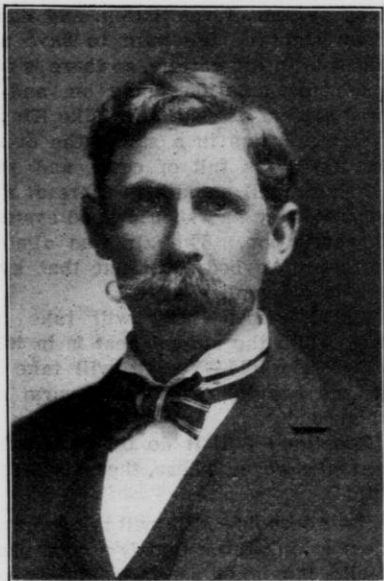
Mr. Utter—The tree is broadest on the ground, that is the beauty of them, and we should cultivate that habit, never allow the lower limbs to be broken or cut off. I think the greatest mistake that farmers make in growing evergreens is that they usually are planted too closely, and instead of cutting out, or discarding a tree, they will trim them up, which spoils it as far as growth and beauty are concerned.

Mr. Phillips—I have a hedge of Norway spruce thirty-five or forty feet high. The great trouble about the Norway spruce is that you must give them plenty of room, and most people do not. The best hedges in Minnesota that I have ever seen had trees set about twenty feet apart, so as to give them room to spread, and then another row about sixteen feet from that.



MILK FERMENTATIONS.

E. L. ADERHOLD, Neenah, Wis.



Mr. Aderhold.

In my work as traveling instructor in cheese making, I have, during the past five years, made a curd test of each patron's milk separate at about two hundred factories—including the milk of between five thousand and six thousand patrons. The results at nearly every factory proved that from twenty-five to fifty per cent of patrons furnish milk that makes a decidedly bad curd. This inferior milk is put in the vat with the better milk and the whole product is injured. Therefore, it is almost impossible to produce perfect cheese or butter in our factories.

Causes of Imperfect Milk.

The general causes for imperfect milk are: Cows out of condition, food

flavors, absorption of odors, unclean utensils, and bacterial ferments. Probably seventy-five per cent of the trouble is caused by ferments, so it becomes the duty of every dairyman to familiarize himself with milk fermentation and its causes.

These ferments are caused by germs. The germs are so minute that it is impossible to see them with the naked eye, but when they gain access to milk they may create fermentations which will injure the quality of the milk, cheese or butter.

Action of Various Kinds of Germs.

The various kinds of germs produce different products. One kind works on the milk-sugar and converts a portion of it to acid, thus causing milk to become sour. Other germs produce offensive flavors, such as fruity, sweet, vinegar, bitter, rancid, etc.

As a yeast ferment creates gas in dough, so certain milk ferments create gas and, in cheese making, it is caught in the body of the curd and causes a porous texture, and usually a bad flavor goes with it.

One kind of germs produces poisonous products and occasionally we hear of instances of cheese or ice cream poisoning.

Germs grow slowest when milk is coldest, therefore the changes in milk are very slow when held at a low temperature. Their activity is greatest at a temperature between seventy-five and one hundred degrees and that is why we have the most trouble with milk in hot weather. A very high temperature kills most of the germs, consequently boiled milk will remain sweet longer than raw milk will if kept at the same temperature.

How Germs Gain Access to Milk.

Not all germs are injurious. The troublesome varieties come from decaying substances such as we find in the stable or around farm buildings. They are also formed in stable dust and in unclean utensils. Cows lie down in the stable or barnyard and some dust and dried manure particles adhere to the udder. Some of this dirt falls into the pail during milking—and with it the germs. It has been demonstrated that in this manner, with the careless milker, milk will become infested with germs at the rate of over ten thousand to the teaspoonful, and there is no doubt in my mind that unclean milking is the cause of half the trouble arising from faulty milk.

How to Keep Germs Out of Milk.

The stable should be bright, properly ventilated, and reasonably clean. The milker's hands should be clean and dry and the cow's udder should always be cleaned before milking. The milk should not remain in the stable to absorb dust and foul odors. It should be cooled to a low temperature as soon as possible after milking to prevent fermentation. When milk is cold it should be covered to keep out dust and odors. All utensils should be thoroughly washed and well scalded at least once a day.

DISCUSSION.

A Member—Do you prefer to milk with wet or dry hands?

Mr. Aderhold—Dry hands. I learned to milk with wet hands, it was just like washing my hands and the cow's udder in the milk itself, a dirty trick.

Question—Wouldn't it be well to have the air of the stable clean enough so that the milk should not be contaminated by it?

Mr. Aderhold—Yes, it would be nice, not only for the milk, but for the

cows. You know when you see a little ray of sunshine shining through a window in the stable, you can tell how full of dust that air is in that sunlight, and so we shouldn't stir up the dust before milking. We want to have a good system of ventilation, and light, clean stables. We want to have absorbents in the gutters, so there is not much fermentation going on, and a good system of ventilation like King's system. I was in a stable the other day that was full of cows, and you couldn't smell manure in there at all, because they had such a good system of ventilation. The air was almost perfect. Anybody can put that system in at small expense.

Mr. Nordman—Milk will take on taint while the animal heat is in it?

Mr. Aderhold—Yes, it will take it just as quickly while it is warm as when cold.

Question—Will it do to set a milk can in a room where there is fresh paint?

Mr. Aderhold—Milk will take on any odor; I don't think that is a good plan at all. It might take on a faint flavor at least.

Mrs. Howie—Will a thunderstorm affect milk?

Mr. Aderhold—Well, it often makes milk sour, because the weather is usually very hot, and that is the kind of weather when the germs are most dangerous. I don't think it is the thunder. Farmers often lay the souring of the milk to a thunder storm when their neighbor's milk goes through the same storm all right. I don't think it is the storm at all, it is carelessness.

A Member—Is there any objection to separating milk in the stable?

Mr. Aderhold—Yes, sir.

The Member—Where should it be separated in the winter without having it freeze?

Mr. Aderhold—Some of these dairy-men can tell you that, I am no dairy-

man. I want to say one thing, the seams on the cans ought all to be soldered.

Mr. Nordman—And don't you think it is important for farmers to put up ice?

Mr. Aderhold—Well, it would be a nice thing, those that have it like it very much, but in cheese factories they are usually not in the habit of doing it, and they can keep the milk sweet from night till morning very well, if they are very careful about it and cool it with water. Of course, if they have the ice, it would cool to a lower temperature and be a good thing.

Mr. Bradley—Wouldn't the milk be a good deal easier to handle if it had been cooled down quick within a few minutes after it was milked? Haven't you said so?

Mr. Aderhold—It is very important to cool it quickly in order to retard fermentation.

Mr. Convey—Would you recommend aerators, and if so, what kind?

Mr. Aderhold—I used to recommend them earnestly, but I do not so much any more. I think the proposition of caring for milk for cheese factories is different from what it was fifteen years ago. I don't believe I ever saw milk work nicer than where aerators were used and no cooling in water, but a few years later, in the same factory, it didn't work at all; there was trouble for months. We could not make a good cheese. We have got a great many more ferments troubling us than we used to have. The old troubles are a great deal worse and we have three or four new ones that are bothering us. You know we have more diseases in the human family and we have more troubles in milk, and we must take care of that milk according to the present conditions; and some factorymen take this theory, that aerating milk does some good,

and may do a whole lot of harm, because they say that anywhere around farm buildings the air is so full of germs that during the aerating process the germs mix with the milk and may cause a great deal more trouble than benefit, and they have ordered their farmers to quit airing it and cool the milk down as quickly as they can and shut the can up tight, to keep out germs and odors, and they are having less trouble than they did when they aired the milk, and we cannot very well buck that kind of experience.

The Chairman—Mr. Goodrich and others have been judging some butter this morning, and I think it would be a good plan to have him tell of some of the conditions he found with reference to this butter.

Mr. Goodrich—This subject of the care of milk is an important one, because butter is made from milk, and if there are any germs in the milk, they show in the butter. We have examined some thirty or thirty-five samples of butter, and I wish to say that on the whole it averages well, very much better than a lot of butter would ten or fifteen years ago before the Farmers' Institutes and Dairymen's Association had put in their work, but it is not all perfect yet, of course. I can see that the women who have made it have taken a great deal of pains and part of it is very good, but there is some that has a very objectionable flavor. I don't know who is to blame for that, but when I find stable flavor in it, as I do in some cases, I believe the man is to blame. Then there were two samples that had a very pronounced smoky flavor. I don't know who is to blame for that, whether the man is to blame for not having a good stove or a good chimney, or, in one instance it was a smell of tobacco smoke, and I think the man is to blame for that probably. I speak of these things so you will think

of them and guard against them as much as possible.

Mr. Convey—I would like to call attention to one other thing that people make a mistake about, and that is the finish on the butter, putting figures on it, or having an uneven surface on top.

Mr. Goodrich—The best way to finish off a package of butter is to leave it level and smooth and not rub the ladle over it, that makes it look greasy. When it is marked up, that is objectionable. Leave it level and

smooth. Have one of these small tools that looks like a potato masher and pound it down with that, and I will tell you a trick that we used to do when we wanted the grain to look nice. We put a piece of cheese cloth on the top and rolled it over, and that made it look very nice. It is also all right to cut it off with a string.

Mr. Convey—But the same string should not be used too often.

Mrs. Howie—A fine wire is good, or a very thin wooden knife.

FRUITS FOR THE FARMER.

J. L. HERBST, Sparta, Wis.



Mr. Herbst.

The subject, "Fruits for the Farmer," should be of interest to each and every farmer of our state, and yet, when we come to look over our state as we pass through it, we

are surprised to learn the small number of farmers that raise enough fruit for the family use. For the family use is what I shall speak of, and not commercially.

Having been connected more or less with those in the business of growing fruits commercially for the past fifteen years, I am satisfied that the average farmer cannot grow fruits successfully for commercial purposes. I have expressed my views on this subject I believe, at a previous meeting of this kind and will not dwell on this part now.

When we ask the farmer why he does not grow enough fruit for his own use, he will give various excuses, but invariably they are poor ones. So many times he will say, "I can buy cheaper than I can grow them." No doubt he can, for as a rule he will buy for his family probably eight or ten quarts of the small fruits and a half bushel of apples for the winter months. He will say, "I have not the soil and location." Why bless your soul, there is not a state in the Union that cannot grow the strawberry. You can at least grow some of the fruits, and if not of one kind, no doubt some



A Cluster of Sparta Berries.

of the others. More often we hear the excuse, "I can't afford it." The question should be, not whether you can afford it, but rather can you afford to be without the fruits. When you take into consideration the expense, time and labor required to properly

take care of the fruit garden and figure the profits you will derive, you will find out that you are more than paid two-fold for your trouble and besides having the satisfaction of profiting by your own labor.

We owe it to our families to have

our tables supplied with fresh fruit. A fruit garden is one of those things on the farm that makes the home surroundings pleasant and the farm more valuable. It is one of those things that help keep the children on the farm. It is one of those things that, when in after years the children are gone to new homes, they will remember the old home as the dearest and pleasantest spot on earth.

The successful farmer of today is the one whose farm home is made pleasant by the surroundings. A neatly kept lawn, dotted here and there with ornamental shrubbery, vines climbing about the porches, the back yard devoid of old rubbish, a neatly kept vegetable garden, a small fruit plat and orchard, show that this farmer is up to the times, that he is as a rule successful in his work of carrying on the farm, and that he thinks more of his home and family than the careless, easy-going, shiftless neighbor.

Time is too short to go into the details of growing all the fruits which we should have. Besides so many timely articles are written by men who understand the business and which are printed from time to time in our agricultural papers, that I would probably not give you anything new in the management and care of the fruit garden.

Use Caution in Buying Plants and Trees.

I am satisfied that a good many of those who have tried growing fruit and failed have been unsuccessful on account of not planting varieties that were adapted to their particular locality. Too many are led into the belief by the traveling nursery tree agent that some high-priced, never heard of variety of tree or plant is what they want. They are told of its marvelous growth, of its big yielding qualities, and before they are aware

of it, they have purchased what afterwards turns out, if it lives, to be not above the common and invariably below. In purchasing plants and trees, order direct from your nearest nurseryman. In this case you get stock that is more nearly adapted to your locality. Choose those varieties that have been tried and are known to have been successfully grown for years. Trees and plants shipped in from other states necessarily have to come farther, which makes express and freight higher. Coming a long distance, they are, as a rule, pretty well dried out when they arrive at their destination. Having been grown in a much different climate, they may not be adapted to your particular soil and location. Wisconsin is pretty well supplied with good, honest nurserymen, and the one who understands his business is ready any time to help you out on varieties and methods for caring for the same. The following list can, however, be safely planted in Wisconsin, as most of them have done well in nearly all sections of the state.

Good Varieties.

Strawberries: Warfield and Eaverlana, fertilized with Beder Wood and Splendid.

Red Raspberries: Marlboro for early and Cuthbert for late.

Black Raspberries: Conrath for early and Gregg and Nemaha for late.

Blackberries: Eldorado and Snyder for early and Ancient Briton for late.

Gooseberries: Houghton for early and Downing for late.

Currants: Victoria, Red Dutch and White Grape.

Grapes: Moore's Early, Delaware and Niagara.

Apples: Whitney, Longfield, Duchess, McMahon, Pewaukee, Wolf River, Northwestern Greening and Wealthy.

Plums: Plant native varieties only, such as DeSoto, Surprise, Forest Gar-

den, Quaker, Rockford, Hammer and Wolf.

Cherries: Early Richmond.

Location of the Fruit Garden.

The location of the fruit garden should be as near to the house as convenient. The orchard can be located further away. The site for the small fruit garden would probably not be an ideal site for the tree fruits, so

well spread. If you have noticed, while digging a plant, tree or shrub, you have found that the roots have grown out in a spreading direction. In setting out our trees and plants, we must take particular care that the roots are well spread and dirt well firmed about them. The tops should also be cut back to some extent to balance up what has been lost of the roots in digging.



Melons Raised Under Glass by John Vanloon, La Crosse, Wis.

that the two possibly should be planted separately. Do not attempt to grow the small fruits between the rows of tree fruits, as poor results will follow this course of treatment. Plant as early as possible in the spring, the earlier the better.

The work of caring for the small fruits can be done much easier and handier if the rows are rather long, instead of being short. Give plenty of room for all fruits. In setting the plants or trees, the roots should be

Care and Cultivation.

About the care and cultivation can be said in a few words, but those few words mean, if kept in mind, a fruit garden and orchard that will be a blessing to our homes and the admiration of all who pass the farm.

These few words are, clean and thorough cultivation. Weeds and strawberries cannot both be grown on the same plot of ground. The cane and tree fruits cannot be grown in sod.

No outlay of expense will be needed for tools, as most farmers have those implements which can do the work. The same hoe that is used for the potatoes and corn can hoe the small fruits. The same cultivator that cultivates the corn and potatoes can do the work of cultivating the fruit garden and orchard. The little time that is required to do the work of caring for our plot of ground amounts to but very little. The cultivating can be done when we go to cultivate the corn or potatoes, and what little hoeing is necessary can be done evenings. A little less time wasted whenever we go to town and put on the fruit garden, will keep it free from weeds, make a strong, vigorous growth to stand the winter and produce a bounteous supply of fruit.

Bulletins Regarding Care of Fruits.

I have said but little in regard to the care and management of the various fruits. Perhaps a good many of the farmers throughout the state are not aware of the fact that a good deal of information in regard to the growing of fruits can be had free through two sources in our state; namely, the Experimental Station and the State Horticultural Society. Both of these institutions are carried on by the state. You are helping to pay for carrying on the work of these two institutions and you are entitled to the results of their work free, and it should be had for the asking. The State Horticultural Society, by locating experimental orchards throughout the state, is endeavoring to show what varieties are best and will give good results in that particular section of the state. The Experimental Station some few years ago started experiments with the small fruits, but of late years for some reasons we have not received much information in regard to this line of work. To those who are endeavoring to grow fruit I

will say, keep in touch with these two institutions, write for their bulletins. The men who have charge of this work are there for the purpose of giving you information as regards varieties, locations, methods of setting out, care and cultivation, pruning and the best methods of protecting, and all this free for the asking.

DISCUSSION.

Mr. Philips—I wish you would strike out the Pewaukee from that list of apples before it goes into the Bulletin. There are very few places in Wisconsin where the Pewaukee is being sought after or planted now.

Mr. Matteson—Why?

Mr. Philips—I was just going to tell you.

The Chairman—Pewaukee is heard from.

Mr. Philips—Mr. Stickney set out one hundred trees and he has discarded all those trees because they are not profitable. I do not know of a single section in the state where men have raised the Pewaukee that are planting it now. It is an apple that is good in but very few parts of our state. The rest of the list is all right.

Mr. Utter—How many years would it be before somebody would advise discarding the Wolf River and Northwestern Greening?

Mr. Philips—Except for certain purposes, I would discard the Wolf River now, but the Pewaukee is so universally dropped in the state that I think should not go into the record.

Mr. Matteson—Isn't one Pewaukee apple worth a dozen Wolf Rivers?

Mr. Philips—No, not on the market.

Mr. Matteson—I mean for eating. There is an orchard near me something over twenty years old of Pewaukee apples, and very few of them die; they bear each year; they are good sellers.

Mr. Foster—Does anybody like the

Whitney? In my experience they bear all right, but even the boys won't steal them.

Mr. Philips—When the minister goes by our place he stops his horse and steals my Whitney apples.

Supt. McKerrow—If the Whitney is going to demoralize even the minister, we better cut it out.

Mr. Philips—I planted the Whitney all along the road so the people can have apples when they go by.

Mr. Foster—You wanted to give them the idea that the rest are like them, so they won't go inside.

Mr. Herbst—I don't expect all these varieties are going to do well in one section. I am trying to give a list that will do well in most sections of the state. The only way you can do is to plant these varieties that are grown near your home, and that you have known to have succeeded in your section of the state.

Supt. McKerrow—We must understand Mr. Herbst is not advising any of these from the commercial fruit grower's standpoint, but from the standpoint of the farmer who is only growing a few. I come from Pewaukee as well as my friend Matteson; we are growing pretty good Pewaukee apples down there, and we don't want to be shut out from growing Pewaukees. We are going to leave this list just as Mr. Herbst recommends it.

Mr. Foster—There is another fault that I have to find with Mr. Herbst's paper, and that is that I consider the growing of the imperfect blossoming strawberries as a device of Satan to discourage us farmers from raising strawberries. I have seen a number of beds set out by ordinary farmers, they were absolutely fruitless, and they did not know what was the matter until I told them. It seems to me that would be all right for commercial purposes, but it is too much of a task to ask of us fellows to distin-

guish and be careful to raise the right kind under those circumstances when we can raise them so easily by avoiding the imperfect blossoming berries.

Mr. Herbst—I have seen perfect flowering strawberries that were absolutely barren. They will blossom out very heavily and produce very little fruit. I have recommended four varieties here that are good yielders, good quality, and the very best for the farmer's fruit garden. Of course, if he wants to plant all staminate varieties, I have no objection, but I have recommended a list that seems to have done well in all sections of the state and have given good results.

Mr. Matteson—If we plant simply the Clyde and the Splendid, won't that be all right?

Mr. Herbst—I know of a party that is growing fifty varieties, and out of that list of fifty, probably forty are staminates. Out of that list of forty staminates there are not more than five that are good yielders of fruit. They blossom out very heavily.

Mr. Matteson—I had some rows of Clydes last year about ten rods long that yielded me about a hundred and fifty quarts to each row. They are not a good shipping berry, but a splendid yielder and good for home purposes.

Mr. Utter—I think Mr. Foster struck the keynote of the cause of failure in the farmer, in just that one point that the farmer does not give enough thought to the selection and care, both of his fruit and vegetable garden, to have success. If he hasn't thought and care enough to look out that he gets the right varieties of strawberries, he isn't going to succeed with any berry he will grow or with his garden. The time has come when, if we are to have a good garden and good fruit, we must give it some thought and attention, the same as we do the other parts of our farm work.

Mr. Matteson—I understand, Mr.

Herbst, that it is right to prune back the apple trees according to the loss you had suffered in the roots. As I understand it, that is contrary to the teachings of Mr. Coe. I set out an orchard bought from him three years ago, and he said not to prune back the first year at all, but to prune the second year.

Mr. Herbst—Well, most all the orchards that I have had any connection with and have helped set out, I have always practiced pruning immediately after the time of setting.

Mr. Philips—I say, cut the top back at the time of setting to correspond with the root. If your root is very small, do not leave all the top. If the root is very small, it cannot start all the top, and in endeavoring to start it, it makes a failure and does not start at all. Cut off the bruised ends of

the roots from the lower side and plant the tree. It needs all the roots that it has to start the top.

A Member—What kind of a fruit tree can I plant on molding sand?

Mr. Herbst—I am going to turn that question over to Mr. Philips.

Mr. Philips—I don't know what molding sand is. Is it molding sand such as is used in a foundry?

The Member—Yes, about five to six feet of molding sand.

Mr. Philips—If I were going to plant a tree there I would dig a hole about four feet square and draw in clay.

The Member—I did that; I dug a hole six feet square and filled it up with ground, but I can't get any tree to grow.

The Chairman—It would be more profitable to sell the sand for molding purposes, I guess, and buy the apples.

THE VEGETABLE GARDEN.

L. E. SCOTT, Stanley, Wis.



Mr. Scott.

"All things come to him who waits," is an old and very common expression which is made much more comprehensive by the modern addendum, "if he hustles while he waits."

"The world owes me a living" is another old saying. It does, most likely, if we work for it; it does not if we do not work. No one has the right to expect the good things of this world without labor, and few of us obtain them without due effort, the Institute worker not excepted. But what may be expected from the effort?

There is locked up in the laboratory of the average Wisconsin soil the elements necessary to produce the most toothsome dainties, if only the right seed or plant is introduced and given the proper manipulation of cultivator and hoe.

There is no man, however wealthy, who can live quite so well, so far as luxuries of the table are concerned,

as the fore-handed farmer. A few hours' delay upon the road, or in the grocery, will often destroy the delicate aroma and flavor a choice vegetable might have possessed had it gone directly from the garden to the kitchen but an hour before dinner.

I have been called the best and

never buys a horse for his own use that is light in the flank. The stomach supports the brain as well as the brawn, and a dyspeptic would be of little use as a Farm Institute worker, and, while he may be the subject of pity, is not the most useful or agreeable member of the family.



Some of the Sweets of Northern Wisconsin Sugar Camp at Forest Lodge Farm, Stanley, Wis.

most regular feeder upon the Wisconsin Farm Institute force, a reputation based principally upon the hotel observations of my fellow workers. While I would resent the charge of "gormand," I believe in good living. I notice that while Mr. Goodrich looks first at the cow's eye, he places equal stress upon a well-developed jaw and a capacious stomach. Supt. McKerrow says, "No foot, no horse," but he

"Feed your stock a variety of succulent and nutritious food," has always been the advice of our best stockmen. Should we not do as well by our families? And yet there are many men who take pride in well-bred, well-fed and carefully groomed stock, that consider the family vegetable or fruit garden beneath their dignity, a matter only for the man of small mind or the potterer. To me

there is something lacking in such a man's nature or his management.

How to Lay out the Vegetable Garden.

The excuse made by most farmers for not having a good garden is lack of time. This may be overcome by having the garden so laid out that the most of the work of cultivation may be done with a horse, and hoeing thereby reduced to a minimum. This may be done by planting everything in rows not less than ten rods long and sufficiently wide apart to admit of horse cultivation, which, in every case, should be shallow, fine and frequent. It is not necessary that the entire row be of the same vegetable, or planted at the same time, but let the row be straight, so as to admit of close cultivation with a fine-toothed cultivator, then with a sharp, bright hoe the weeds may be cut out from between the hills in a short time. If the work is attended to while the weeds are still small, it is another case where "a stitch in time saves nine," if not, indeed, nine times nine.

Preparation of the Soil.

It is not necessary to tell you that the soil should be well drained and should receive each year a dressing of fine manure, which should be well worked into the soil.

A Hotbed a Valuable Aid.

A hotbed should have its place upon every farm, and two of them would be better, one for the starting of such plants as tomatoes, early cabbage and cauliflower, and the other for melons, early cucumbers and the later growth of the tomato, previous to planting out.

One bed will answer, starting it early in March, and when the cabbage is ready to set, say the last of April, the portion occupied by the cabbage may be refilled and the tomatoes

transplanted into it and the portion formerly occupied by the tomatoes may also be refilled and planted to melons, or the early bed may be dispensed with and the tomatoes and cabbage started in the house, and the tomatoes be transplanted into the hotbed the last of April at the time of planting the melons.

How to Build a Hotbed.

A hotbed should be built warm. Any cheap lumber will answer, if banked on a double wall built and filled with sawdust or horse manure. Any old sash or the storm sash from your house will answer, but it is rather hard on the sash, as the amount of steam softens the putty. The regular hotbed sash is not very expensive and is handier. The regular size of these is three by six feet, and as many of them may be used as desired. This would make the bed six feet wide. A bed of that width should be two and one-half feet high on the south side and three and one-half feet on the north.

Fill to within a foot of the top with fresh horse manure, evenly distributed and fairly tramped.

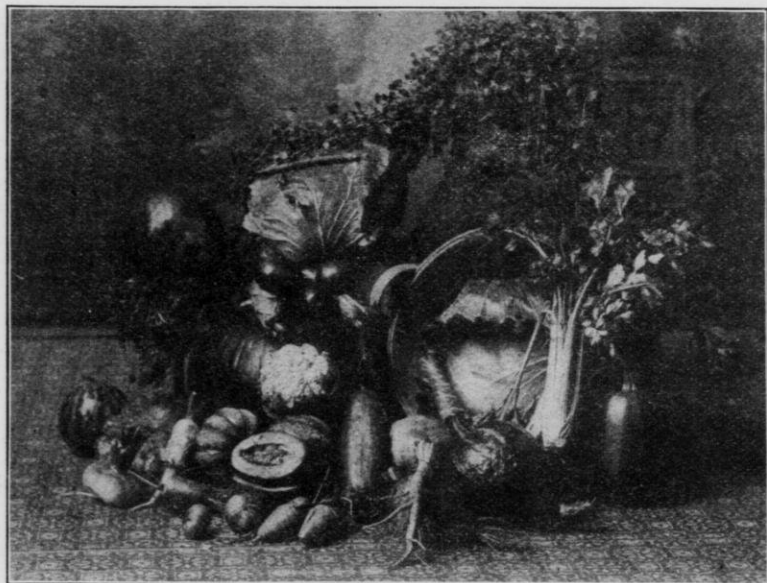
For the early bed, cover with five inches of well prepared garden soil, which should have been piled in a conical form, near by, the fall previous. Put on the sash and wait till the rank heat has subsided. Then sow the seeds and keep sufficiently moistened. Cover glass upon cold nights with an old carpet to prevent radiation and raise the sash at the rear during the heat of the day, to prevent too high a temperature and to provide fresh air. Run a wire over the sash to prevent their being blown on and broken.

For the late bed, instead of garden soil, cut some loamy sods six inches square. Reverse a sharp spade so as to hold it perpendicularly and cut a long strip of sod six inches wide,

straight and true, and then trim and cut into perfect squares. Run a close tined fork under at a depth of four or five inches and pitch onto a truck wagon or into a wheel barrow, and take to the hotbed. Place them closely, grass side down, upon the top of the fresh horse manure. Transplant your tomatoes, which you have started in the earlier hotbed, or in the house. Also plant in sods in a por-

the table from that date till frost came and later, and this upon a heavy soil the coldest and wettest season ever known in our part of the state.

For varieties we plant "Vaughan's Earliest of All" for early, and "Atlantic Prize" for medium. For late, there is, in my experience, no tomato that will equal the "Stone." This is a large, but not overgrown, smooth, meaty and brightly colored tomato.



Some of the Products of the Vegetable Garden at Fairmount Farm, Sparta, Wis.

tion of this bed cucumbers for early, water melons and musk melons. Attend as previously directed and transplant the last of May.

Best Varieties of Tomatoes.

I have transplanted tomatoes when in blossom and some fruit set, and melons that were commencing to blossom. We had, in 1903, in latitude 45 degrees, or that of St. Paul, ripe tomatoes July 20th, and all we wished for

The earliest varieties of all plants are of the poorest quality and the smallest yielders. The first named variety in this is wrinkled, but it is early. I am trying this season, in connection with the above list, "Sparks' Earliana," an early variety highly recommended by our eastern growers.

Musk and Water Melons.

For musk melons we plant "Early Hackensack" for early and "Osage"

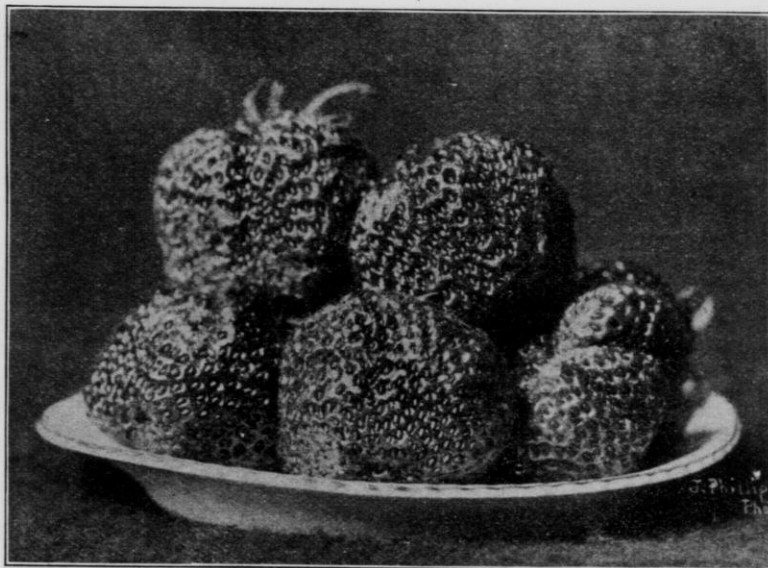
for late. The last named gives us great pleasure when ripe, but is late. The "Peerless" or "Ice Cream" water melon is a white seeded variety, very sweet and crisp and is all right for home use and the boys.

Insect Foes.

Bugs will seldom attack musk melons or cucumbers which are started in a hotbed, but those we plant

Some Benefits Derived from a Hotbed.

The hotbed may be used for radishes, lettuce and the like, but its greatest value is in starting those plants that require a long season in which to grow and which we can get but little good from if planted in the open ground. It will give us a longer period in which to enjoy these good things and the higher the latitude and the shorter the season the greater are



A Dish of Strawberries, Fairmount Farm, Stanley, Wis.

in the open ground we sprinkle with land plaster as soon as above ground, when the dew is on, or after a rain. We use this liberally and, while it is not poisonous, the bugs don't quite like the grit and you can often save your vines by this simple process. I refer only to the little striped bug and not to the large, flat-ironed shaped squash bug.

For cabbage worms we use a little Paris green applied in water up to the time heads form. After this we use air-slacked lime, which will kill every worm it touches.

the benefits to be derived from the hotbed.

Lima beans may also be planted in sods and put out in the open ground when all danger of frost is over.

For a few days just previous to planting out, the sash should be taken off during the middle of the day, so that the plants may harden up.

DISCUSSION.

Mr. Hill—In applying Paris green to cabbages, I haven't had good success in putting it on with water, but

by mixing it one portion to two of flour, it will stick.

Mr. Scott—I think air-slacked lime will do as well.

Mr. Hill—I have tried air-slacked lime and they didn't care anything about it.

Mr. Scott—That is very strange. I never saw air-slacked lime applied to a cabbage worm but what it killed it almost as quickly as it touched it.

Mr. Matteson—I have found hardwood ashes all right.

A Member—Most any kind of dry dust will kill the cabbage worm.

Mr. Foster—What poison do you use for these squash bugs?

Mr. Scott—You can't poison them.

Mr. Foster—I can't understand how you get these little striped bugs to eat it from the bottom of the leaf and get the grit in that land plaster. Nothing of that kind ever affects my striped bugs; I have tried everything, but they are too cute, they skin off the under side of the leaf.

Supt. McKerrow—Everything and everybody up near Fairchild are cute and tenacious, they are stayers.

Mr. Goodrich—And they are in the skinning business up there.

A Member—Did you ever use saltpetre and water?

Mr. Foster—No, but we have used kerosene emulsion and all kinds of dust and things, but the little striped bug, we have to catch and pinch him.

Mr. Matteson—Insect powder, sprayed on the cabbage, would be sure to cure it.

Mr. Scott—There is that hen man again.

Mr. Foster—I have tried that, too, blew it right up at them under the leaf, and they laughed at it, thought it was some kind of pie I was giving them.

Mr. Scott—A number of years ago I wrote to Prof. Goff and asked him about saltpetre and how to apply it, and he wrote back that he thought a

better remedy was land plaster, and from that day to this I have used land plaster and used it successfully, but the flat-iron shaped squash bug you cannot poison, because he does not eat the foliage, he sucks the juice from the stalk of the plant and no poison will reach him. The only thing that can be done is to protect the plant with a netting, or else catch the bugs and destroy the eggs which you will find on the underside of the leaf.

Mr. Martiny—I think there may have been some point in the fact that Mr. Scott said he applied this land plaster to every other hill. That might send the bugs to the hills; between that didn't have it on.

Mr. Scott—I have used it on every hill for ten years. I think where it fails it is because it is applied too sparingly.

A Member—When a person is applying a remedy or going at anything, he should stand by and watch the effect of it and see that it has the right effect, see whether he has used his remedy strong enough or not, not simply throw it on and walk off.

Mr. Foster—I agree with the speaker, and so the plan I have adopted is to cover my plants with some cheese cloth, then they can't get at them.

Mr. Hill—A remedy has been advertised for these flat-iron bugs at ten cents. I know of a party that sent ten cents and got the remedy; it was two little sticks and the directions were: "Catch your bug and put him between the sticks and press them together."

Mrs. Howie—How would you plant your early melons?

Mr. Scott—We just plant the seed in these sods. We cut the sods six inches square, put the grass sod down upon the horse manure about the 25th of April, and we plant the seeds, just taking a knife and mellowing up the center of the sod and planting the seeds in the center. Care for it as

you would any ordinary hotbed, and along the last of May or the first of June, when all danger of frost is over, take to the garden and plant them out in the mellow soil; the roots will soon penetrate through and beyond the sod and you have a nice plant.

Mrs. Howie—How many seeds do you plant?

Mr. Scott—We plant six or eight, but we thin down to four for musk melons and two for water melons after we plant them out.

Mrs. Howie—You put the sod right out with them?

Mr. Scott—Yes, we don't disturb the roots at all. We used to use strawberry boxes for tomatoes, just leave out the bottom of the boxes and you have a mass of roots with the dirt adhering, but we have tried the sods for tomato plants the last year and we find the sods are preferable.*

Mr. Hill—What is the matter with the asparagus bed, why don't you recommend that?

Mr. Scott—It is supposed that every-

body has an asparagus bed. Time is too short to cover everything.

Mr. Bradley—In our Institute work this winter, where we have asked the question as to how many have asparagus, it would average about three in a hundred instead of every one.

Mr. Scott—The asparagus bed should have a place and due attention in every garden and my principal reason for omitting a mention of it in this paper was that Mr. Hill has a very nice treatise upon this most delicious vegetable in last year's Bulletin. A very common error, and probably the reason that many do not plant asparagus, is the notion that it is a hard plant to grow. Nothing is farther from the truth. Plant in any rich, mellow soil, not so deeply in heavy clay soil, as some recommend, say four inches deep, and give reasonable cultivation. That is all there is to it, and a bed once well established will last a lifetime with a little attention. Two-year old plants are preferable and may be obtained from any nurseryman or seedsman, or you can grow your own plants from a five-cent package of seed, but it will take longer.

* Tomatoes grown at Stanley in the season of 1904 by the sod method produced ripe fruit July 21st.



SUMMER COW FEEDING.

C. P. GOODRICH, Fort Atkinson, Wis.

To make cows profitable, they must have an abundance of good milk-producing food for the whole year round both winter and summer.

There has never yet been a summer in Wisconsin when pasture alone

the cows can eat it. This excess of grass soon ripens and dries up, becoming innutritious and unpalatable, so that cows will not eat it. Then, when the heat and drought of mid-summer and autumn come, fresh grass



"Dairying Don't Pay"—Unless You Feed.

would supply a sufficient amount of such food all the time. If the pasture is large in proportion to the number of cows, the grass, during the rapid growing season in the fore part of the summer, grows much faster than

grows so slowly that cows cannot get enough without working too hard for it, and to do well they must then be fed something else. This is not an economical way of doing, for there is a large amount of good feed wasted

and one cannot afford that, especially where land is as valuable as it is in most parts of Wisconsin.

Supplement Pasture with Green Forage Crops.

A better way to do is to have the number of cows proportioned to the pasture, so that they will keep the grass fairly well fed off during the most growing season, and supplement the pasture with a succession of green forage crops. First may be rye (which, by the way, should be fed rather sparingly, for green rye, if it is the exclusive feed, will be likely to impart a disagreeable flavor to the milk), then follow in their order, first crop of clover, green oats or oats and peas, second crop of clover, early fodder corn, later fodder corn, evergreen sweet corn, and sorghum.

It is not necessary that these supplementary crops should be fed perfectly green, making it necessary to cut it each day as it is fed. In fact, I think it is even better that they be wilted or partially cured, so that enough can be cut at one time and somewhat dried to last several days.

If there are more of these supplementary crops than are needed to feed during the summer, they can be cut when at the right stage and made into hay and cured.

Also Feed Dry Forage.

I have found it a good way to feed some dry forage in connection with succulent pasture grass, or any other succulent food. For more than twenty-five years the cows on my farm have been fed every day during the summer some nice, early cut hay, usually clover hay. It is put in their mangers every time they are put in the stable to be milked and they always eat some with great relish, no matter how good the grass may be in the pasture. I am sure it is good for them or they would not eat it. It checks the ten-

dency to scouring which is common when their feed is nothing but the green, rapid-growing, watery grass of spring at times of abundant rains. It also makes them proof against any trouble from bloating when their pasture is young clover.

Feed a Small Amount of Grain.

Many years ago I tried feeding a small amount of grain food to cows while they were on pasture, and I was so well satisfied with it that the cows on my farm, which were giving a good flow of milk have ever since been fed a grain ration equal to about one-half of the usual winter ration, consisting usually of equal parts of ground oats and corn and bran. I found that, although it did not always immediately increase the milk flow sufficiently to pay for the extra feed, yet with cows of a strictly dairy type, which were almost sure to milk down very thin and poor on grass alone, it would enable them to keep up their strength and condition, so that they did much better in the fall and following winter for having been fed grain while on pasture. I think they also did better the next summer.

Whether it will pay a man now, with the high price of grain, to feed it in summer depends on the type of cows and the ability and skill of the owner as a dairyman. If the cows are not of strictly dairy type and the man who handles them is not a first-class dairyman, it will not, in my opinion, pay to feed grain on good pasture.

I have known of some men who have been very successful in dairying, who did not pasture at all, but fed their cows all summer in the stables, on green forage crops, with some grain, letting them have the run of a small field for exercise, with a grove where they could lie in the shade and take comfort. In this way, many more cows could be kept on a given number of acres, and the income of

the farm greatly increased. Of course, it took more work, but these men say that they cannot afford to pasture good tillable land, worth \$80 to \$100 an acre.

A Good Silo the Best Solution of the Question.

Now I will tell you how I think is the cheapest, easiest and best way to provide summer feed for cows.

venient form possible to feed. The cows will eat the silage with great relish every day, no matter how good the pasture is, though they will not eat as much as in winter when on otherwise dry feed.

I know personally several men who practice this way and feed silage every day in the year, and I need not tell you they are very successful men. I know a few men who feed silage



"Golden Morning," First Prize Yearling Guernsey Bull, Junior Champion and Reserve for Grand Champion, World's Fair, 1904, Owned by Geo. C. Hill & Son, Rosendale, Wis.

It is to have a good silo and put up corn silage. If you have a good pasture this silo needs to be only about one-half as large as the one which holds the winter silage. It should be smaller in dimensions, but just as deep, so that enough can be fed from the top each day to keep the silage from being damaged by exposure to the air. In this way, you can have the best of feed to tide over a time of drought and short pasture. It will be always ready and in the most con-

venient form possible to feed. The cows will eat the silage with great relish every day, no matter how good the pasture is, though they will not eat as much as in winter when on otherwise dry feed. I know personally several men who practice this way and feed silage every day in the year, and I need not tell you they are very successful men. I know a few men who feed silage

the year round who do not have any land in pasture. I have in mind one now who has a small farm and keeps as many head of cattle as he has acres of land. He has nearly one-third of his land in alfalfa and the balance, outside of that occupied by buildings and yards, is used for growing oats and corn. He has the material for a well-balanced, succulent ration every day and his cows produce splendidly. Practically one acre feeds a cow. If he needs to buy a little concentrated

food, the pork made from the skim milk is ample for that purpose. Need I tell you that this man is getting for his labor and his feed a very high price indeed? They, who do as he does, are getting many times as much as some men who work harder than they do, just because they use intelligence, judgment and skill in summer cow feeding, as we. as in winter cow feeding and in selection, breeding and care of cows.

DISCUSSION.

A Member—How much grain do you feed your cows in the summer on the average?

Mr. Goodrich—We will say about four pounds a day.

Question—Principally corn meal?

Mr. Goodrich—Corn meal and bran or corn ground, cob and all. I have known a good many who have undertaken to feed cows in the summer who have said that cows would not eat bran when they have fine, fresh grass. They will eat corn meal. The cow knows enough to balance up her ration if you will give her a chance. Nature prompts her to take that which is necessary to supply the demands made on her and if she gets grass that is balanced about one to four and one-half, she doesn't care whether she has any bran or not, but she will take some corn meal, because that is more carbonaceous. Try it and see.

Mr. Foster—Do you give her all she wants?

Mr. Goodrich—No, not always. I just said three or four pounds, and that to cows that are giving a good flow of milk in the summer, and are cows of a good dairy type. I wouldn't feed it to cows that would put it on their backs, and of course not to strippers; I wouldn't feed grain in the summer, that is, if they have good pasture.

Mr. Nordman—How about rape?

Mr. Goodrich—I don't know, I never fed any rape to cows.

Mr. Matteson—Wouldn't you supplement grass for your strippers with some succulent food, peas and oats, or something of that kind?

Mr. Goodrich—Remember I said that every one of them had some nice hay twice a day.

Mr. Convey—I think that where we have good soiling crops to feed in proper condition, it is unnecessary to feed grain, that is, with good pasture and good soiling crops. I don't say you wouldn't get somewhat better results, but I believe it is in the line of economy to furnish soiling crops rather than grain crops and we are working along that line more than formerly. Formerly we depended quite largely on feeding some grain.

Mr. Goodrich—You remember I said that it might be a question now that grain is so high, but I have kept it up and I believe it pays me, but it would not unless they were good dairy cows.

Mr. Foster—What would be the matter in following the rule to feed those cows grain if they paid for it? Wouldn't that settle the whole question, not feed them grain because they are a dairy type or anything of that kind, but if they pay for it.

Mr. Goodrich—No, I don't want to put it in that way, because I have said just what I mean. Of course I expect them to pay for it, but how do you know that they are paying for it? You have got to have a year's work to find out. Of course if you try it a whole year and find that your cows make you a bigger profit than they did before you fed grain, then it is safe to say that feeding that grain paid, but you can't tell it from one day to another.

Mr. Bradley—Suppose one season was a dry season.

Mr. Goodrich—We are not depending on pasture, we have the silo, too.

Mr. Foster—If you are feeding your

cows with silage, and with pretty fair pasture and if you find by the addition of a little grain that you gain more than enough milk to pay for that grain, if your cows increase their flow, isn't it wise to feed grain, and if they do not, is it wise? Now, you haven't got to wait till the next year to find that out, not if you know what your cows are doing. Therefore I say it is a good rule to follow to feed your cows next summer, no matter what the weather is, what grain they will pay for.

Mr. Goodrich—No, Mr. Foster, you don't understand me. We will suppose that you should commence to feed grain and feed five cents' worth a day, and it increased the milk so that you got four cents' worth more of milk, that wouldn't be paying just then, but if you kept right on feeding this grain that cow would come along better in the fall and winter, a great deal, than if she had not had it, and in the end it might pay, because of keeping up her strength and vitality and keeping her up to the highest flow of milk possible.

A Member—Don't you think there is a great deal in the individuality of the cow as to whether she will pay for the grain or not?

Mr. Goodrich—This man has struck it exactly, you must have a cow that has the ability to turn her food all into milk except what she needs to support her own life. So you must have cows of a high dairy type, or, with grain as high as it is now, you could not afford to feed them grain on pasture. And there is more than that, the cow must be bred right, and the man must be bred right, or he can't

handle the cow so as to make the greatest possible profit.

Mr. Foster—I claim that no man is bred right to take care of a cow if he is going to trust to that cow's judgment as to whether she will pay her board or not. Are you going to trust that cow with a lot of grain, trusting and hoping that she will pay for it next winter or next year? Your grocer won't take you that way, he wants to know something about you, he wants to know what he is getting, what the prospect is, therefore, I claim that a cow should not be fed more grain than she will pay for right then and there and we ought to know about it.

Mr. Goodrich—That is the point exactly. Maybe she doesn't pay right down any more than you do, but if she is just the right kind of a cow she will pay before the year is up, the same as you do.

Mrs. Howie—Would you advocate keeping your cows housed all the time?

Mr. Goodrich—No, I wouldn't. My way is to give them a small pasture that they can just about consume the grass while it is growing the fastest and then supplement with some other food of course, preferably silage.

A Member—Are you not bothered with milk fever where you feed so high?

Mr. Goodrich—I used to be bothered with milk fever, because I did just what somebody suggested here a little while ago; I fed stripper cows grain and got them a little too fat, but when I didn't do that, reduced the feed a little while before freshening, I did not have milk fever.

WINTER COW FEEDING.

W. F. STILES, Lake Mills, Wis.



Mr. Stiles.

As friend Goodrich has just finished feeding these cows for the summer, we know that they are in good shape to enter the winter. If a cow is not in good condition to start the winter, it will make a good deal of difference in regard to the profits of the winter feeding. The old saying, an animal well summered is half wintered, is very true, especially when it applies to dairy cows. As the summer feeding is always the cheaper, it behooves us well to see that our cows enter the winter in good condition of health and flesh.

Best Feeds for Dairy Cows.

In feeding all classes of stock, the farmer should try to produce as much

of the feed as possible on his own farm. Now, what are the best feeds for dairy cows that most Wisconsin farms will grow abundantly? Of the coarse fodders, the crop that will produce the most feed per acre is corn. Next comes clover, then clover and timothy and the upland meadow hay. We hope that we will soon be able to add to this list alfalfa.

When we come to consider the grains, the best of these is oats, then oats and wheat, then corn, and in some sections of the state oats and peas, or peas alone. Where peas can be grown successfully, they make a very rich cow feed.

As the dairy cow does her best in the month of June when on good pasture, we should take a lesson from this and give her as near these conditions in winter as possible, both in regard to feed and surroundings. What are some of the characteristics and qualities of the summer feeds? In the first place, this feed is very palatable; next, is easily digested; third, it contains all of the elements of nutrition in the right proportions for summer feeding, and last, but by no means least, it is very succulent. For instance, in mixed pasture grass there is three per cent of protein, thirteen per cent of carbohydrates, eight-tenths of one per cent of fat, two per cent of ash and seventy-five per cent of water. Now, we have all heard about the balanced ration. What is that? It is the ratio which should exist between the digestible protein and the digestible carbohydrates and fat in the feed. In this grass we have just mentioned we find that the ratio is one part of protein to four and nine-tenths of carbo-

hydrates. This is somewhat narrow, but we must remember that grass is a summer feed. In winter feeding, we can add more of the carbohydrates, for it will require more heat formers to maintain the warmth of the body. By a number of tests it has been found that in winter feeding it is safe to feed a ration as wide as one to six. This is what we call a balanced ration for dairy cows in winter. Let us now take these various feeds that we have on our farms and see which is the best way to combine them so as to approach as near as possible all of these qualities of the summer feed.

Best Combinations for Winter Feeding.

In selecting winter feed, one should first select the coarse feeds, as they are usually the cheaper. Of these, hay of the various kinds should be considered first; then corn fodder in its many preparations, and in some cases, but rarely, straw may be used. Then from the grains which are grown on the farm and the concentrated feeds that are on the market, the feeder must select those which are the best and cheapest compared with their feeding value to feed in connection with these coarse feeds.

When the difference in the price is not too great, I believe that it is always best to feed home-grown grains in preference to the by-products of the mills. There is a flavor and a palatability to fresh ground grains which is not found in most of the mill feeds, and palatability has much to do with digestibility. This being the case, we should see well to it that all our crops should be cut in season and put up in the best shape to retain as much as possible of their flavor.

It has been found by various tests that a cow that is giving enough milk to make one pound of butter a day needs a daily ration of about twenty-five pounds of dry matter. In this there should be about two pounds of

digestible protein, twelve pounds of digestible carbohydrates, and half a pound of fat. As clover hay is comparatively rich in protein, when possible this should always form part of the ration. When it is abundant, allow the cows to eat all they will of it. If part of the corn crop has been put in the silo, then give the cows about forty pounds each daily. Where fodder corn is fed instead of silage, then give each cow two bundles as they come from the binder. These should be given in two feeds, as should also the silage and hay. Besides this, they should have all the corn stover they will eat up clean.

Now, as a cow's stomach is not large enough to hold all of the feed she requires of the coarse fodders, it will be necessary to feed her some grain or mill feed. For most seasons, perhaps the best mixture, when silage is fed, will be three pounds of corn and oil meal, three pounds of oat meal, and two pounds of bran or middlings. When no silage is fed, then substitute two pounds of oil meal for the bran. A year like this, when oil meal is \$25 and bran more than \$15, I believe oil meal far the cheaper.

Regularity in Feeding Important.

Another important point in winter feeding is regularity, not only in regard to the feeding, but with all of the work with the cows. The feeder should watch and study his cows individually and know what each one is doing at the pail and also observe their likes and dislikes for the different kinds of feed. There is as much difference in individuality of cows as there is in the individuality of men. For this reason, it is best to feed as great a variety as possible, so that if a cow does not relish one kind of feed she may make up on another.

There is one food, however, I think is not necessary in order to increase the variety, and that is stock food.

Give the cows a handful of salt every other day, or, still better, have a box in the yard where they can have access to it at all times.

Give Cows Plenty of Fresh Water.

One other point of nearly equal importance to the feed is to allow the cattle to have all of the pure water they wish to drink. Do not compel them to drink from a tank that is half full of ice. If the feed is all dry, they should have all of the water they want twice a day. Get them in the habit of drinking before they are fed their grain.

Palatability of Feed an Important Essential.

In closing I wish to emphasize the fact that all of the feeds should be fed in the most palatable form possible, for we must remember that a cow gives us a profit on that feed which she eats and utilizes over that which is required to maintain her, therefore, the more a cow can be induced to eat, especially of the coarse feed, the more profitable she is in the dairy. Note that I said coarse feeds. As a rule, a cow should have two-thirds of her feed of the coarse fodders, and one-third of grain, but right here the individuality of the cow must be taken into account if we would feed profitably.

DISCUSSION.

Mr. Foster—How much oil meal would you feed, and how?

Mr. Stiles—Oil meal this year is comparatively cheap, but it is not safe to feed too much, even if it is cheap. I wouldn't give a cow more than two pounds a day, because it is a little strong.

A Member—Is not clear flax seed better than the oil meals?

Mr. Stiles—I don't think it is. It has a lot of oil in it and with the oil meal that has been taken out. It is

the protein we want more than the oil for the dairy cow, and I think you can get just about as good results with the old process oil meal as with flax seed.

A Member—Would you mix oil meal with grain?

Mr. Stiles—I would as soon as the cow gets used to eating it. Some cows don't like it at first. I have fed it first alone, and then as soon as they got used to it I mixed it with the other feed. I don't know that it makes any difference, except that you are a little surer of giving the cow just the right amount if you do not mix it with the other feed. If you mix it, it is apt to run in bunches and some cows get too much. The way to do is to put on a little handful for each cow and then I know that each cow gets about a pound at a time, or two pounds a day.

The Chairman—That is about the only way you can feed according to individuality.

Mr. Foster—If you were short of protein and buying grain in order to balance the ration, you couldn't balance it by feeding grain and flax seed.

Mr. Stiles—I don't think it is advisable to buy the whole flax seed anyway, you get too much oil. Ground flax seed is all right for calves, but for the dairy cow I would prefer oil meal.

Supt. McKerrow—Suppose you had a dairy cow that was feverish and out of condition, then wouldn't your flax seed have a laxative effect that would be of value over and above oil meal?

Mr. Stiles—Oh, yes, of course; I am speaking of healthy cows and feeding them for profit.

The Chairman—Don't you think that an animal that is being fed almost entirely upon dry, carbonaceous foods that in that case flax seed would be all right?

Mr. Stiles—Oh, maybe in that case, but if you are feeding as you ought to, good, succulent food and good clover hay and early cut timothy hay and upland meadow hay, then a cow is not

liable to get in these conditions. Flax seed has a medicinal effect upon the digestive tract, and it helps to digest the other foods.

Mr. Utter—How does germ oil compare with linseed meal in price?

Mr. Stiles—I think it is quite a little higher and is not as good as corn meal.

A Member—Have you tried gluten meal?

Mr. Stiles—Yes, I have tried it, but it has a flavor that the cattle don't like. As a rule, it is a very good feed. Some of the cows like it and some don't. If you can buy it for \$15 a ton when oil meal is \$25, it is a good thing to add, say, two pounds of that and only one pound of the oil meal.

Mr. Hill—You spoke of feeding the cow two bundles of corn fodder in place of ensilage. Would you feed that whole or run it through a cutter?

Mr. Stiles—That depends a good deal upon the cost of running it through the cutter and the amount of corn fodder that you have. If the corn fodder is abundant and help is high-priced, I would as soon feed it in the bundle.

Mr. Hill—Wouldn't you have to feed it out of doors?

Mr. Stiles—No, we feed it in the manger.

Mr. Hill—Do you let the hired man clean out the manger?

Mr. Stiles—I do all but Sundays.

The Chairman—I have heard Mrs. Howie say that losing buttons encourages profanity. I have thought that these long corn stalks encouraged profanity, too.

A Member—Have you ever fed any mangles?

Mr. Stiles—Yes, last year I fed mangles every day, and they are first rate food if you haven't any other succulent food, but it is a little expensive to grow mangles, it takes a lot of work to care for and store them.

Mr. Convey—How do you regard

middlings as compared with bran as a cow feed?

Mr. Stiles—The way they are getting out the bran now, just taking the shell off the outside of the wheat, I would rather have the coarse middlings to mix with the feed than that bran.

Mr. Convey—I think that where they are fed in connection with some coarse food, so as to guard against feeding too fine food, they prefer the middlings, on account of the bran having so much fibre.

A Member—What grade of middlings do you use?

Mr. Convey—The brown middlings, standard, as they are called.

Mr. Stiles—A good many years ago we got a different bran, and I liked it, but at the present time, the bran seems to be only the outside shuck and there is a good deal of crude fibre.

Mr. Convey—In recent feeding experiments they claim that middlings are worth twenty to twenty-two per cent more than bran. Of course they have not the laxative effect, but with ensilage to feed in connection with the middlings, I prefer them to bran.

Mr. Foster—I think it is given in Prof. Henry's "Feeds and Feeding" that the cleaner the bran the better it is for cow feed.

Mr. Stiles—Of course the experiment stations do a great work, but the old cow is the jury that decides this thing.

Mr. Convey—By chemical analysis, bran shows a higher per cent of protein in quite a number of cases, but there is so much crude fibre in bran that there is not the large per cent of digestible protein that there is in middlings.

Mr. Nordman—Don't you have to mix these middlings with something else?

Mr. Convey—Oh, yes, you can't feed ground feed to any kind of animals

without having some coarse feed to mix it with; I feed with ensilage or on roots.

A Member—Have you ever tested the results of feeding bran as between when it is costing \$7 and \$15 a ton?

Mr. Stiles—That doesn't cut any figure in the quality of the bran.

Mr. Convey—But it makes a sight of difference, because when it is cheap many people want to feed it by bulk, and when it is dear they want to feed it by weight, and they generally don't feed enough.

A Member—I had read about the amount of protein in bran and I mixed it with oats for my horse. They stopped the mill and I stopped feeding the bran and put wheat in.

Mr. Convey—At the Utah Station they got just as good results from bran and middlings as they did from oats, just as good results in keeping up the condition of the horses, and very much better results as far as the cost of the feed was concerned.

Supt. McKerrow—There are none of our mill feeds that will put the same nerve into your horse as oats will.

A Member—Do you feed your mill feed dry or wet to the cow?

Mr. Stiles—I feed it dry.

A Member—Do you think that is better than wet?

Mr. Stiles—I don't know that you would get any better results, but it is easier work.

Mr. Foster—Besides that, you oblige the cow to eat it slower and she is apt to get more in.

Mr. Stiles—There may be certain mill feed which will pay to soak, it will add some succulence, but I think, take it all in all, it is better to feed it dry.

A Member—Does it make any difference as to the richness of the milk what kind of food you feed?

Supt. McKerrow—The old question of feeding butter fat into the milk.

Mr. Stiles—Why, it does and it

doesn't. It is a pretty hard question to answer, but there is this fact about it. You cannot take a cow that will give three per cent milk and give her such food as will cause her to give six per cent milk, but you can take a cow giving three per cent milk and give her straw to eat, and she will give a mighty little bit of milk and it will be rich, but she won't give very much butter fat. As a rule, you cannot feed fat into milk.

A Member—Can you feed it out?

Mr. Stiles—I hardly think you can.

Question—Then the difference is in the amount of milk we get?

Mr. Stiles—Yes, that is it. Your test remains nearly the same.

A Member—Several years ago I noticed that the test at the skimming station fell from 3.8 to 2.6. Now, what caused that?

Mr. Stiles—Perhaps your cows got out of condition. The health of the cows cuts a good deal of figure.

A Member—Did your cows stay out doors that night?

The Member—No.

Mr. Tubbs—I know we can make richer milk. I have seen an appreciable difference in the quality.

Mr. Stiles—Perhaps so, for a day or two.

Supt. McKerrow—To make short tests, there is nobody questions that, but you cannot make a change for a long period.

Mr. Stiles—If it can be done, it is kind of funny they don't do it with these cows that give a big flow of poor milk and make that milk richer. You can fix up a cow so she will give a big test, but then she will run down again. When they are drying up, they will shrink in their milk, but it will be richer in fat.

Mr. Goodrich—Mr. Tubbs said he could increase the amount of butter fat in milk by changing the feed. What kind of feed shall we feed our

cows to make them give the richest milk?

Mr. Tubbs—I have fed bran, then substituted ground oats in place of bran, and I got more cream from the same amount of milk. It is very evident to my mind that it did increase the richness.

Supt. McKerrow—Did you test it for butter fat with the Babcock test?

Mr. Tubbs—No, but we know by the amount of butter.

The Chairman—You know the cream varies as much as the milk does; the only safe thing is the Babcock test.

Mr. Hill—Did you get the increased amount of butter through increasing the amount of milk?

Mr. Tubbs—No, I think not.

Mr. Goodrich—I want to read the test that I made of a cow that was seven-eighths Jersey. I wanted to see how good her milk was. This was in 1890. It was the 28th day of May, in the morning; she gave eighteen pounds of milk, which tested 3.1. The twenty-ninth day she gave seventeen pounds in the morning and it tested two per cent. That same evening she gave twenty-one and one-half pounds of milk that tested 5.5, and the feed had not been changed at all.

A Member—You got the strippings at night?

Mr. Goodrich—No, sir, I want it understood that that was the exact test of that cow. You will find if you read the Patron's Hand Book, that at the Pan-American there were some variations almost as big between morning and noon and from noon till night. The cow was milked as clean as I could milk her.

The Chairman—Well, how do you account for this change?

Mr. Goodrich—She is a very delicate, thin-skinned cow. She was out in the pasture; she had never been out when it was cold enough to freeze and that night it was almost cold enough to freeze, and when I went out in the morning she was standing by the stable door shivering. She came in and I milked her immediately, and her milk tested two per cent. At night she gave more milk and it tested 5.5. Of course I don't know what happened, but I believe it was in consequence of that cow feeling uncomfortable that the test went down. Her average test was about 4.5 for the whole summer.

Recess to 1:30 p. m.

A



AFTERNOON SESSION.

The Institute met at 1:30 p. m. Conductor W. F. STILES in the Chair.

FERTILITY.

D. B. FOSTER, Fairchild, Wis.



Mr. Foster.

By fertility we commonly mean the plant food in the soil that is in a proper condition for the plant to assimilate. A soil may be stored full of material for plant food, but if it be not in the right form so that the plant may use it to make growth, that soil would not be called a fertile soil. Our low-lying, cold, sour soils are an illustration of this.

Many things are required to bring a plant from seed time to a successful harvest, but we will agree that one of the most needful of these is food,

abundant food, within easy reach and in the proper form.

When a returned traveler tells us that in the northwest they grow from forty to fifty bushels of wheat per acre, our first impression is not one of excellent seed, or improved cultivation, or of great, good luck, no, our very first thought is of the fertile, fruitful soil that enables that result. When we hear of a man who raised one hundred bushels of corn to the acre, we know that his soil is good because otherwise such a result is not possible, no matter how good the seed nor how perfect the cultivation.

It is urgently proper, therefore, that we inquire into this soil of ours and find out whence comes the difference between half crops and full crops, which if continued mean to the farmer, good times or hard times, prosperity or adversity, success or failure!

The Composition of the Soil.

The original rocks, of which, so these learned scientific men tell us, the earth was first composed, after being ground in Nature's ice-mill to fine particles, and then decayed and weathered into still finer ones, and transposed and mixed through the agency of rushing torrents and Noah-like deluges, were then fitted to become the frame-work of a soil, just as the crude fiber in our plants acts as their frame-

work, and although usually largely indigestible by our animals, is still indispensable, as it furnishes storage room and protection for the food particles.

Now the frame-work of a soil is no more a fertile soil than the frame-work of a cow is good roast beef; it is the accessory furnishings that are necessary; so Mother Nature simply fol-

her boys would be with her treasures if she let them have full swing, wisely put us under limitations as to the amount of fertility we might draw out of the soil, with our heedless, wasteful ways. She put us upon a yearly allowance, so to speak. Why, the chemist now tells us that there is fertility enough in the ordinary farm soil to produce good crops for a thou-



Starting Some of the Old Crop on Foster's New Dairy Farm, Fairchild, Wis.

lowed good, practical farming ways and by growing all the plants that were adapted to her farm and returning in an economical way the soil product to the soil, she finally brought this earth, after uncounted ages, to the perfection in which we find it, and handed it over to the sons of men, not for our very own, but in trust for the coming generations of her children, even to the thousandth generation.

Having created us trustees of this great fund of fertility, Mother Nature, knowing how careless and wasteful

sand years, and yet the farmer knows to a certainty that most soils can be "run out" and made unproductive with just a few years' injudicious cropping. Well, it is like this: the fertility is there all right, but the great bulk of it is in such form that neither you nor your plants can use it, it is locked up, and all you may have this year is just what Mother Nature will hand out to you. It is like money in the bank, behind bolts and bars; it is yours, yes, but children and reckless spendthrifts are not allowed to

even handle all the money that may belong to them.

Now, let us take this soil apart and examine some of the essentials for plant growth which it contains.

Principal Elements of Plant Food.

The chemist tells us that the three principal elements of plant food are nitrogen, potash and phosphorus, or phosphoric acid, as it is commonly called. He tells us that the use of each of these elements is as follows: nitrogen is the forceful part of the growth; it takes force to push the head of the plant, up, up, into the air; it takes force to grow corn twelve feet high; it takes force to lift the tons of water to keep the leaves alive. He tells us that nitrogen is some relation to the saltpetre which gives the explosive effect to gunpowder; that it is the nitric acid which, when mixed with harmless glycerine, makes the terribly explosive nitro-glycerine, which is again transformed into the powerful dynamite. So no matter whether we grow corn, or shoot game, or blow up big pine stumps, nitrogen is the force that does it.

He tells us that potash combines with and softens or dissolves the sand grains and other minerals, so that the plant can use them to stiffen its stalks or stem so that it will stand up. You know that grass and grain which grows on very rich ground often falls over and lodges; plenty of nitrogen there to boost it, but not enough backbone to hold it up, don't you see? And the phosphorus, he tells us, is what is needed in the top, in the grain, in plants, in the brains of men. We tip our matches with it to get quick, bright results; phosphorus stands for concentration and ability; I should say that a man without phosphorus in his brain would be like a head of wheat without the kernels, a cob without corn.

How to Renew Plant Food in the Soil.

Now as we take out some of this plant food in every crop we grow, we can soon "see our finish," so to speak, unless the supply in the soil is constantly renewed, and this can be done in three ways:

1st. By buying fertility from those who have it to sell in the form of commercial fertilizer. This may sound all right, but it is too expensive for ordinary farm crops, as it costs so much money that it doesn't leave profit enough to live on.

2d. Mother Nature is constantly unlocking fertility, but that is too slow altogether for us fellows; it means summer fallowing and waiting, and so it is not practicable with high-priced land and expensive families.

3d. By returning to the soil a goodly share of what grew there and holding it there by an intelligent method of cultivation that will also develop and quicken chemical and microbic action in the soil, and this is the key to Nature's treasure house.

Each of these elements, nitrogen, potash and phosphoric acid, has a market price at which they are bought and sold on the open market, and as the farmers of this country spend \$50,000,000 per year for commercial fertilizer simply to get the nitrogen, potash, and phosphoric acid which they contain, we can easily get at the value of each on the market, and we find that nitrogen is worth not less than twelve cents, potash four and one-half cents, and phosphoric acid four and one-half cents per pound.

Now, at these prices, a ton of clover hay is worth \$7.23 in fertilizing elements alone, and yet there is lots of clover hay sold for less than \$5 per ton on the farm. The reason for this is because the farmer didn't have to earn or buy the fertilizer that went into that hay, if he had he would know what it was worth; his rich Mother Nature saved that fertility

and left it to him and ordinarily he doesn't think of the cost of that fertility any more than the young dude in the city does of the dollars which his daddy earned and left to him. Does the dude who never earned an honest dollar in his life know anything about the market value of dollars? Doesn't he squander them just as if they weren't worth twenty-five cents apiece? He don't know how many backaches or sweat drops each of those dollars cost! No! He didn't earn them, and the farmer who sells his fertility at less than the going market price, is, it seems to me, in pretty near the same position.

Now in farming, I believe that the best method is to raise as much as we can and buy no more than we have to, and this rule will apply to fertility as well as to meat, or grain, or fruit. A proper rotation of crops, combined with a proper making and application of manure, will enable the farmer to gain fertility, and reap the reward of larger crops each year than were possible before. But if he is deluded into adopting the practice of buying his fertility in commercial fertilizers, he is contracting the same foolish habit that some young married folks have of buying their victuals at the store instead of cooking them. The soil is the pantry of our raw materials from which the farmer must prepare the proper food for his plants, and he may well compare the work of the good cook with that of the poor one. Both being given the same materials in the form of raw meat, vegetables, flour, etc., the one will produce a meal of victuals fit for a king, while the other could not properly feed a hungry tramp. So of the two farmers with the same elements of fertility in their soils, one of them will, by intelligent cultivation, form such a combination with the forces of Nature as to succeed in the highest degree, while the other will fail to make even a decent

living under the same outward conditions. The farmer must understand Nature's rules and follow them closely if he would enjoy the highest success.

DISCUSSION.

A Member—What is the value of timothy hay?

Mr. Foster—As a fertilizer, according to the chemist, it is worth \$4.31 per ton before it is fed. With every ton of hay that you feed, with every ton of grain that you feed, with the grain that you sell, you should figure the fertilizing value, it will add materially to its apparent cost. When you sell hay, you ought to figure what it costs you, both in labor and in material.

The Chairman—Compare that timothy hay with clover.

Mr. Foster—Clover is much richer in fertilizing elements. Clover also has an advantage in that it leaves a greater portion of these elements in the soil. Clover adds a good deal to the land from this free fund of nitrogen in the air, and therefore leaves the land richer than it was when it was taken off. I refer to clover, not because selling clover hay at less than the market price of its manurial elements would make a man poor necessarily, but simply because of the foolish practice of selling things for a good deal less than they are worth.

Capt. Arnold—As I understand that, that is based upon the proposition that the three principal elements there are nitrogen, potash and phosphoric acid.

Mr. Foster—Yes.

Capt. Arnold—Are there not other qualities necessary to make fertility found in clover?

Mr. Foster—Yes, particularly humus. Humus is the form in which we store up nitrogen. Humus is the carbon itself, some of the inside furnishings to a good soil. Humus is the sub-

stance that holds moisture and that keeps it there in a dry season. A great share of the nitrogen is stored up in that humus and kept there until we use it.

Mr. Nordman—What element of fertility is necessary to have in the soil to help stiffen the straw where it lodges?

Mr. Foster—Theoretically, perhaps, it would be potash. I have heard men say that by plowing our soils a little deeper where the oats lodged, by turning up some of the soil underneath, that we would prevent the lodging to some extent, and that would be reasonable, because it would not give that nitrogen so good a chance to work on the oats and perhaps it would turn up some of the potash which has been worked down, being very soluble in water. Then again, we sometimes find that by discing corn ground intended for oats, shallow instead of deep, it will give a better result and help make the oats stand up.

Mr. McCormick—Would you recommend for a root crop putting on barnyard manures in the spring?

Mr. Foster—A root crop needs considerable humus in the soil to be in good condition. Now, fresh manure is not humus. This humus is made of it, but the fresh manure is not decayed. As a rule, for potatoes or for root crops, I would advise putting fresh manure, but I would advise having the manure put there long enough before so as to become well rotted and forming humus.

Mr. Jacobs—How would it do to apply to the clover crop the year before?

Mr. Foster—That would be the best plan. It is a good plan to haul the manure direct from the stable and spread it thinly upon the grass ground, or, if it is fine manure, upon the fall plowing, then work it in in the spring. On the grass ground it is still better, because then the winter

and the spring rains wash the soluble fertility out of it and onto the ground, where every bit of stubble and every bit of leaf that is on that soil grasps it, soaks it up, and holds it and keeps it there until the next rain comes and washes it down to the roots of the plant.

Mr. Jacobs—According to reports, clover hay contains the most fertilizing element and we also know that it takes less from the land. Now, isn't it very foolish for the farmers to raise so much timothy hay as they do, either to feed or to sell?

Mr. Foster—Well, I don't know, there may be circumstances where it is not. I like to raise all the clover that I can on the land, because of its manurial value, but then, where my catch of clover was not first rate, I want something to fill in. Clover and timothy and alsike clover grow very peaceably on the land together, even on an amount of surface that will only support a given number of red clover plants there will still be room for a different rooting system. The clover roots go down deep and we can scatter a little timothy or alsike seed that roots shallow and there will be room enough for the two, because they do not crowd each other, just as you can take a tumbler full of buckshot and pour in a little bird shot and they won't crowd each other at all.

A Member—Another reason is that clover is apt to freeze out and timothy is not, and if the clover does freeze out, you have a good crop of timothy.

A Member—Isn't it better to have a short rotation?

Mr. Foster—I think we are going over the line a little into tillage, but I practice a short rotation four years. We come to the subject of tillage next.

Question—Which, in your opinion, is the best floor for a stable, earth,

or plank, or cement, for saving fertility?

Mr. Foster—Cement will doubtless save the most of it, and a great deal more will be saved if you use land plaster in your stables as an absorbent of the ammonia instead of putting the land plaster on your fields first. Anywhere where there is fermentation going on, there is a waste. The ammonia, or nitrogen, is worth twelve cents a pound, at least, and you can't buy it for less than that, unless you buy it of some foolish farmer, but that is getting away whenever your manure ferments. Now, do not get this fermentation mixed up with evaporation. You spread manure on the field and it dries out, it does not ferment, you lose simply the water. You pile it in a heap and it ferments, the gas goes off, and that gas is composed largely of nitrogen worth twelve cents a pound. Can you afford to let it float away?

A Member—There are hardly any cement floors in this country. I have had them for four years and I find them more serviceable and more cleanly, certainly, and I think it is a great saving all through with this absorbent upon it.

Mr. McCormick—We have a farmer living near Menomonie who sows a crop of rye in the fall, as he says, partially to keep it from washing and partially to keep the nitrogen from escaping from the exposed surface. He turns this right down in the spring. What is your opinion of that?

Mr. Foster—Oh, I won't say that it is not a profitable thing to do, but I

think he is not living up to his opportunity. Why does he not sow some crop like clover that will not only save the nitrogen he has, but reach out for some more? What is the use of doing business just to do it at cost and not make any profit? His rye adds nothing but humus to the soil, and it takes nothing out of the soil, except the humus, it will make the plant food a little more available as the rye decays. Even if I raised rye, I wouldn't want to plow it under that way, because these crops are worth probably three-quarters as much for manure after they are fed as they were before, so I would prefer to feed that crop, whatever it is; then I would have all the milk and meat that I had made from the feeding and three-quarters of my fertility left. The Danes, I understand, send way up to Minneapolis and buy our oil meal and take it clear across the ocean and feed it there to cows and use the product of our feed to rob us of the British butter market. They know that that linseed meal is worth to them a great deal for its manurial value, and they have to buy their manure largely. We do not appreciate it, but when we get down to the point we are getting to fast, here and there in communities sprinkled through Wisconsin, we shall be depending on fertilizers, too, and when we get there, we farmers will lose our independence. When a farmer has reached that point, he is no more lord of the soil, he is simply a tenant, buying his fertility as he wants it, and feeding his soil before he can raise a crop.

TILLAGE.

A. F. POSTEL, Menomonee Falls, Wis.



Mr. Postel.

To produce crops it is necessary that the soil be worked or tilled. Tillage serves several purposes, it opens the soil to the influences of the atmosphere and particularly to the oxygen of the air, thereby creating more available plant food. It tends to preserve the moisture in the soil, which is necessary to dissolve the plant food and make it available for the plants. It has also for its object to keep the weeds down and so give the cultivated crops a chance to make use of the plant food which otherwise would be taken up by the weeds.

Tools Used for Tillage and Methods Employed.

Tillage is accomplished with different tools, the grub hoe and the spade

being the oldest in use. Nowadays we have the plow, the harrow, the roller and the cultivator, all of different description, but serving the same purpose, each in its line, the ultimate object being to put and keep the soil in such condition that it will produce the best possible crops.

The plow opens the soil to greater depth and exposes the same to the influences of the atmosphere, also providing storage room for moisture, which is so essential in the production of crops. The deeper we plow, the better it is, because the more plant food will become available, the larger will become the storage room for moisture, and the better will the plant roots be enabled to penetrate into the deeper strata of the soil and gain a firm foothold. Deep culture is particularly necessary for all the cultivated crops, like corn, potatoes, root crops, and also for the successful growing of clover. If the roots of the latter are enabled to penetrate speedily into the deeper soil, there will be less danger of drying up of the same the first season. Still the soil must not be deepened at once, but gradually, as otherwise too much of the raw or dead soil would be brought to the surface. This would cause poor crops until the soil again becomes fertile through the influence of the atmosphere and the application of stable manure, which latter is indispensable in successful agriculture. It will be far better to deepen the soil first with the aid of a subsoil plow and throw but one inch of the dead soil on top at a time. This must be done in the fall and not in spring, so that the action of frost and moisture may decompose the raw soil. Deep plowing and sub-soiling in the fall will also

enable the soil to fill up with moisture, whereas in spring it would naturally have a drying-out tendency, as such soil will remain more loose. If soil must be plowed in spring, it should be done as early as the condition of the same will permit and never to a greater than the usual depth. Dead soil thrown on top in spring will prevent the weeds from early sprouting, so that the farmer will have no chance to kill any of them before planting time, which is very essential, particularly in the raising of small grain where there is no chance to keep the weeds down afterwards. The wet plowing of the soil in spring must also be avoided, as otherwise it will be hard to get it in a fit condition for a seed bed and may become so hardened under the horses' footsteps that it will be impossible for the plant roots to penetrate deeper into the soil. Result: a bad crop.

Preserving Moisture and Preparing Seed Bed.

After the soil has been opened to the influence of the atmosphere, either in the fall or in the spring, the next move would be in the direction of preserving the moisture in the soil and preparing the seed bed.

Soil plowed in the fall must lay in the rough furrow over winter, but as soon as the soil begins to dry up in spring and the horses can be walked over it without leaving too heavy footprints, it should be harrowed and made fine on top. This will create a dust mulch, preserve the moisture in the soil and encourage the weeds to grow. Should the soil have run together over winter and become hard on top, a pulverizer should be used first and the harrow follow immediately. The harrowing should be repeated either after a rain, or else within a week at least. This will kill a good many sprouting weeds and

tend to preserve the moisture in the soil.

If the soil is plowed in spring, the harrow must follow the plow at least once every half of a day. It is a bad practice to continue the plowing, especially of a large field, and not harrow it until the plowing is finished. The soil will lose an immense amount of moisture in this wise and will be very hard to put in good condition for a seed bed, even in case of rain following the plowing, but still more so in dry weather. The practice of allowing the soil to lie too long in the rough furrow is largely responsible for a bad stand in crops of every description in case of a dry spring. This, together with the evaporation of moisture which takes place, results in the poorer crops which are raised in a dry season.

When we prepare the seed bed, we use either a pulverizer (disc harrow) or the cultivator attached to a broadcast seeder. The soil is then loosened well and the moist soil from underneath is mixed with the dust mulch on top, the harrow follows and then the roller. The soil should be well packed, as otherwise, if left too loose, it is more apt to dry out and will also be unable to draw the moisture from the deeper strata by capillary attraction in case of dry weather.

Plants can take their food only in liquid form; for this reason moisture is absolutely essential in promoting plant growth and in producing good crops. After the soil is rolled and packed well, a dust mulch should be created by harrowing once with the harrow teeth thrown back.

Planting.

Now we are ready for seeding or planting. Where broadcast seeders are used, the grain is usually cultivated in. In this case the harrow and roller will follow the seeder. Here I should like to draw the attention of

the farmers to a roller which may be termed a disc, or corrugated roller. This roller packs the soil well and leaves it with a surface similar to that left by a harrow. It saves a good deal of harrowing and yet makes the soil very fine on top. It may be used to good advantage in any kind of a soil, but is still more valuable in the preparation of a heavy soil. It is the very instrument to use after seeding and planting. If a smooth roller is used, the harrow should follow as heretofore stated, as otherwise the soil would bake very heavily on top after a rain and becoming dry, crack open, which would give the moisture in the soil a chance to escape.

Cultivation.

In cultivated crops, like corn, etc., the cultivation tends to preserve the moisture in the soil and to keep down the weeds. Cultivation usually begins after the plants show above ground. The first cultivation of corn and potatoes is usually accomplished with the harrow; that of root crops with a cultivator which cultivates but shallow. Shallow cultivation is best for all crops, as deep cultivation injures the fine rootlets of any of the plants, loosens the soil too deep and in this wise renders it subject to drying out. What we want is a dust mulch on top to keep the soil from drying out, incidentally we also kill the appearing weeds and keep them from growing, as otherwise they would take so much nourishment away from the plants and eventually smother them. The result would be a poor or no crop at all. Some farmers might say, what's the use of cultivating if there is a dust mulch on top and no weeds to kill? Yet this is necessary. There is in every soil present a system of capillary tubes, which is especially well-developed in a tile-drained soil. In case of rain, the moisture will go down by gravity in these capillary

tubes, to rise up by capillary attraction as soon as the soil becomes dry on top again. These capillary tubes must be kept covered up on top, as otherwise the moving atmosphere or wind would suck the moisture from the ground and the latter would dry out. If the dust mulch is not shifted from time to time, little funnels would form and thereby connect the capillary tubes with the air and the results would be as stated, a drying out of the soil. The dust mulch also enables the oxygen of the air to penetrate the soil, thus avoiding the nitrification of the ammonia contained therein and enhancing plant growth thereby. At the same time the dust mulch does draw the night dews to itself, which provide a great deal of the moisture necessary for plant growth during a dry season.

Cultivation is continued until the time that the plants are so big that they would only be injured thereby, from which time on they are able to take care of themselves.

DISCUSSION.

In the absence of Mr. Postel, the discussion was lead by Supt. Geo. McKerrow.

Mr. Foster—Did you say anything about changing the temperature of the soil by tillage?

Supt. McKerrow—I said one of the objects of cultivation was to allow the warm air to pass freely through the soil.

Mr. Foster—We are inform'd that shallow cultivation, cutting off evaporation, is what warms the soil, and it also helps in the more moist seasons, when we have more moisture below than we want, to carry that extra moisture off.

Supt. McKerrow—That is very true.

Mr. Jacobs—I have found that free cultivation will not only conserve moisture, but relieve unnecessary moisture in the soil.

Supt. McKerrow—Any cultivation will allow the water to get away. There are two objects in cultivation, one is to conserve moisture and the other to let the water get away.

A Member—Do root crops have a tendency to rob the soil any more than any other crop, sugar beets, for instance, mangles or carrots?

Supt. McKerrow—Root crops, when they are good, big crops, do take a good deal of fertility. We make this fertility available by good, thorough cultivation, and in that sense we are cropping out the fertility pretty fast, but if we only grow root crops once in three or four years, the root crop is a benefit to the soil, because the soil needs this cultivation. Of course, if we keep on raising potatoes, beets, or any other root crop year after year on the same soil, we will certainly work out the available fertility very rapidly and the soil will show the effects of it.

Mr. Goodrich—I presume that question was asked because the gentleman was thinking about raising sugar beets. I was in the Michigan Farmers' Institutes last winter; at one time I was right in the district where they were raising sugar beets, and I made all the inquiries and got all the information that I could, and came to the conclusion that on this point of beets taking fertility out of the soil, it is a fact that a crop of sugar beets grows lighter each succeeding year, and after they had raised sugar beets three years on the same piece of ground at the Experiment Station, their crops were light following the beets. Where they raised only one crop of sugar beets, they got a fine crop of something else afterwards. Mr. Clinton D. Smith, six years ago when I was there, talked in public that sugar beets did not take fertility from the soil to any great extent, that the sugar was made from condensed sunshine, and it took a good deal of

wind and sunshine to make a crop of beets, but last winter, after making these experiments, he said that it would be ruinous to follow one year along after another with sugar beets on the same ground. They tried it three years; the first crop was good, the second crop was a little less, and the third was not worth harvesting.

Supt. McKerrow—We are getting over a little onto Mr. Finkle's subject. This statement of Mr. Goodrich must impress this fact upon our minds, and that is, that we should follow a proper rotation of crops and not try to grow any cultivated crop twice in succession, unless we want to kill out a patch of Canada thistles or quack grass, or something of that kind, then two thoroughly cultivated crops, one following the other, is a very good thing, otherwise we should follow a rotation. The tobacco growers of southern Wisconsin, the old hop growers, all these people who have followed some special line of work, find to their sorrow, as did the potato growers of central Wisconsin, that by trying to grow crop after crop, even these crops that they thought did not take much out of the soil, that they did deplete the fertility very rapidly; therefore we should all have good sense and follow a system of rotation.

Mr. McCormick—We have a number of what we call hay farmers up in northern Wisconsin. They grow hay because it is not much work, and they are in the woods in the winter. They have cropped continuously with the hay until they have their farms so that they couldn't raise sour apples. Now, we all grow hay here in this part of the country, but you would not advise us to stick to hay. We do not advise the farmers to stick to beets, but on the authority of the best agriculturist, Prof. Marks,—I think he is called the chancellor of agriculture in Germany, he makes this statement, that after fifty years of cultivation of

sugar beets, there are farmers there producing twenty-five per cent. more oats and barley on the same soil after the crop of sugar beets, than they did before they had the sugar beets on the soil. That statement stands without question, and Germany is pretty good authority on agriculture. The theory is that it is on account of the intense cultivation and the clearing of the weeds and bringing the fertility into such condition as to be used by the other crops.

Supt. McKerrow—In order that Mr. McCormick may not be misunderstood, I want to say right here, the crop of sugar beets, or any other roots, does not take a large amount of fertility out of the soil, but it teaches the man who grows that crop successfully how to till well, and it gives the land upon which a later grain crop is grown the benefit of good cultivation once in three or four years, therefore we say that in rotation the work may count for good. It is true, as he says, that in Germany where they cannot buy fertilizers and make it specially profitable, they grow sugar beets by rotation and keep their land rich in that way.

Mr. Convey—Mr. Goodrich has spoken of the experiments conducted at the Michigan Station in regard to sugar beets. I went over that ground with Prof. Smith, asking a lot of questions, and I found that they applied commercial fertilizers in large quantities to the ground that they raised the beets on, costing more than they could possibly take out of the beets. That was because of the poor physical condition of the soil. Even where they applied the commercial fertilizer, there was such a lack of quality in the land that they did not raise more than half a crop. The rotation of crops will keep your land in proper physical condition, and it is just as essential as fertility; in fact, I consider it more essential in this respect; I am satisfied that if you take a soil that is in

good physical condition, fairly well cultivated, that it will not only hold moisture better, but it will take up moisture from the atmosphere just as a wagon wheel will take up moisture. All cultivated soil will actually take moisture from the atmosphere. The question was asked here if the growing of rye on land adds to the fertility of the soil. Of course it adds to the physical condition of the land; if there is something on the surface of the land it prevents storms from packing the land, and it is considered one of the best American methods of farming to keep a growing crop on the land as nearly all the time as you can. Rye sowed in corn will keep the land in better condition and this is especially true of light soil where the fertility is apt to leach out.

Mr. Toner—Where the land is heavy clay, how are you going to get on that land after rain?

Supt. McKerrow—The best thing for that soil is tile drainage. The next best thing is surface drainage and then the deep rooting plants, like clover, which in a sense, is a drainage plant. You have got in some way to get the water away to get on that land quickly, because if you get on it when it is too wet and puddle it, then you will damage the texture of the soil. A goodly amount of humus in that soil will help to get the water away. The clover plant is good, not only because it is a deep rooter, is a drainage plant, but the humus allows it to rot quickly, the moisture passes out in the drier parts of it.

Mr. Foster—What are the advantages of this rotation you speak of?

Supt. McKerrow—That intense cultivation that you give the root crop develops the nitrogen into nitrates very rapidly, and they pass into the air, that is why Mr. McCormick's man sows his rye to save the escape of nitrogen, and those rye roots that have used up that nitrogen are there to help the physical condition of the

soil later, and there is some humus to it, and for that reason the rotation of crops, as a rule, keeps adding some humus, and then they will not draw the same proportion of the same elements, allowing your soil to rest in some of its elements in raising the different kinds of crops. Besides the rotation of crops meets the weed question in different forms. Some weeds will be smothered by your clover crop, some weeds will fail to ripen with your grain crop, and you kill some of

them with each kind of a crop, and a good many of them of course with the cultivated crop in your rotation. So there are many advantages in rotation, although we are only talking about rotation as applied to the tillage side of the question.

Mr. Graves—What kind of soil is it over there in Michigan?

Supt. McKerrow—At Lansing, their farm is a sandy and clay loam, a little lighter than we find on some of our oak openings in Wisconsin.

SUGAR BEETS.

G. L. FINKLE, Appleton, Wis.



Cultivating Sugar Beets.

I have been asked to say a few words on sugar beet culture, and as this industry is growing and spreading so rapidly, it is a question many are interested in.

Preparation of the Soil.

Sugar beets can be grown successfully on any soil that will produce a good corn crop. My best results were obtained on a clay subsoil that has

five or six inches of black surface soil. I should like the ground to be well enriched and deeply plowed the previous fall, then as soon as the ground can be worked in the spring, disc and cultivate at intervals, knowing that every time the ground is worked millions of sprouting weed seeds are destroyed,

are two inches high, take a single horse and a light corn drag and drag them lengthwise of the row. This will break the crust and disturb the weeds without injuring the beets. Repeat this dragging several times at intervals of four or five days, when the beets will be large enough to bunch. Do this by going down the row and cutting out the plants the width of



Cultivator for Beets.

thereby lessening hand labor in the crop. Continue the cultivating until seeding time, which in this locality will be from the first to the tenth of May.

Planting the Seed and Cultivation.

Now, when you have the soil in the finest possible condition, mark off into rows twenty-one inches apart. The seed can be sown with a Planet Jr., or any small seeder. When the beets

the hoe, then leave a bunch of several plants, and remove them the width of the hoe blade again. This bunching can be accomplished rapidly, after a little practice.

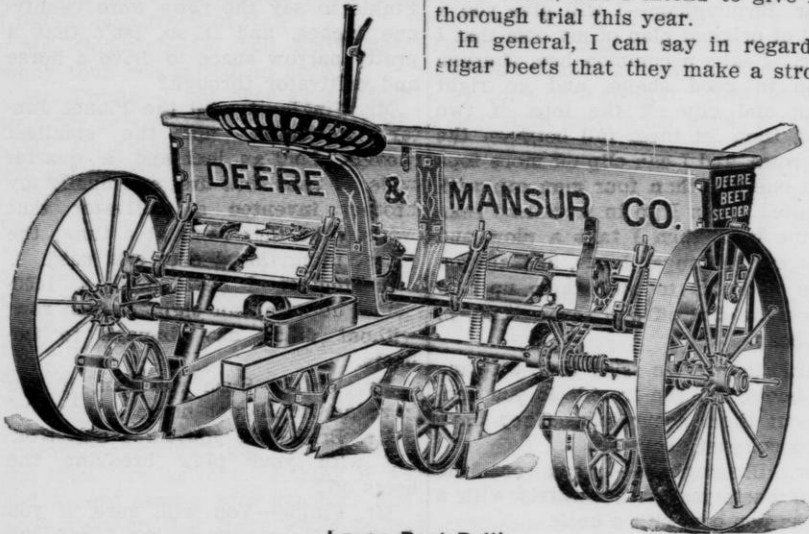
The next step is to thin the beets to single plants, always leaving the strongest plant in the bunch, and not closer than seven or eight inches in the row. This may strike the beginner as a thin stand, but you will be satisfied when you come to harvest

them that they were left thick enough.

Now keep the cultivator going and don't allow the weeds to get a start. You can kill the weeds before they are fairly up by going through once a week with a cultivator and very little work with a hoe will be necessary. Continue the cultivating until the middle of July, or as long as you can get through the row with a horse. If a few leaves are broken off no harm will result. The last couple of times through, adjust the cultivator so as to

as far down as the leaves start out with a heavy knife, and the beets were thrown in a pile in the center of the circle, and covered with the tops. You are now ready for shipping orders. After the beets are shipped, these tops can be feed to stock to advantage. I feed mine to milch cows, and they give a decided increase in the flow of milk. I have had no experience in feeding pulp, but am convinced it is valuable when fed with other feeds, and I intend to give it a thorough trial this year.

In general, I can say in regard to sugar beets that they make a strong,



Large Beet Drill. .

throw the soil towards the beets. This will have a tendency to reduce the amount of waste crown that must be removed at harvest time.

Harvesting the Crop.

When my beets were ready to harvest, I took an old J. I. Case plow, removed the mold board, had the shear cut down to about eight inches and I had a fine beet digger. I would plow out about ten rows of beets for a row of pits, the boys would take them by the tops, rattle the dirt off, and lay them in a circle, tops out. They were then topped by removing the crown

vigorous growth, are not subject to rot, blight or insects, respond readily to care and cultivation, and I expect to increase my acreage this coming season.

DISCUSSION.

A Member—Does it make any difference which way the rows run?

Mr. Finkle—I would prefer north and south, if possible. You see that will let the sun and light and the air in better. It is better for corn, and I think it will be better for sugar beets.

Question—Do you plow your beets out of the ground?

Mr. Finkle—Yes, we ran this plow right under them, and they stood right up. I hire some boys and they take hold of them and rattle them together and get off what dirt they can and lay them around in a circle. Then I hire some women to top them. I have a sack with some straw in it, and they kneel down and top about two and a half tons a day, each of them.

Mr. Birmingham—I will give you a kind of original plan of my own that I have. I take a common hoe, sharpen it up in good shape, and go right along and clip off the tops of two rows, then let them fall between the two rows, and I can clip off more tops with one hoe than four men can with a knife. Then I go to work and rake up the tops, then I take a plow and plow out the sugar beets, and all you have to do is to pick them up and knock the dirt off and throw them in the heap.

Mr. Finkle—We tried that with sugar beets, but the trouble is you cannot cut them accurately. They have to be cut just about so.

Mr. Birmingham—I can cut the sugar beets just as accurately with a hoe as you can with a knife.

Mr. Finkle—All right, come to me and I will give you a job, with good pay.

Mr. Birmingham—I will try it at your place next fall, and show you how it can be done.

Mr. Finkle—All right, you are engaged for next fall, remember, and I will pay you \$4.00 a day.

Mr. Toner—Was there any sand in that black soil?

Mr. Finkle—Yes, there was some. It was no swamp land, it was good, strong soil.

A Member—I sowed beets, and the beets covered the ground entirely; I

couldn't see the ground, I never saw anything grow like them.

Mr. Nordman—If you were not living near Appleton, where you can get these boys and women, would you increase your acreage?

Mr. Finkle—There are generally neighbor boys that you can get. Of course it is an advantage to be where you can get help, but it isn't as much of a job as lots of you people think it is.

A Member—Did I understand Mr. Finkle to say the rows were twenty-one inches, and if so, isn't that a pretty narrow space to drive a horse and cultivator through?

Mr. Finkle—I used the Planet Junior cultivator, not the smallest shovels, about an inch and a quarter wide. I used that first and finally my brother invented a cultivator that would take four rows at a time; the nicest thing that I ever saw used.

A Member—I have used a 1400-pound horse on an eighteen-inch row, without doing any damage to the beets.

Mr. Finkle—Sure you can, if you have an intelligent horse.

Mr. Brill—Did you have any trouble with your plow breaking the beets off?

Mr. Finkle—You will, sure, if you don't go deep enough, but I had one of those J. I. Case plows and it was just the thing for us. It always went in too deep for other things.

A Member—Could not these shovels be used for potatoes?

Mr. Finkle—Yes, if it sets up high enough. They cut right down into the clay.

A Member—Did you cultivate every week last summer?

Mr. Finkle—Yes, any time I wanted to. Our soil is peculiar, the water seems to go down and still it stands the drought well.

Question—Have you no other drainage?

Mr. Finkle—No, no, just natural.

Mr. Goodrich—Mr. Chairman, I want to find out the most important thing about this business, and that is whether there is any profit in raising them. In the first place, does Mr. Finkle know how much it costs to raise an acre of beets?

Mr. Finkle—No, I do not. I know how much it cost to thin those beets. It cost me on two acres and a half about \$6.40. The other work we did with the hired men at odd times and I didn't keep track of it.

Mr. Goodrich—Do you know how many tons you raised an acre?

Mr. Finkle—I got over twenty-four tons per acre on two acres and a half.

Mr. Goodrich—And how much did you get a ton?

Mr. Finkle—Four dollars and twenty-five cents. I want to say generally you do not want to contract unless you take a per cent. If I had had a per cent. I would have had \$6.40 a ton.

Mr. Toner—You got that for your beets on board the cars and the company paid the freight?

Mr. Finkle—Yes, the company paid the freight. This was an awful bad season, we couldn't get a worse season than this last one. I think if we had a good season with sunshine and good weather, that there would be no trouble in our beets bringing us pretty near seven dollars. They would test about eighteen per cent.

Mr. Toner—How high did your beets test?

Mr. Finkle—Sixteen and six-tenths.

A Member—Our beets don't test so much. I sent eleven tons and a half and I got paid for eleven tons and ninety pounds.

Mr. Finkle—I had a big shrinkage. On three carloads I had nine tons shrinkage, but I didn't blame those men and I will tell you why. They didn't get all the beets I had, I put six tons of beets in my cellar, I am feeding them every day, and come to examine those beets, on each side of al-

most every beet there is a kind of little sunken place where the fibers, roots, come out, and that is filled with dirt, and you come to rattle that off and it makes a lot of difference. I told Mr. McCormick that it was too much to lose nine tons on three carloads, but come to sum the thing right up, I concluded it was not a bit too much. I brought a basketful to my wife one day, and showed her the amount of dirt that I shook off of those beets. You know the season was wet, the ground was very wet. There is one thing about it: those people can't afford to beat the farmers; they don't dare do that. Now, here is a beet right here in my hand; you will be surprised to see the amount of dirt that clings to that beet, especially if the weather is bad. You are in a hurry when you harvest, and you can't get the dirt all off of them.

A Member—I visited the factory this fall, and I was surprised to see the dirt on the beets. That one, Mr. Finkle, is very clean, comparatively.

Mr. Finkle—I have seen the dirt an inch thick on beets and I tell you that weighs heavy. I weighed my own beets and kept track of them, and on seventy-two tons I was nine tons shy.

Mr. McCormick—A statement has been made here which might possibly, without explanation, reflect upon the company of which I am manager, and I would like to say a word in our behalf. Beets are weighed on the wagon, say at Kaukauna, coming out of the soil, there is more or less clay here, then they are weighed on the car. Those beets dry out in the course of three or four days, the jolting of the car shakes more or less of the dirt to the bottom. The beets are unloaded out of the cars into our shed, and I have seen cars with six inches of dirt in the bottom, all over the bottom, that ordinary clay, and that will weigh anywhere from two to four tons. You understand that everything is weighed by a man hired by the rail-

road company, and sworn to do it right; he is not hired by us. When the car goes back again, the dirt is weighed out; the difference is called the gross weight over all. This gentleman who is complaining, weighed that dirt on his wagon, and therefore claims a difference in weight. If any man will stop to consider this, he will realize these facts, and I believe will confirm what Mr. Finkle says here, and I can confirm what he says, that the company could not afford "to kill the goose that lays the golden egg," we have enough money to live on without beating you out of a few dollars.

Mr. Finkle—They can't do it but once, gentlemen.

A Member—You spoke of dragging beets. What do you mean by that?

Mr. Finkle—We have a light horse drag made from two-inch square timber and old horse rake teeth cut off and sharpened, and it is fine. It is sharpened round and you can go over them just as nice as can be. Of course, you want your ground clear so there won't be any corn stalks or anything of that kind. There isn't any crop that you ever raised that will show the results of cultivation as well and as fast as sugar beets will.

Mr. Imrie—Did you ever use a weeder?

Mr. Finkle—Yes, and they are not worth a cent. My neighbor has one, I borrowed it three times, and I said I wouldn't give a pin for it.

Mr. Imrie—What amount of seed do you use?

Mr. Finkle—I use about fifteen pounds of seed, but I presume on some of this hard soil a person would want to be sure to put in seed enough so that sometimes when there may be

a crust form on top of that soil, if you had lots of seeds under it, it would raise that up so that your beets would get out, but on our soil it never crusts over to amount to anything, and fifteen pounds are enough.

Mr. Toner—You have had considerable experience with crops. How do you consider beets and potatoes as compared?

Mr. Finkle—Of course, there is a little more hard work, but the cultivating I shouldn't think was any more. I really enjoyed cultivating sugar beets.

Question—Doesn't the fact that you know how much you are going to get for your sugar beets add to your enjoyment?

Mr. Finkle—Yes, your beets are marketed before you sow the seed and they furnish the seed. I am not talking for those folks down there. I would jump on them just as soon as anybody else if they didn't do the fair thing. Outside of this thinning, the cultivating wouldn't be any more than for potatoes.

Question—You get sixty tons on two acres and a half?

Mr. Finkle—Yes, clean beets.

Question—How do you thin them, after you clip them off with the hoe?

Mr. Finkle—I have boys. One boy I had was nine years old, and he did just as much as any of them.

Mr. Toner—I would like to say that all the farmers raising beets for the Menomonee River Sugar Company can equal Mr. Finkle's record, and it was a good record, particularly for the first year. I am interested in this matter because I held forty sugar beet meetings among the farmers of this section last year.

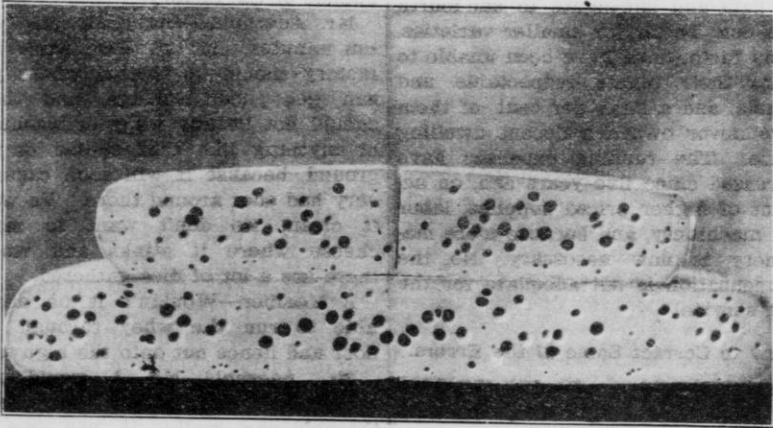
CHEESE FACTORIES.

E. L. ADERHOLD, Neenah, Wis.

The cheese industry became well established in Wisconsin at a time when scientific knowledge in the art of cheese-making was lacking. As a consequence, many errors were made in building and equipping factories and in the methods of manipulating milk and curd. The light of the present day indicates plainly that, with modern factories, we could enhance

ery are causing a loss to farmers of from four to six cents per hundred pounds of milk.

Will it pay to improve the factories? Let us look ahead and see. The production of cheese in the United States in the past ten years has grown very little,—if at all. While most dairymen could easily feed twice the number of cows they now have,



First Prize Swiss Cheese at Cheesemakers' Convention, 1901. Made in Monroe Co., Wis.

the value of our annual cheese production hundreds of thousands of dollars. We improve very slowly because the farmers (who must pay for all these mistakes) in general are not aware of the loss that is caused by imperfect methods and therefore do not demand better factories. Cheap competition between factorymen is another obstacle. Unclean whey tanks, poor curing rooms and old-fashioned machin-

the rate of increase in milk production is restricted by the number of cows farmers are willing and able to milk. The demand for cheese—owing to our rapidly increasing population—is growing with giant strides. That is why cheese was high in price in recent years and for the same reason it will be comparatively high-priced in years to come. Yes, we will need cheese factories as long as peo-

ple will eat, so let us equip and operate our factories properly and stop these big losses.

Some Problems to be Faced.

Can the factoryman afford to make the necessary improvements? His property is of unstable value and he cannot afford to materially increase his investment unless his patrons properly appreciate such improvements and give him their united good will.

Is the compensation for manufacturing cheese adequate for the best factory service? For years it has been (in the eastern part of the state) one and one-fourth of a cent per pound for flats and one-eighth to one-fourth of a cent better for smaller varieties. Many factorymen have been unable to make their plants respectable and salable, and a large per cent of them have never owned a decent dwelling house. The running expenses have increased since five years ago, on account of higher priced supplies, labor and machinery, and because more machinery is now necessary. No, the compensation is not adequate for the best service.

How to Correct Some of the Errors.

Can the patron afford to increase the price of making? Yes, for he is receiving an advance of two cents per pound as compared with the price of five years ago, and he can well afford to take one-fourth of a cent out of that two cents and add it to the price of making. Then he can say to the factoryman: We want you to keep that whey tank clean; we want you to furnish a better curing room; we want you to get a boiler and curd agitator; we want you to keep the flies out and to keep your factory in a sanitary condition.

The cheesemaker cannot get money out of the factory. He must get it out of his patrons, and they owe him,

and should not begrudge him an honest living, because they cannot very well get along without him. Yet, with the price of cheese exceedingly high, on account of inadequate remuneration, the ranks of the cheesemakers are becoming so thinned that, with all the scrubs counted in, there are not enough to fill all the positions.

DISCUSSION.

Question—How often should the whey tanks be cleaned out?

Mr. Aderhold—Once a day as a rule in hot weather.

Mr. Foster—I didn't hear you say anything about sanitary conditions outside of the factory.

Mr. Aderhold—They only gave me ten minutes. In the first place the factory should be located where you can get good drainage, and there should not be any whey or washings or anything like that spilled on the ground, because it will soon cause a very bad odor around there. We want it clean, we don't want to make cheese where it stinks and where there are a lot of flies gathered.

A Member—Wouldn't it be advisable to run the whey through the floor and hence out onto the highway?

Mr. Aderhold—No, I would run everything out above the floor, through the wall. If you run it through the floor, you are sure to spill some.

A Member—I mean to run it through a hole in the floor onto the ground and hence onto the highway.

Mr. Aderhold—Oh, you don't want to do that. You would have an awful mess underneath. We would prosecute you if you did that.

A Member—It is being done in this county.

Mr. Aderhold—It should not be. Here is the law on that: "Any person or corporation who operates a cheese factory shall maintain his

premises, in a clean and sanitary condition," and if he does not, there is a penalty of from \$25 to \$100. We practiced on that law a little last summer. The first man that had the honor of paying a fine for having a dirty factory lived up here in Brown county. If some or you have been patronizing that kind of a factory, just send word to the Dairy and Food Commissioner and he will make it his duty to attend to that fellow.

Mr. Imrie—What percentage of cheese factories pay by the test?

Mr. Aderhold—We have about 1,100 factories that make American cheese and probably six hundred of them making brick and limburger. Those Swiss cheesemakers do not pay by the test at all, and out of the 1,100 that make American cheese, I think probably half of them pay by the test—I am guessing at that.

Question—What is your idea of the fairest way?

Mr. Aderhold—There is only one fair way, and that is to pay by the test. The farmers who do not like the test are not well acquainted with it. They think they have to have a high test to get a high price for a hundred pounds of milk, but the test alone does not tell him how much money his cow is earning.

A Member—There is a man in our neighborhood who claims that milk that will test two per cent will make just as much cheese and as good cheese as milk that will test five per cent.

Mr. Aderhold—They ought to send him to the lunatic asylum.

Question—How often do you test? Every day?

Mr. Aderhold—No; with corrosive sublimate tablets, you can keep a sample two weeks. I usually test twice a month, taking a sample every time they bring milk.

Question—Will the amount of

cheese vary with the amount of butter fat in the milk?

Mr. Aderhold—Not exactly.

Question—Then how near does it come to being a fair test?

Mr. Aderhold—You know usually at factories the highest and the lowest tests will be something like one per cent apart, or perhaps a little more or a little less, and within those limits the yield of cheese is almost exactly according to the test, but when you get farther apart, say, two per cent apart, with one testing three per cent and another five, the yield of cheese would not be quite in proportion. The reason why we test milk at all is because there is a difference. If it all tested alike, we wouldn't have to pay by the test, and the bigger the difference, the more necessary it is to pay by the test. It is very seldom such wide differences appear, but one herd of cows may be fresh in the spring and another in the fall, so that one herd may be strippers, having a high test, while the other will be fresh and they will give poorer milk, of course, but six months later it will be just the other way, and so the thing will even itself up in the course of the year.

A Member—Well, if there is so much butter fat, it goes off in the whey and they can make butter of it.

Mr. Aderhold—Well, sir, in a thousand pounds of whey, we lose from three to four pounds of butter fat. We cannot save that, even under the most skillful management. There isn't any more fat in the whey from rich milk than there is in the whey from poor milk, so that the fat does go into the cheese.

Mr. Jacobs—Isn't it a fact that the quality of the cheese from rich milk will be increased so that it really makes up the difference?

Mr. Aderhold—There is a little in that, but our buyers do not recognize it when they make the price, so I do

not usually speak about it. You cannot have the yield in proportion to the fat, and have it get richer at the same time. Of course, when one milk tests two per cent higher than the other, it would make a little richer cheese.

The Chairman—Does not Dr. Babcock say that the richer cheese holds more moisture?

Mr. Aderhold—Yes, it helps the weight of the cheese.

A Member—If a herd tests four per cent in the summer, what ought it to test in the winter; I mean a herd fresh in the spring?

The Chairman—If they test four per cent on grass in the summer, I would expect, if they were fed pretty well, they ought to test pretty nearly five per cent in the winter and give half as much or one-third, but that is a pretty hard question to answer.

Capt. Arnold—About how much more cheese would one hundred pounds of milk testing five per cent make than one hundred pounds testing three per cent?

Mr. Aderhold—It would make about four and one-half pounds more, and it would be a little richer cheese. Before I sit down, I want to talk to the farmers and ask them to look ahead a little. You farmers have to pay for all the mistakes that are made at the factory, either directly or indirectly, and you can't get out of it. Many of you do not understand your true relation to the cheese factoryman, the cheesemaker. When you hire a man on your farm, you have two points in view, namely, what wages does he want, and how good a man is he, and if you have two men to choose from and you can get one for \$15 a month and the other you cannot get for less than \$20, you size up the two and you say, "I have to pay this man \$5 a month more than the other, but he will do twice as much work and he won't eat any more, so he is really the cheaper man." That is the way to

figure. Now, you have to furnish that hired man everything to work with, the team and the plow and the horse and the binder, and his bed and board and wages, and you can't get a cent out of him, can you? The only way you can get any benefit out of him is through his work. So you have to figure very closely what kind of a job he is doing for you. When you come to deal with the factoryman, how do you go to work at it? You just look at the one side and consider how cheap you can get that man to work. You don't ask what kind of a job you are going to get; you don't ask if he is going to waste five or six cents on every hundred pounds of milk, and you are paying for the losses. You don't ask him to stop those losses and do a better job. No, sir, the only question is, how cheap can we get that man to work? And you think every eighth of a cent you can pinch off his wages you are in that much, but you are mistaken. Your relation to the factoryman is exactly the same as it is to your hired man on the farm. You have to furnish everything, you have to pay for the factory, for the buildings, for the machinery, for the wear and tear, and you can't get one cent out of that factoryman and he can't get one cent out of the factory, he has got to get it out of you. The factory is no producer. You take so many pounds of milk to the factory and you take away the same number of pounds of cheese and whey, and there is nothing left. Your farm is the producer, you take a great deal more out of it than you put into it.

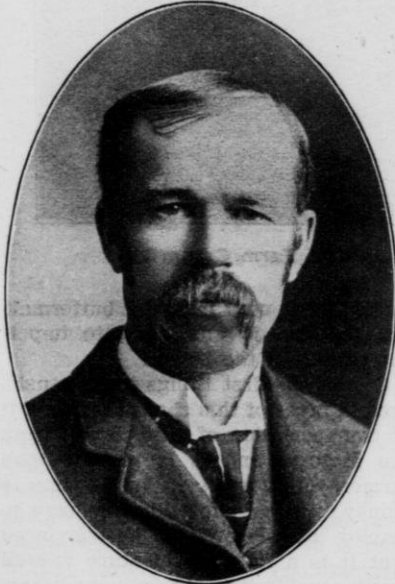
Now, the factoryman has to make his living out of the farmers, and if he can't make it honestly, he has to make it some other way, and there are some of them that have to know how to do it, and they do know—you would if you were in their places. They have to support their families, they have to make their living off the farmers.

Now, here is another thing: It costs a good deal more to run a factory nowadays than it did five years ago, because everything costs more today. Labor is higher, supplies are higher, and the only solution to this problem is that he shall charge more for making and a great many have done that the last year. Up around Seymour, they raised the price quite a little, and the farmer has been getting two cents more for a pound of cheese than he got awhile ago. He ought to take a little out of that and add to the price of making, and then they ought to tell the cheesemaker, "Here, we know it costs you more to make cheese than it used to and we want you to fix up

and do a better job than you used to do. It will cost more to keep that whey tank clean than it used to, it will cost a good deal more for machinery and an agitator, but it is worth a good deal more than it costs." You can't get along very well without that cheesemaker and while his business may not be as noble as that of the farmer, it is a respectable business, and he has a right to get enough profit out of it so that he can make an honest living, fix up his factory, and have a decent house to live in. There are a whole lot of cheesemakers that haven't decent houses to live in, they live up under the roof above their old factories.

CREAMERIES.

E. C. JACOBS, Menomonie, Wis.



Mr. Jacobs.

That creameries have been of great benefit to Wisconsin farmers needs only a ride through any creamery district to prove, but the benefits go farther and are of a more enduring nature than a superficial observation would indicate. The creamery has made possible and helped to establish a better system of farming by which the soil fertility is conserved, thus assuring success for the future while securing immediate and regular profits. It has helped to solve the transportation problem for remote districts by putting the products of the farm on the market in condensed form and in good market condition. And, what is of greater importance, it has relieved the housewife on the farm of a serious burden, thus making brighter the lives and homes of farmers and their families.

Location of New Creameries.

In building new creameries, care should be exercised that they are not

built too close together and that there are a sufficient number of cows to support them well, as it is a business in which competition is not a benefit, for, other things being equal, the larger the business the cheaper it can be done and the better will be the returns to the patron. But I am not in favor of the larger plants located at central railroad points and shipping cream from a large territory.

eries, and there are many of them that are giving the very best results.

Benefits of a Hand Separator.

There has been a constant change in creamery practice, brought about by the adoption of improved machinery, and at the present time the use of the hand separator is causing another and important change in the business and one which as a rule has not been



Gathering the Cream for E. C. Jacobs' Farm Creamery.

No doubt a co-operative creamery that can take the cream from a radius of five to ten miles from the factory will be the most satisfactory and give the best results in a majority of cases, but should not be built through the aid of a creamery promoter. If the farmers are not able to organize and build a creamery for themselves, it is good evidence that they would not be able to run it successfully if it were built and they had much better depend on private or individual cream-

looked upon with favor by buttermakers, for fear it was going to impair the quality of the butter.

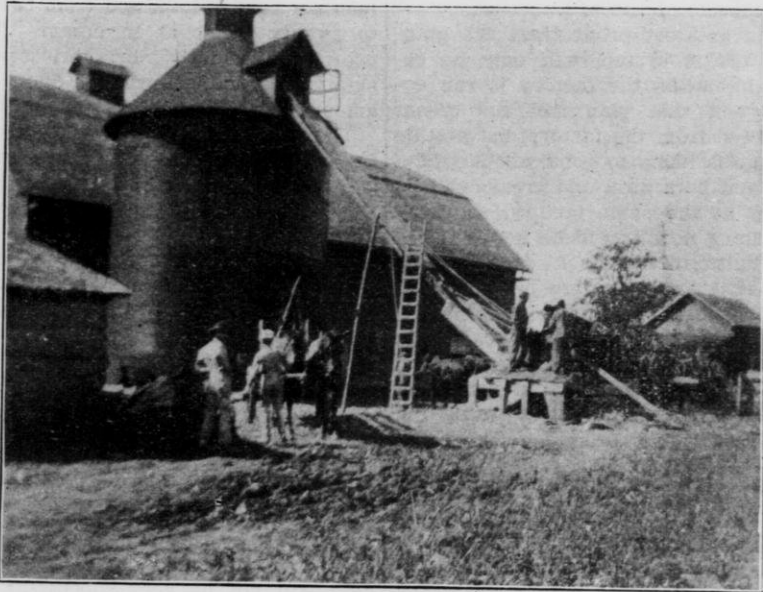
One of the first things to be considered in favor of this change is the cost of transportation of milk to and from the factory, and it is greater than farmers often realize; but if time is money, and anyone will only have to employ a little of it to be convinced that it is a fact, this feature is well worth considering. As only about one-eighth of the whole amount is going

to be sent to the factory, it can be gathered by a team from the factory with about the same economy that mail can be delivered by rural carriers and will lessen the cost to at least one-third of that for delivering whole milk, and will, I think, more than offset any depreciation in price that may result from gathered cream. It also affords an opportunity for the

will furnish an object lesson to the patron furnishing poor cream.

It avoids having skim milk hauled in milk cans and often left in them until sour and the cans difficult to wash properly.

But no doubt the greatest gain will be derived from the increased value of the skim milk when fed directly from the hand separator.



Filling the Silo on the Farm of E. C. Jacobs, Monomnie, Wis.

factoryman to note conditions and surroundings of milk and cream and make helpful suggestions as to the proper care.

It saves sending back milk or cream that has become sour or otherwise unfit for use, thus enabling the factoryman to "live peaceably with all men," as it can be left at home, or, if there is much of it and there is room in the factory, can be manufactured separately and sold on its merits without doing any injustice to the patron furnishing good cream, which

Gathering the Cream.

In gathering cream, a spring wagon should be used, with jacketed cans for carrying the cream; a weighing can about eight inches in diameter; a pair of spring scales that can be adjusted to show the net weight; a tin sample tube about one-fourth of an inch in diameter and as long as the weigh can is deep; as many small, wide-mouthed bottles as there are patrons, with the numbers on the corks or covers, are also essential. Samples should be taken from each weighing and by be-

ing taken with the tube the whole depth of the cream in the weigh can, a sample will be obtained in proportion to the amount of cream weighed. The samples being taken to creamery before a preservative is added will furnish the buttermaker a means of locating anything that might not be right in the quality of the cream, although the cream gatherer should have his sense of taste and smell well developed.

The greatest profit from the gathered cream system will only be obtainable when the factory is run entirely on that plan and the cream gathered from the factory, but as this change is likely to come about gradually and both milk and cream will be taken at the same factory, as many are doing now, it will be necessary in calculating dividends to take into account the losses the cream patron has already sustained in skimming.

When it is shown by the scales and Babcock test that the cream patron has delivered one hundred pounds of butter fat, we know, if the weighing and testing has been done correctly, that there is one hundred pounds of butter fat that is available in the cream vat, but when by the same process it is shown that the milk patron has delivered one hundred pounds of butter fat, there is only ninety-seven or ninety-seven and one-half pounds of butter that is available in the cream vat, the other two and one-half or three pounds have been left in the skim milk. To put them on a level and do justice to both, we must deduct two and one-half or three pounds from every one hundred pounds of butter fat delivered by the milk patron, or, what is usually the better plan, add the same amount to the cream patron's account.

Between the patrons and the factory, I think the better plan is to pay the factory a certain price per pound for making the butter, then the bal-

ance remaining from the sales will be divided among the patrons in proportion to the number of pounds of butter fat delivered and in this way all friction in regard to overrun will be avoided, for it has all gone to the patrons.

Overrun is the difference between the butter fat as shown by the Babcock test and the churn yield of butter, and may vary from ten to seventeen per cent in milk and from twelve to twenty per cent in cream. The overrun is influenced by the losses in skimming and churning and the amount of water held by the butter.

The analysis of samples of butter from fifty Wisconsin creameries shows a variation in butter fat of from 77.07 per cent to 87.50 per cent, with an average of 84.70 per cent butter fat.

The buttermaker will not be able to make the same amount of butter from different lots of cream containing an equal number of pounds of butter fat.

The improvement of machinery and methods and the work of graduates of our dairy school, have brought our creameries to a high state of perfection, but this is truly a co-operative business and unless the farmer will do his part by furnishing good, clean, wholesome milk and cream, the business will not be very successful, no matter how costly the creameries are equipped, or how good buttermakers we have.

Loss to Farmers from Improper Care of Milk.

The farmers of Wisconsin are losing many thousands of dollars every year in the quality of butter sold by improper and indifferent care of milk and cream, and when this change to the gathered cream system is brought about, as it is sure to be, the farmer will have still more responsibility as to the quality of butter and it is necessary that he should be well informed

on the care of milk and cream and do his part in an intelligent and conscientious manner, not only to protect himself from financial loss and the entanglements of the law, but because it is his duty as a good citizen to furnish an article of human food that shall be pure, clean and wholesome.

DISCUSSION.

Question—Why do you object to shipping cream by rail into skimming stations?

Mr. Jacobs—I have no objection to its being shipped by rail, but from experience we have had in the western part of the state this year, I object to running those large factories, that might be almost called in the form of a trust, gathering cream from large territories and taking the business almost entirely out of the farmers' hands, and they not knowing anything about the conditions of the factories, or the people running them.

Mr. Philips—What does it cost to gather the cream and make butter?

Mr. Jacobs—It is costing three and one-half cents for gathering the cream and making the butter. I will say, however, in justice to the creamery, that it is a small creamery and the cream is gathered from quite a scattered territory.

A Member—In the La Crosse factory, they gather the cream and put it on the cars for a fraction less than two cents a pound, and they do a large business.

Mr. Jacobs—This was a co-operative creamery and it was done absolutely at cost.

A Member—What was the average price paid for cream this last season?

Mr. Jacobs—I couldn't say, but it was four and one-half cents less than the highest Chicago price for the butter it contained; that is, the patrons received that.

Question—Is the Chicago price the same as the Elgin price?

Mr. Jacobs—Just about the same. We assume that it costs the creamery a cent a pound for freight and commission, so the creamery shall receive three and one-half cents for gathering and making.

Mr. Convey—Have you made any estimate as to the cost of gathering?

Mr. Jacobs—I have. In our locality, I think it costs us in the neighborhood of a cent a pound, but this, as well as the cost of making, depends very much on the territory, and the amount that is made.

Question—Do you get better cream by doing your own gathering and do you think it is a more economical way of handling the cream?

Mr. Jacobs—I think we both get a better quality of cream and it is more economical, the patrons will get better net results in this way.

Question—How do they take that cream?

Mr. Jacobs—It is nearly all taken by the hand separator. Those that are skimming in any other way are doing it at great loss.

The Chairman—How much would this cream bring you for four thousand pounds of milk?

Mr. Jacobs—You can take the Chicago price for butter and figure it as well as I can.

Mr. Scott—How is this cream cared for when it comes from the separator?

Mr. Jacobs—Perhaps it isn't all cared for as well as it should be. The way we aim to have it taken care of is to have everything done in a cleanly manner, the cream cooled as rapidly as possible and kept in tin cans at as low a temperature as possible. Some of them have ice and some do not. Of course, those who do not have ice have a little more difficulty in keeping it, but they have no trouble, where they have taken reasonable precaution, to keep it the length of time that

is required before it is gathered, which is twice a week in winter and three times in summer. Cream that is kept in ice water and hauled in jacketed cans will not warm up but very little, although it is being hauled quite a distance. Cream that is kept in a wagon three or four hours will arrive at the creamery often, in quite warm weather, with no higher temperature than fifty-five degrees.

Question—Then you want this cream cooled as quickly as possible and at as low a temperature as possible?

Mr. Jacobs—Yes, that and cleanliness comprise the whole thing.

Question—Could you get any more out of your milk by taking the whole milk to the factory than you can to keep the milk at home and take the cream?

Mr. Jacobs—You could if you set it at home, but if you skim with the hand separator, I don't think you could.

A Member—Do you have to stir that cream during the cooling process?

Mr. Jacobs—No, it is not necessary, if it is cooled in small sized cans, as we always recommend, these common shot-gun cans. They always should be set in cold water. Never depend on cooling in the air.

Mr. Scott—If you have not ice water, you would prefer to have a large volume of water?

Mr. Jacobs—A large volume of water, or water that was flowing, being constantly changed.

Mr. Convey—Would you accept cream before it was cooled?

Mr. Jacobs—No, we would not accept it until it was cooled, and do not accept it if it is sour.

Mr. Scott—Would you allow warm cream to be put into this cold cream?

Mr. Jacobs—No, we are very particular about that.



ADVANTAGES OF A FARM SEPARATOR.

L. P. MARTINY, North Freedom, Wis.



Mr. Martiny.

While the merits of the farm separator are quite generally understood, dairymen in many instances fail to properly appreciate that it is invariably applicable to their own individual conditions, and that to every one separating cream from milk it offers a means of better and more satisfactory results.

Advantages Over the Gravity System.

The advantages of the farm separator over the gravity system are too numerous to give a full or extended enumeration, but those of the most importance are, more perfect separation, greater value of skim milk, saving of time and labor, saving of ice, and a better quantity of butter.

Under the best methods of deep setting, it is rather difficult to keep the loss of butter fat in the skim milk down to three-tenths of one per cent, which will mean a loss of \$60 in a herd of twenty cows each giving five thousand pounds of four per cent milk per annum. This is a very conservative estimate, for if we were to take the average of all the conditions throughout the state the loss would be about twice as great as I have estimated.

Progressive dairymen, as a rule, are aware of the advantages of the centrifugal separator over the old process and comparatively little milk is being skimmed in that way, most Wisconsin dairymen delivering their whole milk to the creamery, or using a farm separator and delivering the cream to the creamery.

The point that will most interest the average dairymen of Wisconsin is the advantages of the farm separator system of creaming and then delivering the cream to the creamery, over the whole milk system, and I wish to discuss it from this standpoint.

Advantages Over the Whole Milk System.

The principal advantages of the farm separator to the patron of the creamery are, increased value of skim milk, saving of cost in hauling the dairy products, less expense in making up the butter, a smaller and less expensive creamery plant, and a possibility of a better butter product. I have named these advantages of the farm separator in their value of importance, although there may be a great many exceptions to this enumeration. For instance, the lessening

of the cost of delivering the dairy products to some distant creamery may be of greater value than the increased value of the skim milk, and there may be other conditions that would change the order of the advantages of the farm separator.

Users of the farm separator find one of their greatest advantages in having the warm, sweet, skim milk, fresh from the cow, for calves, pigs and other feeding purposes. With separator skim milk there is no scouring, or other digestive troubles, with calves, and this one point is not fully appreciated; for this trouble impairs the future usefulness of our cattle more than we think.

Where patrons deliver whole milk at the creamery, it will cost them on the average about eight cents per one hundred weight for hauling. With a herd of twenty cows, giving one hundred thousand pounds of milk annually, this means a cost of \$80 to get it delivered at the creamery. In delivering cream, it usually costs about one-half a cent per pound of butter fat, which means with one hundred thousand pounds of milk testing four per cent, or four thousand pounds of butter fat, that the cost will be \$20, a saving of \$60, and very often the creameryman hauls the cream himself free of charge, because he can reach out farther from his factory and haul a larger quantity of butter fat to his factory, in the form of cream, compared with what he could haul in the form of milk, and thereby increase the business of his factory.

The man that delivers cream to the creamery should receive more per pound for butter fat than the man that delivers whole milk, because he has saved the creameryman the expense of separating the milk, which means that he does not need as large and expensive a creamery, less high-priced machinery, less help, and less expense in running the factory. As a rule, the

man that delivers cream should receive about one cent per pound more for his butter fat than the man that delivers whole milk, because in connection with the less expense of making up the butter, the creameryman suffers none of the loss of fat in his skim milk, while there is always a small loss of fat in the skim milk of the man that delivers whole milk.

The possibility of a better butter product is very evident from the fact that the dairyman has a less volume to care for, there is less filth in the cream to hasten fermentations than there is in the whole milk, fermentations go on more slowly in rich cream than in whole milk, and the cream does not need to be heated at the factory, as does the whole milk, which process cannot but hasten fermentations.

Some of the Objections Made to the Farm Separator.

One of the objections to the farm separator is the first cost, but when we stop to figure on the profit there is in the investment, the cost is not worthy of much consideration, besides they must be well made of the very best material and the best workmanship to run well and be durable at the high rate of speed at which they must run.

Some creamerymen object to the introduction of the farm separator at first and condemn them in a great many ways, but, as a rule, they object to them because they do not care to make preparations for handling the cream, for it generally comes in in too small quantities at first. It necessitates different apparatus for testing and more work for the comparatively small amount handled.

Again, some object to the use of the farm separator on the claim that butter made from farm separators is not of as good quality as that made from whole milk. The cause of the poor

butter is not in the use of the farm separator system, but in its abuse by not taking proper care of the cream, not delivering the cream often enough and not keeping the separator properly cleaned. Right here is where a great many short-sighted separator agents have done a lot of harm to the system by claiming for their respective machines that it is unnecessary to wash them more than once a day, and sometimes not so frequently. If there is any milk utensil that needs washing it is the bowl of the separator. It gathers filth from the milk and holds it and if the milk is run through this bowl after it has stood for twelve hours, it will undoubtedly cause bad flavors.

A Few Pointers to Buyers.

It might be well to mention a few points on buying separators. In the first place, see that they skim clean. Select one of the standard makes of machines, even if it costs a little more than some other make. Don't be in a hurry to invest in some new and untried make of machine under the pretext that they will do about as well. Suppose one machine leaves two-tenths of one per cent of fat in the skim milk more than another, with a herd of twenty cows giving one hundred thousand pounds of milk annually, it means a loss of two hundred pounds of butter fat at twenty cents per pound, which means \$40 annual loss by the use of the inferior machine.

Test them under all the adverse conditions you will be subject to in the practical use of the machine, such as cold milk, uneven speed, making a heavy cream, etc.

In the second place, see that they will separate to their claimed capacity by actually determining it by the use of a watch and scales.

Third, see that the gearing is so constructed that the machine will be

durable, remembering that the fastest running parts, as in other machines, are generally the first to wear out, and fourth, see that the machine runs easy and is easy to clean. Some makes of separators are so constructed by the use of a very light gearing that they will run easy, but they are very short lived and should be discriminated against, as they are made to sell without much regard for their future usefulness.

DISCUSSION.

A Member—What do you mean by standard machines?

Mr. Martiny—I mean machines that have been used for quite a number of years and have given good satisfaction.

A Member—What are their names?

The Chairman—Write to some experiment station and ask them what they think are standard machines.

Supt. McKerrow—We have three advertised in the Institute Bulletins that we call standard. Get the Bulletins and read the advertisements.

A Member—Where would you keep that separator?

Mr. Martiny—We have ours in our barn. Some may object to having it in the barn and doing the skimming there, but in our case the separator is started before we are done milking and the cream is taken away from the barn just as soon as it would be if we didn't have the separator there, so I do not think that it is a very bad practice. Of course, if you had a barn that was very filthy, it would be a bad practice to have the separator in the barn.

Mr. Scott—Isn't it a fact that a barn that is too filthy for the separator is too filthy for cows?

Mr. Martiny—Yes, that is true.

Mr. Foster—What power is best to use with that separator?

Mr. Martiny—You must decide that in your own individual case. We use hand power, but a man can invest a few dollars in a small tread power and have it run by a calf, or a sheep, or a dog.

A Member—Which make of separator do you advise?

Mr. Martiny—Any of the standard makes, the De LaVal and the United States, any of those standard separators that have a reputation among creamery men are good separators.

Mr. Bradley—Have you ever figured out how much it would cost you to turn the separator by hand?

Mr. Martiny—No, nor have I figured out how much it would cost to keep a sheep and have it to bother with.

Mr. Foster—Have you ever figured out the advantages of turning it by a gasoline engine?

Mr. Martiny—No, I haven't. There is one thing in buying a separator to consider. A great many farmers make the mistake of buying too small a separator, especially where they are turning it by hand. The higher capacity of machine you buy, the cheaper it will cost you according to the capacity of the machine. I would want one that would skim six hundred pounds of milk an hour if I had more than six or seven cows.

Mr. Imrie—The size depends altogether on whether you are going to run it by hand, or sheep or other power. It depends, too, on the number of milkers. If you have twenty cows and four milkers, a separator that will skim four hundred and fifty pounds an hour, if it is turned by sheep power, is large enough, and for this reason, if you have a large separator skimming six hundred pounds per hour, perhaps these four milkers could not keep it supplied with milk, so you would have to have a can standing there with milk in it, and you would have to have some one to put the milk in the separator. If it only

skims four hundred and fifty pounds an hour, you could commence skimming and the four milkers would keep that separator full, and when they are done milking they are done skimming.

Question—Do you skim immediately after milking?

Mr. Martiny—That is the best time, as soon as you can when it is fresh from the cow.

Mr. Imrie—We have used a sheep for three years, the same sheep, a sheep that is kept only for that purpose, feeding him little or no grain. We keep him in the stable the whole year on clover hay and a little ensilage and it costs but very little. The fleece will just about pay for his keep. He gets a little ensilage and what clover hay he wants.

Mr. Scott—Mr. Imrie and I have been associated so long in Institute work that we know how to back up each other in our statements, and I want to endorse what Mr. Imrie has said. I have run separators by hand and by steam, and last year we ran one by sheep power; for a time I was somewhat discouraged, so I wrote to Mr. Imrie and he told me to keep right at it, and I find it is the most practical way I ever tried, we are very much pleased with it, indeed.

Mr. Hill—I will suggest another way. We have separated cream on our farm for about twelve years and the power is run by a bull. All good dairymen who have good cows keep a bull, of course, and probably keep it in the barn, and the exercise on the tread power is just what the animal needs; we have found it a perfect success.

Mr. Convey—In the multitude of devices, you can select that which you prefer. The sheep for the small tread power does not give satisfaction in all cases. For instance, you buy a power and run it with an animal that is just adapted to running the separator when it runs just right and everything is

satisfactory, still if you are a little bit short of weight in the animal that you choose, if your tread power is running at a low rate of speed, it may not be able to handle it in an emergency. You must have a regular speed, and a sufficient speed. You will find in the winter time that your power will run a little bit stiffer and harder than when the temperature is just right. We have used all sorts, the hand power, the horse power, and the gasoline engine, and by all odds I myself prefer the gasoline engine, especially with the oil cooler.

Mr. Martiny—I object to the gasoline engine because it is not an even speed. I have seen the separators run with a gasoline engine, and every time the gas in there would explode you would hear that separator howl.

Mr. Convey—The modern gasoline engine doesn't run that way. With the old engine, there would be that extra impulse. I run two gasoline engines myself, and I get the steady motion all the time.

Mr. Goodrich—I ran a separator on a farm a good many years. We commenced in 1890, the boys ran it about two weeks by hand, and they didn't like the fun of it; it didn't turn hard, but it was monotonous, and then we took our big horse tread power and attached it to that; we used a Jersey bull and used that same animal for five years and it kept him just as docile and gentle as any animal could be, he just enjoyed it. He didn't make us any trouble at all after he got accustomed to it, he liked it, we would open the door to his stable when we got ready and he would walk on of his own accord. We didn't even tie him in, or put a bar up behind him, and when we got through we set the brake and told him to come out and he came out and took his place in the barn. It used to take about forty minutes, on an average, twice a day. He didn't

have to walk fast and it was not set up steep, so it was not hard work for him, and as for speed, we could have that absolutely regulated. There was a regulator on the machine that would keep the speed at just what we wanted. I don't know but a gasoline engine is better, but that is good.

Supt. McKerrow—I am glad to see the day when the dairymen have to go into the sheep business.

Mr. Scott—I have no objection to Mr. Goodrich and Mr. Hill using the larger power and exercising the heads of their herds, but we don't all want to pay \$200 for the power. Some of us want less power, and the sheep is all right and more cleanly, which is quite an advantage. Now, with our De LaVal separator, we found the pulley that came with it too small and we put on a wooden rim, making the pulley larger, then we put a pin in this rim, which served as a crank handle, and it was very valuable in helping out the sheep when we put him in. Instead of tying in the sheep, we put a bar in the rear of the power with two or three ten-penny wire nails. You may think perhaps that this is inhumane, but it is not, it does not puncture the skin, it just starts him a little bit, and we find when that separator is running too slowly, that there is something the matter with the separator that needs attention and we go to work and clean it up and start it up again and find no trouble in maintaining an even speed. But I would suggest in buying a power, that you buy one that you can regulate the tread, that is, with a lever, without slackening or tightening the belt, such a power as is made by the United States people. I want to ask Mr. Convey what size gasoline engine he uses.

Mr. Convey—We use a one and one-half horse power engine, but we pump water with the same engine and run a feed cutter with it and churn and everything. We can churn and sepa-

rate at the same time and do it right along; also pump.

A Member—Don't you have any difficulty in running a gasoline engine in cold weather?

Mr. Convey—Not the slightest, with the oil cooler. I wouldn't have a machine about the place without a battery and an oil cooler.

A Member—We have run our tread power with a bull with a good deal of success for a good many years, but we have changed to the gasoline engine. Probably from the standpoint of the bull, the tread power is very much the best, but from the standpoint of the dairyman, I like the engine best.

Mr. Scott—There are thousands of men in this state today that can buy farm separators who can afford a sheep power at \$17.50, but cannot afford a gasoline engine at \$100.00 or more.

Mr. Convey—The important thing is for the farmer to be careful not to buy too small a power.

A Member—Would you advise running a 600-pound machine by hand.

Mr. Martiny—Yes. There isn't a great deal of difference in turning a machine that runs 600 pounds over a 450-pound machine.

Mr. Bradley—I think if this gentleman has it in his mind to buy a hand separator, he will find it easier to turn a 600-pound machine ten minutes than a 450-pound machine thirteen and one-third minutes.

Mr. Convey—Another thing about a small machine: it is a question of ten minutes' time for two persons, one to turn and one to put the cream in. I wouldn't buy a small machine, the chances are that you will want a bigger one in a short time. If your milk gets too cool, put a little hot water in it; it won't hurt the milk at all.

A Member—In creameries where

they are using their own separators, will they take the farmers' cream and mix it with their own separated cream?

Mr. Martiny—I said before that at first when the farm separators were introduced, the creamerymen objected to them, but it is not the fault of the separator, it is because the creamerymen do not want to handle the small amount of cream that comes from one farmer or a few; they have to test differently, but they are glad enough to have a large quantity of cream. There was a creameryman in our county that was bitterly opposed to the farm separator, but the farmers put them in and he saw he had to come to it, and then he turned in and encouraged the hand separator business, and it was but two or three years before every one of his patrons had separators, and he saw he could make up the butter so much cheaper that he went to work and hired a teamster and paid him, I think, a cent a pound and hauled the cream. I think the coming way for the creamery business is the hand separator system. The time is coming when every man that owns a cow will have a separator of some size.

A Member—Do the farmers generally test their own cream at home?

Mr. Martiny—No more than they did the whole milk; the creameryman tests the cream just the same as he did the whole milk.

Mr. Hill—Mr. Philips tells about a creamery over in his section that makes butter for less than two cents. How is the cream gathered there?

Mr. Philips—Gathered with teams; it is gathered cream.

Mr. Hill—How much butter do they make in a year?

Mr. Philips—Nine hundred eighty-seven thousand pounds last year.

Adjourned till 7:30 P. M.

EVENING SESSION.

The Institute met at 7:30 P. M. same day. The following committee on resolutions was appointed by Supt. McKerrow: W. C. Bradley, Hudson; C. I. Brigham, Blue Mounds, and Geo. S. Church, Winnebago county.

Conductor W. C. BRADLEY in the Chair.

HOME-MAKING A FINE ART.

Mrs. J. W. BATES, Broad Ripple, Ind.

I am glad to bring greetings from the many thousand home-makers of Indiana to this representative body of auxiliary home-makers of Wisconsin.

To many fine art may mean a Raphael, Landseer or Rembrandt, whose faithful brush and accurate eye have portrayed to canvas the beast of the field, the beauties of a landscape, or the infant Jesus, or, there may be memories of a Mozart, Strauss, Beethoven or Wagner, whose musical compositions have charmed your ear and soul with their melody of a march, waltz, sonata or opera. There may come to some the music of the human voice, whose magical tones have carried you to other worlds with their art of oratory, but home-making, with its various diversities of work, of care, and the rearing of children, has a ringing note of purer rhythm than the musician's touch, a picture of brighter hues than an artist's brush can portray, and the shout and laughter of the children's voices far sweeter than the magical tones of the orator.

In the primitive days, two of the chief objects worked for by the home-maker was to prepare sufficient edible food for the family and sufficient clothing to protect them from the inclement weather.

Women helped to card the wool, scotch the flax, weave the garments, and knitted the hosiery besides. Washing, ironing, patching, darning, sweeping, cleaning, etc., were side issues, to be done when time permitted, but these days, and all primitive days, are fast being relegated to the past and books of ancient history. In the twentieth century home, luck no longer rules the kitchen; no longer are the flavor, color or grain of the butter, the crispness of the loaf, the juiciness of the steak, the sanitary conditions of the home and family trusted to that treacherous god. Already the hand of science has emblazoned in bold letters, and cried in tones louder than the roar of the mighty deep, "Thou hast been weighed and found wanting."

The home-maker's brain should be educated equal to her brawn, if not more so, according to her strength. The skilled home-maker, with her magical instruments of lard, butter, flour, meats and vegetables, stands equally by the skilled mechanic with his saw, hammer, nails and lumber. And why not? Does it not depend upon her in a great measure whether the child shall be tainted with an inherited disease, or malformed body from non-nutrition through the period

of motherhood? A great number of intestinal diseases are caused by unsanitary conditions and improper food. Fissures of the skull, malformed joints, cholera infantum, non-formation of the frontals, chicken-bone chest, early decayed teeth, pallid cheeks and pale lips, with the flesh tightly drawn over the little body, and of a glistening appearance, tell the story too well that the frail body has not received some element of food to balance the delicate machinery. A number of our serious crimes, and inmates of our jails, prisons and almshouses, have been committed by an abnormal appetite, formed by the absence of a something they did not receive in their food when they were maturing.

Classification of Foods.

Foods are divided into three classes: proteids, carbohydrates and mineral matter. Protein, or albumen, is the first in food value, and is one of the essential elements for growing children. It is principally found in lean of meat, fish, eggs, casein of milk, and cheese. Starches, sugars and cellulose form the bulk of the carbohydrates, which include in a great measure wheat, corn, rye, rice and potatoes. Peas, beans and lentils, although usually classed among the vegetables, really form a distinct class by themselves, although rich in protein matter.

Fruits constitute a great part of the food found on the American table. The mineral qualities help to build up bone, muscle and blood cells, while the juice, or water, of which fruit contains about nine-tenths, acts as a solvent to wash out impurities in the system. Fruits form a perfect carbonaceous food, and with the addition of the proper nitrogenous matter, constitute an ideal dietary. All the elements required include water, pro-

teids, fats, carbohydrates and mineral matter.

Fats form fatty tissue, and are found in fat of meat, butter, olive oil and oils of corn and wheat.

As the body is constantly wearing and throwing off energy and heat, our diet necessarily regulates the machine, and for the maintenance of health, the food must contain these four elements in proportion, and the absence of any one of them will in time result in disease.

Preparation of Foods.

The preparation of food is an art alone, both from an economical and scientific point of view. It is a worthy knowledge for the homemaker to know how to prepare a roast, or broil a steak so as to secure 189 grains of nitrogen from one pound of lean meat. It is, also, an item of importance to know when the body needs the use of more nitrogenous matter. The man who works in the field, who uses his brawn more than his brain, in cold winter days, is the one who uses the more salt pork, as it contains more heat than beef, but beef is more easily digested, is better for students, growing children, and persons with weak digestive qualities.

In selecting beef it should be a good red, firm under the finger, and have a layer of clear, white fat around it. Pork chops, veal cutlets, tenderloin steak, and mutton chops come from along the backbone. These chops are more tender than other cuts of the meat, which is caused by those muscles not being in such constant use as the muscles in other parts of the body.

To broil a steak, the skillet should be smoking hot, the meat, about an inch in thickness, neither hacked, pounded, nor chopped, salted nor floured, but just as it is received from the shop, and without any grease. Throw the steak into the hot skillet,

sear, then, with a broad-bladed knife, turn, and sear the other side. In this manner, all the juices are held in the meat. When cooked sufficiently, place on a hot platter, add salt, pepper and butter. This same method is used in cooking all meats where the juices are retained. Only a boil or stew is plunged into water at the temperature of 212 degrees F. at the beginning of cooking. A roast is placed in a very hot oven until seared, then the temperature reduced.

Salt should not be used at first, as it draws out the juices and hardens the meat. Do not use in boil or roast until within twenty minutes of serving, unless it is used in the making of soups, then place the bone in cold water with the necessary amount of salt.

Sanitary Conditions.

A first-class cut from a choice steak, the delicate flavor of the butter or milk, will become tainted if perfect sanitary conditions are not enforced. Decaying vegetation, onions, carrots, cabbages, a can of spoiled fruit, if left where milk and butter are, will taint them in a short time, as there is no article of diet that absorbs odors so quickly. Any of the things named, if left in a damp cellar, will breed disease germs and cause illness in the family.

A number of cases of diphtheria in Indiana were traced to a heap of decaying turnips in a foul cellar, where the germs found luxuriant quarters to thrive and multiply. Typhoid fever has been carried by flies in a number of cases, while the greater amount of it comes from water.

All waste water and refuse from out-buildings should flow from the well that supplies the home with drinking water.

Arrangement of the Work.

Home-making cannot be an art if there is no systematical arrangement

of utensils for work in the kitchen. Certain laws and rules cannot be put down for every home-maker to follow, as each home and home-maker have their individuality and their own peculiar imprints of personality, but it is the right of a home-maker to have a first-class range, with good draughts, plenty of fresh air and sunlight in the kitchen, and plenty of utensils known to the culinary department.

If the kitchen will permit in size, the work table should be placed in the center, with a shelf beneath, where the everyday utensils can be placed ready for use. A gasoline stove is a great luxury in extreme warm weather, when wishing to prepare a meal or when ironing or canning fruit.

The covering of the floor should be one that is economical and easily cleaned, also pleasing to the eye.

It is every home-maker's duty to save as many steps as she can while at her work. Sometimes if a little thought is given before preparing the meal, once going to the cellar will bring all the vegetables needed, or once going to the dairy, all the butter, milk and cream can be brought. Again, if the meal is thought of before preparing, the necessary articles can be prepared for tea the same time as for dinner.

On wash and iron days, while the range is not, a pot of vegetables, roast, meat pie, baked beans or baked apples, can be cooked in the oven while the washing or ironing is being done.

If the home-maker is short or tall in stature, she should have her work table, wash bench, ironing board and range elevated or reduced as needed. Economy of time and of strength means economy of health. It is a poor excuse to try to do all of one week's work in one day and then suffer excruciating pains as a reward.

Home-makers must learn to make

their work a finished product; they must plan and execute their work with as little waste of energy and time as possible. It is every one's duty to take a stroll in the morning or evening as a relaxation to the nerves and strengthen them with communion with nature's tonics, pure fresh air, sunshine, flowers, grasses and trees.

Character Building.

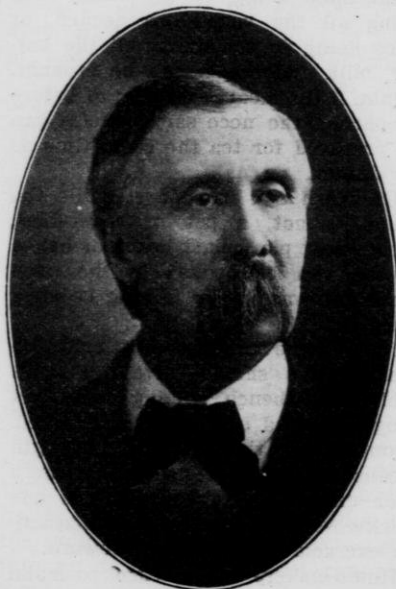
The home-maker needs to build her home not only with things that are a pleasure and blessing materially, but of such that her children will "rise up and call her blessed," for characters that are trained by a loving, tender, devoted mother, whose aim and object is to mould her children to be strong, wise and pure, and to be fit jewels for the King's crown, are the backbone and energy of our nations,

the brain and sinew of our farms, the strength and valor of our armies. The maker of such a home is a queen in her rights, her children her subjects, her husband her counselor at all times, her home circle her palace, her scepter of government is love, and love is the unseen guest, the unseen host at the marriage feast, and lives in a rich temple hung with gems that never dazzle, but breathe a benediction when entered.

Bonaparte says he thinks "every good or evil of a child entirely depends upon the mother," and these home-makers, these mothers who hold the balance of justice in their hands, who balance the physical, moral and the spiritual welfare of these children, they are the uncrowned queens of America, and they are the ones who elevate home-making to a fine art.

EDUCATION AS RELATED TO LIFE.

Prof. FRANK H. HALL, Aurora, Ill.



Prof. Hall.

There are three theories of education. The first has its foundation in religion; the second, in culture; the third, in service.

The first seeks the enjoyments of Heaven. The second seeks the higher intellectual enjoyments of this life, with faith in varying degree that these will be continued and enhanced in the unknown beyond. The third seeks enjoyment in doing things that need to be done. "Happiness through work," says Baker, "is the new creed of the dawning century."

The Religious Phase of Education.

According to the first theory, the function of education is to fit one for the enjoyments of the future life—for life beyond the grave. It was in accordance with this theory that the early schools of New England were established.

"We are told that up to 1665, the catechism and the Bible were almost the only books used in the schools. At this time the Psalter containing the Psalms, the Proverbs, the Sermon on the Mount, and the Nicene Creed was introduced. The classes ranked as follows: 1. The Psalter Class, or beginners. 2. Testament Class. 3. The Bible Class."*

The schools were established, they said, because it was the project of that old deluder, Satan, to keep men from a knowledge of the Scriptures. Therefore all the children must be taught to read.

We are told that so deeply imbedded was the religious idea in one colony that when it became a state, the state officers were required to "profess faith in God the Father, and in Jesus Christ his only Son, and in the Holy Ghost, one God blessed for evermore; and to acknowledge the Holy Scriptures of the Old and the New Testament to be given by divine inspiration."

Only those teachers were employed who were "sound in the faith" and understood, not the metric system, nor the science of human government; not the binominal theorem, nor the philosophy of education; not the word method of teaching reading, nor the elements of agricultural science,—but the "plan of salvation."

Our Catholic friends, too, maintained, and perhaps to some extent still maintain, that the primary function of education, its most important function, relates to religious duties—to divine obligation; hence the parochial school and its direction and management by ecclesiastical authority.

But a complete blending of religious and secular education is possible only in a theocratic government. The overthrow of monarchy in this country carried with it, for the time

being at least, the downfall of theocracy. Democracy—the rule of the people—was about to be put on trial in place of all other forms of government. A most vigorous and partially successful attempt was to be made to build on the ruins of monarchy and aristocracy and theocracy a government of the people, for the people, by the people.

But the people represent every variety and every shade of religious views and practices. There is the Catholic and the Protestant; the Trinitarian and the Unitarian and the Universalist. Among the Trinitarians are several varieties of Baptists; the Church of England, High and Low; the Methodists and the Free Methodists; the Presbyterians and the Cumberland Presbyterians and the U. P.'s; the Congregationalists and the Lutherans and the Christians. Then there are the Quakers and the Shakers, and now we have the Christian Science people, the Faith Cure folks, and the Dowieites—and I have not named the half of the denominations to be found in the city of Chicago alone—surely the theory of public school education can no longer relate itself directly to the rewards and punishments of another world and to the true methods of securing the one and avoiding the other. Hence the second theory of education.

The Claims of the Higher Intellectual Life.

According to this theory, the function of education is to fit one for the enjoyments of the higher intellectual life, here and perhaps hereafter. Culture becomes "the word of ambition," and the culture ideal takes the place of the religious ideal, and gives form and quality to public school education. Culture for culture's sake, art for art's sake, truth for truth's sake, are the favorite maxims. Says W. H. Payne, an apostle of this the-

*Journal of Education.

ory, "A love of knowledge for its own sake is the highest and most comprehensive motive a teacher can seek to establish." Says Baker, referring to this theory of education,—“The old idea of a scholar was of one who in the serene contemplation of truth, beauty, and goodness finds a never-failing source of delight.” Men were to be measured, not by the depth and quality of their religious faith, certainly not by the amount of their material possessions, but by their knowledge and culture; by their ability to enjoy, through the cultivated imagination, the beautiful in nature and in literature, and in all the products of the fine arts. Beauty and symmetry and harmony must be enthroned, it was said. And the supreme purpose of education was the cultivation of those qualities in mind and heart and person, and the ability to recognize and appreciate them in the world of nature and in the world of art. The symmetrical, well-balanced, cultivated man, living in a world of tribulation and sorrow and danger and disaster, should be able to turn his back on all these and with “his eye fixed on the polar star of truth,” secure for himself “poise, serenity and contemplative delight.”

The ethical element occupies a prominent place in this second theory, and the spiritual is by no means entirely wanting; for both these elements are necessary to harmonious development. Sectarianism is largely eliminated, but the ethical and spiritual principles that are common to all the churches are retained and emphasized.

It will be observed that both these theories make the ultimate purpose of education enjoyment. The first puts the emphasis on the far-away joys of Heaven; the second on the intellectual and spiritual joys of the higher life on earth.

A Third Theory of the Purpose of Education.

But there is a third theory of education. According to this theory, the purpose of education is useful activity—service. Each student must be prepared to do something that needs to be done. This must be in the thought of the teacher and of the pupil during the educative period. “A passion for service,” says Dr. Eliot, “must fuse with a passion for knowledge.” Fuse with it; not come after it, or grow out of it, but grow with it.

It may be charged that here, as in the working out of the other two theories, the ulterior motive is enjoyment, and perhaps this is true. But it must be the enjoyment of achievement—achievement on lines that contribute to the good of the race. The emphasis is upon the service feature of life, not upon knowing or believing or enjoying. It is upon performance, upon doing, upon efficiency in some reputable employment. Men must be measured, not by what they know, not by the amount of their wealth or of their culture, but by what they do, by the amount they contribute to the well-being of humanity.

Men may possess great wealth, great knowledge, great culture, and yet be useless. It is useful men that are wanted in this day and generation. Says President Woodrow Wilson, of Princeton University, “We want useful men, not men who think they are better than other people because they have something in their heads which is useless.”

Now by far the greater part of one's contribution to human good comes through his vocation. Hence, according to this third theory, education must relate itself to vocation. The primary function of public education is to fit one to earn. I do not say acquire. I say earn. He earns who

does some of the world's necessary work. He earns who by his own effort contributes something of value to community life. His contribution may relate to the material, the intellectual, the ethical, the aesthetic, or the spiritual. If he contributes he earns. If he does not contribute, he does not earn. If he contributes more than he consumes and destroys, he is a public benefactor. If he contributes less than he consumes and destroys, he is a parasite—a dead weight upon society. The world would be better off without him.

The preacher earns. The teacher earns. The physician and surgeon earns. The editor earns. Some lawyers earn. The merchant earns. The mechanic earns. The farmer earns, and the house-wife earns.

All need the help of the schools as a preparation for earning—for service. Private and public welfare alike demand that this be given. Since the founding of Harvard, the schools have faced toward the professions; at first towards the ministry; later towards all the so-called learned professions. This fact is just beginning to be understood and its effect realized. The machinery of the schools has been unconsciously employed to take men away from the farms and workshops and into the pulpits and law offices and teachers' desks and editorial chairs. The theory that the purpose of education is primarily to prepare for the enjoyment of the higher intellectual life has led men away from all useful activities except those that are mainly intellectual.

The theory that the purpose of education is service, not primarily enjoyment, the very best possible service in any and every useful occupation, is turning the thoughts of educators toward manual training, toward commercial high schools, toward domestic economy, and the science of agriculture.

The schools of yesterday faced towards the learned professions and the enjoyment of the higher intellectual life. The schools of tomorrow will face towards every legitimate vocation and the enjoyments of achievement in every useful occupation. The mechanic arts, commerce, agriculture, and domestic science are to be given the place in the schools which their **importance demands.**

The Dawn of a New Epoch in Education at Hand.

Some recent notable utterances make us believe that we are at the beginning of a new and interesting epoch in educational theory and practice.

Says G. Stanley Hall, "The germs and extracts of as many trades as possible must be introduced into the schools."

This must be done that students may see the relation of their school work to the life work for which they wish to fit themselves. This must be done in order that "a passion for service" may "fuse with a passion for knowledge," that the child may learn things as a preparation for doing things, and thereby become a useful law-abiding citizen. "Interest a boy in useful occupation," says Fra Elbertus, "and you transform chaos into cosmos." "Interest a boy in making things and he'll stop breaking things."

"Education," says President Hyde, "should fit one for three things:

"1. To earn one's living by the exercise of trained powers.

"2. To support the institutions of society through intelligent appreciation of their worth.

"3. To enjoy the products of art and civilization through the cultivation of the imagination."

Note the order: Earn, contribute, enjoy. This is the natural order, for one who cannot earn cannot contrib-

ute, and one who does not earn and contribute has not fulfilled the conditions necessary to the highest enjoyment.

Says Dr. John Dewey, "The education of yesterday was but the survival of an education designed for the leisure class."

We want an education now for the working class. "And," says Ruskin, "there is a working class, strong and happy, among both rich and poor; and an idle class, weak, wicked, and miserable, among both rich and poor." It is the function of education to increase the numbers in the working class and diminish the numbers in the idle class, among both rich and poor.

The True Education.

Says David Jordan Starr, "The sooner a man finds his life work and gets at it, the better. This being admitted, the fuller the preparation the better, provided the final goal is always kept in view."

The especial goals which the Farmers' Institute of Wisconsin would have the young people in the schools keep in view, are the farm and the home. The time has arrived when some people—many people—must be educated with reference to achievement as agriculturists and home-makers—farmers and farmers' wives. A passion for doing such work and doing it intelligently must "fuse with a passion for knowledge."

"But," says one, "this is a narrow view of education and of life. We want a broad and liberal education for all our people, not one that is narrow and specific."

But what is a "liberal education" as the expression has been used in the past? What does it mean to be "broadly and liberally" educated?

Listen to the testimony of two very able educators in regard to the breadth of the education of the past, educators whose names are known to

students of pedagogy on both sides of the Atlantic. I refer to Dr. Nicholas Murray Butler, the president of Columbia University, and Dr. John Dewey, of the University of Chicago.

Dr. Butler speaks of what has been called a liberal education as "a very narrow and technical course of study that was invented for a very narrow and technical purpose."

Says Dr. John Dewey, "It is our present education which is highly specialized, one-sided and narrow. It is an education dominated almost entirely by the mediaeval conception of learning. It is something which appeals for the most part simply to the intellectual aspect of our natures; our desire to learn, to accumulate information, to get control of the symbols of learning; not to our impulses and tendencies to make, to do, to create, to produce."

The new education does not think mainly of breadth, but of efficiency. It accepts Hegel in his statement that, "inapplicable knowledge is a cumbersome load—only that knowledge which subserves the ends of life becomes a working power." It would educate for usefulness in its broadest sense. It would give so much of general education and so much of special education as will insure the largest possible product, expressed in terms of efficiency. Not the general education first, and the special afterwards, but both fusing together—to use Dr. Eliot's term again—with the goal of great and useful achievement ever in view.

The student who accepts this theory will be obliged to turn his back on much that is attractive and interesting. He must seek that and only that which will increase his power for good in the world, his power for doing necessary work, for feeding people, for dressing people, for housing people, or for rightly pleasing people

with the arts or sciences, or any other subject of thought.

It will be well for the student and well for his family and well for the community in which he lives, if he will accept the teaching of Ruskin that, "Humanity is a divine family, the ideal of which is that each shall work for the good of all and precisely in so doing secure for himself the greatest good."

It will be well for him if he can realize with DeGarmo that, "Men are eternally going to the wall financially because they lack the will or the ability to seek the advancement of themselves through the advancement of others."

It will be well for him if early in life he accepts the wonderful philosophy in that marvelous paradox that one must save his life by losing it—losing it if need be in self-denying service—or in absorption in some form of useful, efficient labor.

How much education? How much knowledge for you and for me? Charles Dudley Warner says, "Greediness for intellectual things is no more praiseworthy than greediness for material things." It is easy for one to spend time in getting that ought to be spent in giving. And this is as true of knowledge as it is of material wealth.

"But," says one, "I want my share of the world's knowledge and wealth." What is your share? According to Carlyle's "Pig Philosophy," it is all you can yet get out of the general swine's trough without being literally pounded on the head for it.

According to the true philosophy of life it is all you can get honestly (that is, by giving a full equivalent for it) and use effectively (that is, for the good of the race, yourself included). And this applies to knowledge as well as to material wealth.

A love of books is regarded as praiseworthy. So it is, within certain

limits. But when a love for learning diminishes the desire and power for earning, it is a positive misfortune. "That book," says Emerson, "is good to read that leaves the reader in a working mood."

"It must be remembered," says Wade Rogers, "that life is not for learning, but learning for life."

"The mission of education," says the late Governor Russell of Massachusetts, "is not contemplation; it is service."

"The catechism of the university," says Dr. Baldwin of Yale, "comes very near teaching that the chief end of life is to get an education. It would not be far wrong if it taught that the chief end of life is to use an education."

And so it goes; the leaders in education, Eliot, Butler, Hyde, Dewey, Baldwin, Jordan, Cooley, Rogers, Dutton, and hundreds of others are adopting the service theory of education.

It is the general acceptance of this theory that provides for the agricultural college, the Experiment Station, the agricultural high schools, and for the teaching of the elements of agriculture and domestic economy in our rural schools.

To use a common expression, "men are falling over each other" for an opportunity to express themselves in favor of such teaching. The word practical is no longer a red rag to the masculine element in a teachers' convention as it was twenty-five years ago. The great majority agree that children should be given such knowledge as they can put into practice, make practical.

Wisconsin a Leader in Practical Education.

In this work Wisconsin has been a leader, and today she occupies a place in the very front of the line. The three H's have made themselves heard and felt to the very borders, not of

the state but of the land—Henry, Hoard, and Harvey.

The co-laborers of these, McKerron, King, Babcock, Russell, Farrington, have made their names familiar in all the Institutes and in many a farm home outside of Wisconsin, while in northern Illinois the cows are treated a little more humanely and the calves a little more tenderly, and the young colts and pigs a little more gently because Mrs. Howie has been across the border and made her practical, scholarly, womanly, motherly plea for the young things on the farm.

If Illinois is not as tall and strong as you with your veterans—in the use of this word I do not mean to include Mrs. Howie—with your veterans in your college and station; with your short courses, your farmers' dairy school, your experimental club with its hundreds of members; with your seven state Normal schools and your six county training schools for teachers, and your two county agricultural schools, and your law requiring teachers of your rural schools to be examined in the elements of agricultural science and domestic economy, with "Feeds and Feeding" in your school libraries, and Hoard's "Dairyman" on your parlor tables, and a Babcock tester, separators run by sheep and bulls and by gasoline in your dairies, and free bulletins for distribution at your Institutes, and a wholesome sentiment in regard to the "dual-purpose cow"—if Illinois is not as tall and strong as you, you must not forget that we did not begin to grow as soon as you did by some twenty years; you must not forget that we never had a governor who looked after the interests of our cows and calves. (We have a governor now who spends all his time putting up fences. They do say that he had one cow so dear to his heart that he transported her to the mansion barn, even though he was not permitted to use an express frank

for this purpose. It is currently reported that he milks his appointees and that some of them have "kicked" most vigorously,—but since for the space of one full year I allowed myself to be tied to the public crib by this same governor, it is not proper for me to testify in this case. I am not a competent witness.)

What Is Being Accomplished in Illinois.

If you think Illinois is not as tall and strong as Wisconsin in the matter of agricultural education, do not forget that Senator Stout lives in Wisconsin, and do not forget that our growth during the last six years is unparalleled. There are more teachers in our college of agriculture today than there were students six years ago. Four times in five years our number of students has doubled. Six years ago the value of our agricultural equipment at Urbana was estimated at \$7,000.00. Today we have a building that cost \$150,000, with its two acres of floor space and 113 rooms, in which there are more than 300 capable, enthusiastic boys and girls sitting at the feet of more than twenty of the best teachers money can provide.

But I am in Wisconsin. If this sounds like boasting to you Badgers, remember that we acknowledge you as our leader and teacher, and give unmeasured praise to those who have managed the work at Madison and throughout the state. We have had good men in Illinois, and we have good men now, but somehow until recently the conditions have been against us. The cause of agricultural education never had a better friend than old Prof. Turner, whose body we aid to rest in a Jacksonville cemetery a few years ago. Don't let the next generation of farmers in the Badger state forget their indebtedness to the man who was the prime mover for the

Morrill act (signed by the immortal Lincoln) which made our agricultural colleges possible. Geo. E. Morrow was a capable and true friend of the farmer. He sowed much good seed during his life, though he did not live to enjoy the harvest.

The men who are managing our Agricultural College and Experiment Station now, the Dean and the heads of departments, are among the most capable in the land, and what encourages us most is that the people from Cairo to the Wisconsin line have faith in them and generously provide all necessary funds for carrying forward the great work in their hands.

If we at length outstrip you in this great work, as we believe we shall, you can point to us as an example of what a pupil may accomplish who has had the benefit of the best of instruction by pioneers in this field, among whom none deserve more credit than the three H's and their co-laborers in Wisconsin.

In Conclusion.

In conclusion, let us come back to our subject for a moment.

Men must learn more in order that they may earn more.

But there are three classes of earners:—

1st. Those who earn less than they receive and are continually complaining because they are obliged to do so much work and get so little pay.

2d. Those who are willing to earn all they receive, but not one cent more.

3d. Those who always earn more than they receive.

Promotions are usually made from the third class. The world wants men in great numbers who earn all they receive and more. It has no place for those who habitually earn less than they receive. It is said that the world loves a lover. It admires and rewards the earner, the man who can and will contribute something of real value to the community in which he lives.

It is my firm conviction that the tendency of the service theory of education would be to put more men and women into the last named class, those that earn more than they receive. It will help to make our young people feel that all labor is honorable, and that he serves himself best and serves God best who forgets himself in the service of his fellows.

Adjourned to 9:00 o'clock next day



THIRD DAY.

The Institute met at 9 o'clock A. M., March 17, 1904. C. P. GOODRICH in the chair.

IMPROVED LIVE STOCK.

R. E. ROBERTS, Corliss, Wis.



Mr. Roberts.

The live stock industry of this great agricultural state is the sheet anchor of our prosperity and as such should command our careful consideration. The live stock interest in some of its branches stands at the head, and ranks first and foremost with her sister states. No state in the Union has better natural resources for the production of high class dairy products, beef, mutton and pork, than ours, yet we do not all avail ourselves of the advantages and means at hand, by

keeping abreast of this age of progression and improvements that are being constantly made. Methods that were profitable some years ago have become wholly unprofitable now, so the first and all important step is to be taken by the average stockman is the improvement of our farm animals, to have an ideal in mind and to breed for a purpose. By the aid of science in agriculture and live stock breeding, we have obtained a knowledge whereby we can produce an animal machine that will consume and convert in a condensed form for market, at a profit to the farmer, our high-priced grains and feeds, in a first-class article of food for mankind.

First Steps Towards Improving a Dairy Herd.

The up-to-date dairyman has realized the necessity of a special-purpose dairy animal for successful dairying. In raising his dairy herd, while it is necessary to secure form and type, his attention is given more to the performance, in dairy production, of their dams and grand-dams.

In selecting his dairy sire, he must possess the form, type and right ancestry, bred for a long period of time with the object of intensified dairy performance. With this ideal, he accepts him, with reasonable certainty that his progeny will resemble him,

advance his work, and impress heavy milking qualities upon daughters of his herd.

The average dairyman must take advantage of this grading up of his herd, as few can afford to replace a common herd by a pure bred one, but the improvement must be made by the use of a pure bred sire, as the intro-

The Most Profitable Cattle from a Beef Standpoint.

Formerly, the big-boned 1,800 to 2,000 pound steer was held in high esteem; now the long yearling or two-year-old "handy weight," weighing from 1,200 to 1,500 pounds is in the highest demand. It has been demonstrated that no greater weight can be



A Fair Feeding Type.

duction of good, improved blood will work wonders to grade up the herd for dairy purposes. Only by working on this line shall we be able to make dairying successful and our investment in high-priced land profitable.

But the danger and risk is in the use of common, unimproved, scrubby stock, with results that surely end in disappointment and loss to the dairy farmer. All farmers are not inclined the same way and will not make dairying their leading line, but would rather raise cattle and market them for beef.

produced with a given amount of food, and no cheaper meat made on an animal, than while it is young.

In view of this fact and the greater cost of producing meat on the older animals, owing to the larger amount of the food of maintenance, we should keep the young animals growing right along from the start, and never allow them to lose what is termed their baby fat.

With stock of good blood, there is no difficulty in making a steer two years of age top the market and bring a good profit for the feed and care

given, however, the great bulk of stock shipped to our leading markets are not of the above class. One will readily ascertain at the stock yards that quality counts for more than quantity, and that fat alone is not sufficient. Buyers will ride into a pen of cattle and are anxious for a chance to bid on them, and perhaps will raise their first bid in order to get them, and

to work to dispose of them and when he does the price is disappointing to the farmer, as it is only about one-half the price per cwt. that the best class brought.

A portion of this class consists of stock with an infusion of dairy blood, while they make good gain, their feed goes to the production of internal fat, but a greater per cent are common,



Unprofitable Feeding Type.

the seller easily disposes of them at the top price of the day. This class are of the high grade, good beef type and conformation, with capacity for producing the greatest percentage of high-priced meat. They are what the buyers term the smooth, fleshy lot, with their meat on their back and ribs. But this class only comprise about ten per cent of the bulk. In adjoining pens buyers will ride in, view the stock, then ride away with the remark, "Will not give the price, they are too rough." The seller has

unimproved, inferior animals, in finish as well as form. This class comprises about fifty per cent of the stock forwarded to market.

Now, this simply means that the farmer has received about half the price for the animals he has raised and forwarded to market that he would have received if they were properly bred, grown and finished. It has taken as much of the food of maintenance and as much feed to grow every pound of their weight as though they were worth twice the money. It

is due to this class of stock raised that many farmers claim that growing live stock does not pay.

The class referred to certainly does not pay. It is folly to attempt to engage in beef production with such a class of animals, especially where stall feeding and intensive farming are practiced. There is no reason why such stock should be grown, as

profitable, but I am in debt, and cannot afford to buy one now, I have got to be content with the scrub until I get out of debt." This is not logical. Going into debt is excusable where a man plainly sees good results from his investment. When a farmer most needs quick and profitable returns is when he is in debt. The man with money and no debts is the only one



Profitable Pork Producers on Rape Pasture

the type and conformation can be improved in a most effective manner by the use of good, pure, beef-bred sires, and the more grading up by pure blood animals of approved form, the better the results. Four or five generations by a pure bred sire will establish a herd of live stock that is practically as good for all feeding purposes and yielding as large a profit for feed and care given as pure bred. A remark farmers are often heard to make is: "I am convinced that the use of a pure bred sire would be more

no one can afford to breed inferior stock, but the man in debt cannot afford to do so.

The Best Kind of Sheep to Raise.

This is also applicable to a portion of the sheep and swine forwarded to market. While good sheep are profitable on our best and highest priced lands, sheep of poor mutton qualities will not pay any more than keeping a dairy of twenty cows that produce no more milk and butter than ten good cows will, or raising and fattening un-

improved, inferior cattle, but by the use of better mutton sires, possessing quality and the highest characteristics of the breed selected to grade up with, and better selection, care and management of the flock, sheep raising is certainly profitable.

The people are anxious to secure all the choice mutton and lambs in the market; there is apparently no limit to the buying or consumptive capacity. The demand for choice mutton and lamb exceeds the supply. The owners of good mutton sheep are assured of good prices for a first-class article, as quality is what the market demands.

Same General Rules Apply to Improving Swine.

In regard to the hog, it is not so much the amount that he eats, but what he produces from what is eaten that makes him profitable, as the hog that obtains the most out of the food eaten is the best paying animal, yet there is a vast difference in the animal machine which is to be fed.

No farm animal receives greater attention or improvement in the hands of breeders than the hog, yet many farmers are not keeping abreast of this progress in selecting their breeding stock for profitable pork production. As an illustration: If a farmer with ten brood animals, instead of using an inferior sire, would secure a good, improved-bred one at an outlay of \$20.00, or a little more, the crop of pigs, an average of six to a litter, will number sixty head, when marketed at eight months of age, they will weigh from forty to fifty pounds per head more than the same number would sired by a scrub sire. At the average price of pork on foot for the past quarter of a century, \$4.50 per cwt., the minimum gain of forty pounds per head would amount to \$1.80 apiece, or \$108 profit on the crop of hogs, which is a very good margin on the invest-

ment. If he has not reduced the cost of production of pork, he has increased a marketable product without extra feed or care, but every experienced hog raiser knows that a broad back, improved-bred hog can be grown and finished at a profit when the scrub would evidently be a loss.

Some of the Results of this Improvement.

It seems unnecessary to further argue that the first object in breeding our farm animals should be quality, as the market especially demands quality in all its meats. It calls for the best beef, choicest mutton and pork, as it is for the excellent roast, steak and chop that the customer is willing to pay the price asked. We all know there is a shortage in the supply of the best and the only way we can become able to produce the best from the common herds and flocks of the country is to grade them up by the use of good, pure bred sires, at a little cost, and keep on grading upwards, and get up on the higher plane of live stock breeding, and also receive the higher scale of prices in the market. There is plenty of room at the top; it is also pleasanter and more profitable, but too crowded among the scrubs.

Above all this, there is a satisfaction in breeding and raising good stock that cannot be measured by dollars and cents.

DISCUSSION.

In the absence of Mr. Roberts, the discussion was led by Conductor F. H. Scribner.

The Chairman—You see Mr. Roberts believes in improved stock. He believes in improving them for a special purpose. Now ask Mr. Scribner any questions that you would ask Mr. Roberts.

A Member—Which would you con-

sider the most profitable to raise, heavy stock or roadsters?

Mr. Scribner—For the average farmer, there is probably no question but the heavy horse is the most profitable. There are few light horses that ever get to the top. The two-minute horse is a scarcity, and unless we have race horses that are at the top, we would make a failure of the business. For the average farmer, I think the heavier horse is cheaper and more profitable, as they are more easily handled and grown and do not require so much training to put them in marketable condition.

A Member—What breed would you recommend in raising heavy horses?

Mr. Scribner—Oh, I would get myself into trouble if I told you what breed I prefer. We have several breeds of heavy draft horses; a man must make his own selection. If he prefers the Percheron, that is the kind he ought to raise, if he wants the Snares, or any other particular breeds, it is his business to make the selection for himself.

Capt. Arnold—It seems to me, while we ought to have an ideal in all our efforts, that a man should study his surroundings and what he will be able to accomplish and what he is willing to do before he starts out in any one line. There is an old saying that extremes are always wrong, and extremes are always wrong unless a man is willing to follow the extreme. If I was going to be a dairyman, I would get a dairy bred cow and I would give it that care necessary to produce the best results, but we have a large class of farmers that are not born dairymen, they never will be dairymen. The main reason why the stock from Wisconsin fetches so poor a price in the Stock Yards is because it is dairy bred stock and it is unavoidable, we can't expect to get as good prices for our stock as in other states that are not dairy states. Here

are a large number of farmers that will never take proper care of their cattle, the care which is necessary to make dairymen. They have to do something, they should be put to some use in the world, and they are a class of men who have a class of cows that will give milk. There is certainly no place in the state of Wisconsin for a cow that will not give milk, I don't care what breed she is, but there is a place for a class of cattle that are sufficiently hardy to be able to overcome the ill-treatment that generally maintains on the average farm of Wisconsin. That man can make what we call the beef breeds profitable in this state and obtain as good results if they give milk as they will to breed for the dairy. I notice that all the good cattle that they show on exhibits are from cows that give milk, no matter what breed they may be; there is no particular breed that has the monopoly in giving milk, and while heredity has much to do with this matter, the individuality has also a great deal to do with it. I noticed in Mr. Brown's herd at Minneapolis that all his show cattle were from cows that were good milkers, and you go anywhere among show cattle and you won't find one from a dam that was not a milker, that couldn't raise her own calf. Now, these things are to be taken into consideration and I maintain that a farmer in the state of Wisconsin has got as good a right to consideration, even if he is not a born dairyman, and that we should seek to build those men up and fit them out with a class of cattle that they can work profitably, even though they cannot be dairymen. We have a place for men that are not dairymen and such men ought to be encouraged.

Mrs. Howie—Do I understand Mr. Arnold to say that we should encourage these men to use inhumane treatment to any kind of an animal, and that these men must have an animal

that can bear ill treatment? Is that the proposition?

Capt. Arnold—Mrs. Howie does not understand me. What may be inhumane treatment for one sort of an animal may be the best treatment for another kind of animal. The beef animal that is subjected to the same kind of treatment that the dairy cow must have, would not thrive. The man who will abuse his cow or his dog will abuse his wife, and I have no patience with that kind of a man, but men that want to raise meat have to have cows that give milk, notwithstanding they want to raise meat; you can't raise a calf without milk. I doubt if Mrs. Howie knows how to raise calves without milk, as much as she knows.

Mrs. Howie—Yes, but the mother that gives the milk—she must have the very gentlest, the most tender treatment.

Capt. Arnold—I agree with you.

Mrs. Howie—Whether she is a beef cow or a dairy cow, it doesn't make any difference.

Capt. Arnold—I never quarrel with a lady. I have no place for a cow that doesn't give milk.

The Chairman—Did you ever know of a cow that didn't give milk?

Capt. Arnold—I have seen them pretty near it.

Mr. Phillips—I have seen them up at Arnold's.

A Member—The gentleman spoke about some pigs in the same litter weighing more than the rest. I have pigs in the same litter that weigh about seventy-five pounds apart, and they are six months old.

Mr. Scribner—That might happen in any kind of stock. There is always one little one in every flock.

A Member—Some of our local meat market men claim that the white hog makes better pork than the black hog. How is that? I can't tell the difference when it is on the table.

Mr. Scribner—I don't believe the

color cuts very much figure. I don't care what color a hog is as long as he is black.

The Chairman—Beauty is only skin deep anyway. But to come back to Capt. Arnold's talk, I didn't just get the drift of it. It seems to me that he believes in what they call a dual-purpose cow. It seems that he believes that a cow can give milk and make beef profitably at the same time, is that it?

Capt. Arnold—Her progeny will make good beef and she will be a profitable cow. I wouldn't have a cow around that wouldn't do both.

Mr. Convey—In this state, people are making gross mistakes along the line of breeding. Most of the stock that is put on the market under the name of beef is low grade material that brings very poor prices. The dual-purpose idea may work all right from Mr. Arnold's standpoint, but the general farmer tries to compromise with breeds and cross breeds and the result is something that cannot produce milk at a profit, nor beef at a profit, and he falls down between the two, and I believe that we ought to discourage that in the Farmers' Institute. You go to Europe. Do you find any locality where they are making an effort to produce both from a certain breed? In certain localities they produce beef, but they produce a high class of beef, they have got to do it to make it profitable. They cannot afford to give high-priced food to stock that will only bring half price, and it works exactly the same with dairy cattle. It is time for Wisconsin to find out where she stands. I say, milk your beef cows and get what you can from them, but carry your work either along beef lines or dairy lines, something that you can get one hundred per cent profit from, but do not fall in between and get left. It is time we tried to do first-class work, because there is an opportunity for first-class people

to do first-class work and make money at it. The people who are doing the other kind of work are having a hard time of it and always will.

Supt. McKerrow—There are districts in England where they breed for both beef and milk some very large herds of Red Polled cattle. There are some Shorthorn cattle that are very large milk producers and producers of very good beef, bringing probably not the highest price, but good producers of a good quality of beef. I can refer you to several herds of Red Polls and Shorthorns in that country, but the men who breed those cattle have a standard, an ideal. You may call it a dual-purpose or double-ideal, if you please, but it is an ideal, the idea that Capt. Arnold was trying to draw out. You speak of Wisconsin farmers. The great bulk of the Wisconsin farmers may have the dual-purpose idea in their minds, but do not have an ideal of the animal they should have, and that is where they make the mistake. They will grade with Jerseys and still expect beef, and they make a failure of them. Then they say, we will get this by crossing with Shorthorn or Hereford or Polled Angus, and they make a cross and then they fail on the milk side of the proposition. They have no ideal in their minds, no correct line of breeding, and therefore they make hash, and so at a Wisconsin Institute we want to discourage that idea. To the dairyman who is going to make a business of dairying, we have advised the use of a strictly dairy cow. To the man who is going to make high class beef his ideal, we will advise a strictly beef animal, but I believe that Captain Arnold is right in saying that with a beef animal the cow should provide a fair amount of milk, so as to give skim milk to raise a good beef steer and start the animal right in the world, but the man who is bound to have both beef and butter, though he

may have an ideal of some particular breed, never will reach his ideal by making hash and crossing first one way and then the other.

Mr. Convey—we will agree in that particular, and I have noticed about those men who claim that they have dual-purpose cows that occasionally they get an individual that is really a dual-purpose cow, but they fail to secure a herd of that kind; there are isolated cases where they are apparently dual-purpose. Nobody that I know of has a herd of that kind.

Supt. McKerrow—Mr. J. W. Martin, of Richland City, has a herd of that kind.

Mr. Convey—I have seen animals from his herd that were almost ideal beef animals and I have seen animals that made six hundred pounds of butter, and you can't call such an animal a beef animal at all.

Supt. McKerrow—When that cow is in good condition, she is pretty good beef, I guess.

Mr. Convey—She is one of the best bred cows, not from his own herd but from his locality, bred for a special purpose. I have my eyes open looking after those things, and I have no prejudice against any class of cattle, but we ought to have an ideal and work up to it, not an ideal that will bring us half price for what we do, but an ideal that will bring us the very top price. We don't want to have people see-sawing, backing and filling in, cross breeding, making hash that is a disgrace to the state. I wouldn't think of raising a steer on my farm. I know the flavor of Jersey beef is all right, but how much does it represent? When I put them in competition with good beef cattle, I get about four cents when the good beef cattle are bringing six cents, and that kind of work doesn't pay me, or anybody else.

Supt. McKerrow—That is very true. You know about one Shorthorn cow that was brought to the Experiment

Station that was a wonderfully good producer. There was another cow that everybody said would not be a producer, because she took on flesh so rapidly. But feed cuts a great figure, and when they got her feed changed and properly regulated, she raised in about two years from two hundred pounds of butter with a great deal of flesh on her back, to four hundred and twenty-six pounds of butter with less flesh on her back. These are things that we want to lay before the farmers of Wisconsin. The poor you always have with you, the dual-purpose farmer will always be a fixture in Wisconsin, and we want to pay some attention to his conditions as well as the other fellows, but by trying to put the right kind of an idea, an ideal into his mind. If he is bound not to have Jerseys or Guernseys or Holsteins and is bound to have something else, then let us get that something else of the best sort fixed in his mind.

Mr. Convey—I would advise that those people who advocate the dual-purpose cow do not forget to follow the ration as well that will make a dairy cow out of that kind of cow.

Prof. Emery—I have been informed that Mr. Goodrich has recently developed a new idea in regard to the tri-purpose and the double-dual-purpose cow, and I think it would contribute to the benefit of this meeting if we had that presented to us.

The Chairman (Mr. Goodrich)—I thought it was about time to close this discussion when the superintendent compared the dual-purpose man, the believer in the dual-purpose cow, to the poor that we always have with us. Now, for the time being, I am a believer in the dual-purpose cow. I believe that we should do with our animals everything that we can do with an animal. I am not satisfied with a dual-purpose cow, I want the tri-purpose cow. In some countries they work cows in the yoke as we do

oxen here. I am acquainted with a man who came from some place in Austria, and he says that the only team his father had was a good pair of cows, and the only cows he had on the farm. Those cows, he says, were good for milk, their steers were good for beef, and they drew the plow good and strong, and when they went to town with a load of garden truck, sometimes they took some of the small children and when the children wanted something to eat all they had to do was to milk the team. I believe in going still further, we can add other things to what this cow can do. Why not add speed? About four hundred years ago, when the southern part of this continent was settled with Spaniards, some of their cattle escaped from civilization; they ran for hundreds of years on the plains, contending with wild and fierce beasts; only those could survive that were the fleetest of foot, and those having the sharpest horns. After the working of the law of the survival of the fittest for three or four hundred years, a race of cattle was developed that were fierce fighters, with broad, spreading horns, and they were remarkably fleet of foot. After awhile the Mexican with his lasso captured some of these animals and redomesticated them. Only a few years ago, down in Texas, a man trained a Texas steer to drive in a sulky, the same as a horse; he was entered on the race track at a county fair and he won the race and took first money. Now, why not add that to our cows? Why not, I say? If we have such a cow as that, we will have one that will give a good mess of milk, her steer will make a good lot of beef, you can harness her in the yoke and plow your fields and besides that we will have a cow that when the young man on the farm wants to ride out with his best girl on the fourth of July, he will start out with a fine harness and go at a spanking gait into

town, with the stars and stripes streaming from the tops of each of the seven-foot spreading horns. Then if they want to be economical and they need some refreshments, all they will have to do is to get out and help themselves.

SHEEP FOR WISCONSIN.

W. C. BRADLEY, Hudson, Wis.

For the past three years, on account of the scarcity of hired help, and the high price of mill feeds for milk cows a great many farmers who realize that they ought to keep live stock are asking the question, "Will it pay me to grow sheep? Well, that depends. If you have reasonably dry land that will grow clover, rape, turnips, and corn, and are willing to give sheep careful attention at the right time, it is a pleasant and profitable way of converting the coarse feeds of the farm into a concentrated product, in this way handling a large amount of stock with very little help and keeping the fertility on the farm.

Breeds and Management.

Just what breed, or how they shall be managed, depends on our location. If on high-priced lands, and close to a good market for early lambs, some of the large mutton breeds, lambing in January or February, ought to pay best. If barns and sheds are fitted for this work and the lambs fed liberally on a variety of good feed that will grow them quickly, they can be put on the early market and very little land used for pasture. If, on the other hand, you are far from market and on cheap land, it might be better to have some of the medium mutton breeds, having the lambs come on pasture, which will require little or no grain, if the lambs are to be fed the following winter for market.

Summer Feeding.

The man who pastures through the summer should sow with all his grain some clover and turnips for pasture. As soon as the grain is stacked and on his corn ground that is cleared for the silo, rye should be sown with the last cultivation, which makes a good pasture till snow comes. In this way lambs can be moved from field to field on fresh pastures and avoid any trouble from worm disease, and the land growing this second crop that is fed on by sheep is actually better than if it were bare, and the ewes pastured in this way are in fine condition as breeders.

Care of Breeding Stock.

In our selection of ewes, let us cull the old ones that have passed their prime, and any young one that has failed to be a good milker. The selection should be made and those marked while lambs are with their mothers, so we can tell which are growing good ones.

Then, in selecting a ram, get the best you can afford, and you can't afford a poor one, no matter how cheap.

Wintering the Flock.

The breeding flock should have plenty of exercise and be liberally fed on a variety of feeds and straw, timothy hay and marsh grass can be left out with profit. Clover hay, alfalfa, oat and pea hay, bright corn stalks,

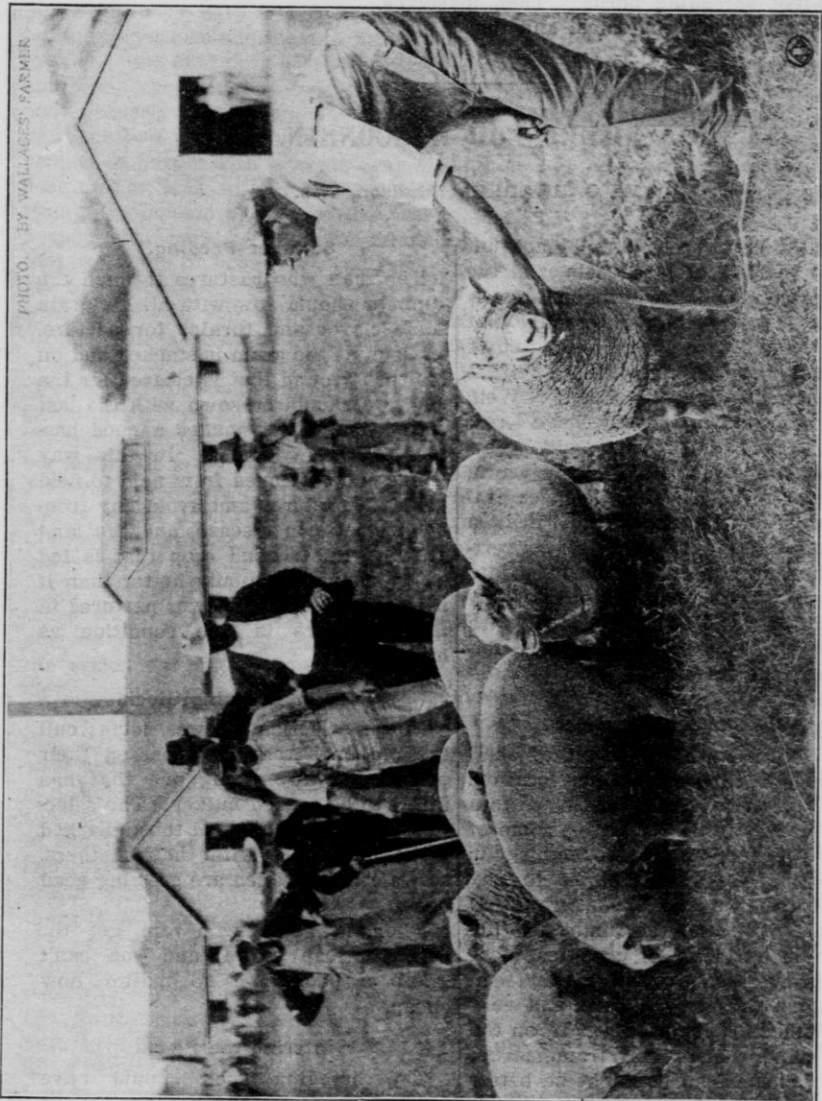


PHOTO. BY WALLACE'S FARMER

The World's Champion Flock of Southdown sheep; winners over all breeds at Iowa State Fair, August, 1904, and winning flock at St. Louis World's Fair, October, 1904, Owned by Geo. McKerrrow & Sons, Pewaukee, Wis.

ensilage or turnips, make a good variety.

Lambing Time.

Before lambing time, all the tag locks should be clipped from udder, so the little fellows will have no trouble in finding what they want. If lambs come in winter, the ewes should be fed a little grain two or three weeks before lambing, then after the first few days feed the ewe a variety of grain, and the best roughage you can get. Lambs should be fed apart from the ewes. Oats, corn, and a mixture of nine parts of bran to one part oil meal, fed in different boxes, gives the right variety.

Shearing.

Many flocks are allowed to carry their wool, or part of it, until very warm weather, much to the discomfort of the flock and loss to the lambs, because ewes that are too warm cannot give as much milk as if comfortable.

Keep the flocks clean outside by clipping, keep them clean inside by frequent change of pasture and variety of feed. Keep yourself hustling to improve your flock, by selecting new blood and weeding out poor stock. Keep posted, by going to fairs and visiting your neighbors' flocks. Go slow and learn the business and if you like it there will be money in it.

DISCUSSION.

Mr. Jacobs—Don't you think the farmers of this state are losing a great deal of money in shipping their sheep to market in an unfinished condition, and also in shipping their corn to the man that finishes the sheep?

Mr. Bradley—Yes, that is so. There are a great many sheep shipped to the St. Paul market and the Chicago market that ought to be finished in

Wisconsin. In the town where I live, there is a bunch of six thousand sheep being fed—I think they would be a great deal better off if they were in bunches of five hundred—but this man is feeding them in one bunch, feeding a lot of roughage that he gets from the farmers of the town, and is also shipping in screenings from Duluth and finishing them. It seems to me it would be better for the farmers to finish their own sheep instead of selling them and selling the roughage to the man to feed them with. Two years ago they were feeding twelve thousand or fifteen thousand sheep over in Winona and the farmers of Wisconsin were hauling in their clover from twelve and fifteen miles and selling it to that feeder over there who was fattening some of the very sheep that they had sold him, and then they were selling the rough produce of their farms for him to feed, losing the manure, and he was making money on the feed they had raised that they should have fed on their own farms.

A Member—When do you consider the best time to shear?

Mr. Bradley—If a person is feeding or raising early winter lambs, if his lambs come in January or February, just as soon as the weather begins to get warm, say, in March, if you have reasonably warm stables so that you can close them up, as soon as the ewes show that they are uncomfortable, take the wool off of them. This time of year, or perhaps a month later, would be all right, but as soon as you see that the ewes are uncomfortable and the lambs by their side, take the wool off of them. It will be necessary if it is raining or misting when they are shorn, or shortly after, for the shepherd to be around and get them under cover, not allow them to be out in the rain, but I think fully half the sheep in northern Wisconsin carry their fleeces until June, and they ought not to do that, because they suffer greatly.

A Member—Do you keep your sheep in with a barbed wire fence?

Mr. Bradley—Yes, but you should have the barbed wires pretty close together, there should be about seven wires. If the bottom wires are strung pretty tight and the posts not farther apart than sixteen to twenty feet, they will be enough. Barbed wire is not an ideal fence for sheep, and I think almost every one is trying to fence his farm with some kind of woven wire fence.

Supt. McKerrow—Is barbed wire an ideal fence for any kind of stock for the first two feet from the ground?

Mr. Bradley—It is all right for cattle, about four barbed wires make a very good fence, but it doesn't make a good fence for sheep, horses or hogs. We find it better to have twenty to thirty inches of woven wire and then two barbed wires on top of that.

A Member—I don't think four barbed wires make a good fence for cattle, because they are apt to break in to reach over. I think woven wire at the bottom is better for all stock.

Prof. Henry—I wish to call the attention of farmers to the importance of fattening lambs rather than mature sheep, if that is possible. The farmer may get the impression that if he will let a lamb grow up and get a couple or years old then he can fatten it very economically, while to feed a lamb is extravagant. Now, farmers, get that notion thoroughly out of your heads. From a given quantity of food, a young lamb, pig, calf or colt will make the most gain in weight and not the older animal. If possible, crowd your animals ahead young, a lamb will gain as much as half a pound a day, while it is a lamb. You feed that amount of food to a two-year old wether, and he won't make over a quarter of a pound gain. You can fatten a lamb thoroughly in from eight to twelve weeks, making him as fat as the market will require; you can

do it upon different foods. Now, the best food for the fattening lamb is a ration containing considerable corn. For growing animals, putting them into the best possible form, oats, bran and peas are best. For making an animal fat, where you expect to dispose of them, use a large quantity of corn in the ration. A lamb would eat as much as half a pound to a pound of corn, and they get up sometimes to two pounds of corn a day. When a lamb is eating the equal of two pounds a day, with some clover hay, it ought to gain half a pound a day. Two pounds of corn ought to put on half a pound of gain, making about four pounds of grain for one pound of gain. That is a little better than we can do with pigs. A pig will take about five pounds. There is in this state a great opportunity for you farmers that want to make some money, that want to go into the live stock business and have not much capital. They are perhaps on the home farm, they want to grow a side line, and I urge upon those young men to get a little flock of sheep and try to produce early lambs. I went into this business myself as a fourteen-year old, I had a little flock of sheep, and I know how much it helped me in gaining ideas along agricultural lines. It is one of the simplest propositions we can start out on; the only other animal that compares is the pig. Any young man can turn out a lot of mutton each year and do a nice business. He can easily learn to shear his own sheep. I urge on the farmers, let your boy have a few pigs or sheep, and just see how that boy will grow into a fine business man. If you should come to Madison, you will see us feeding lambs that are five weeks old that weigh thirty-five pounds. They will get to Chicago for the Easter market, and we expect to get about eighteen cents a pound. They will weigh about forty to fifty pounds. We will get as

high as \$8 for a lamb that is five or six weeks old, and there is good money in it. Eighteen cents a pound, live weight, is pretty high, and there is not a very big market for that, but the market has not been overcrowded, and there is a splendid chance for a person to go into this line of business in Wisconsin. It is a little like running a hothouse. You have to be specially fixed up for it and make it your line. The average farmer, you know, gets along any way, and if you are an average farmer, you don't want to go into this, but there are, I hope, a good many young men in this audience that can take up that business, and it will bring them a nice little income and develop them into stock farmers.

Mr. Bradley—I think there are a good many farmers in the northern part of the state who are not able to equip good dairy farms and who are a long way from the market, but they are on cheap lands and they can easily keep a flock of sheep and make money out of them while they are clearing up their farms, and while it would be impossible to do first-class dairy work. The big ranches in the west are being crowded out, settlers are getting into Montana, Colorado, Utah, Wyoming and South Dakota; those big sheep ranches will soon be extinguished; the country is settling up and we must depend on smaller farms to raise our mutton in the future. The demand for mutton is growing all the time, and the Wisconsin farmer who will start with a flock of well selected sheep—they need not be thorough-breds, but they ought not to be scrubs—and handle them well on the sheep lands in northern Wisconsin, certainly will have a business that will not only improve the farm, but it will furnish him with a market for the products that he raises.

Prof. Henry—I wish to say to the farmers here that there is no line in which you can get to the front more

quickly than you can with sheep. We can show you today at the University Experiment Station farm some ewes that were shipped from Montana and sold for \$2.50 a head. Those ewes were bred to a splendid Southdown sire, and the lambs from those \$2.50 ewes went down to the Fat Stock Show in Chicago and won the prize, beautiful, round, fat lambs that stood out in contrast and quality with any sheep in that great show, and their mothers were \$2.50 Montana ewes, and their sires are fine, pure bred, registered Southdowns. Now, buy good, healthy ewes, and you can buy Montana ewes that cost but a very few dollars apiece. Then get a good sire, spend your money on the sire, or have several of the neighbors get together and buy him. In that way you will get cross breeds that will bring high prices for mutton. Use that sire on about twenty-five ewes a year or two, and sell him and get another good sire. The first lot of lambs will have been half Southdowns. Your next crop will be three-quarters, and you will have a splendid lot of sheep. It is really easy to do and pays well.

Supt. McKerrow—I am very glad to hear Prof. Henry bring out the idea of the great improvement that can be made by using a good sire. I have always said that when you were grading up from scrubs, the sire was all the herd, so far as improvement along blood lines is concerned. In improving your flock, you must keep it firmly fixed in your mind that you must have a good sire. One of those Southdown sires costs probably \$50 or \$100, but you cannot possibly succeed without having a good sire of the right breed.

Prof. Henry—Would you go to your neighbor's flock and pay him \$10 for a male, or would you pay him more money?

Supt. McKerrow—I would pay more money. If you had paid \$10 for the

sire you use at the University, you would not have got the prize for the sons of those Montana ewes in Chicago.

Capt. Arnold—There is one thing we should consider. We fail in not studying the wants of our animals. Mrs. Howie does when she starts her dairy cow, but Mrs. Howie would be off if she undertook to feed a fattening steer and put him in the right shape. She would find out that the steer did not enjoy that kind of treatment. When we are handling any kind of cattle, we should diagnose their needs and conditions, we should study them, and above all things we should make them comfortable. That is what good treatment means, to make them happy and contented; that is what we must do if we are going to succeed. I sheared my sheep last year in March, and I think I will this year if the weather will admit, because I am satisfied that the ewes are much more comfortable within three days at least, and besides that you get rid of the ticks. Many farmers are so anxious to get a heavy fleece of wool, that they say they cannot shear until the oil comes out, and they leave it until warm weather. I suppose they do lose a little wool, but the health of the sheep is more important. It will not do to undertake to fatten lambs unless you feed them right from the start. It will not do to undertake to make baby beef unless you feed them right from the start, and that is where many of us fail, we do not feed enough when the animal is young. I wouldn't give much for a lot of lambs coming late in the year; they always have worms, you cannot finish them up and you have to sell them as yearlings. Early lambs are what we want and it will help along to make the ewes comfortable by shearing them early in the season if you have comfortable quarters.

Prof. Henry—If any of the farmers

here have sheep and the lambs are now being dropped, let me urge upon you the English system of having a lamb creep, an arrangement by which an animal can pass through into another part of the enclosure and get to its feeding trough, this passageway being so narrow that the ewe cannot get through. Run a couple of boards horizontally with slats up and down so near together that the lambs can get through but not the ewe; have a little, low trough with a flat bottom on the other side and sprinkle a little corn meal, a little bran and coarse ground oats, several different kinds of food, and let the lambs eat it. Each lamb won't eat a handful, at first, but it will make them grow surprisingly fast. You don't want the ewe to get much grain, but you want the lamb to get all you can, and you will be surprised to see how fast they grow and what splendid sheep they make, either for breeders or for mutton. You will also find that your flock increases wonderfully in its quality. If they are bred right, you will get about two lambs for every ewe. That is what our flock at Madison averages and the ewes will be strong enough handled properly to care for those two lambs, and in that way you multiply your animals more rapidly and your profits correspondingly. Remember that the time to make money is in feeding and caring for young things. It is my business to take care of boys, and I know that the young creatures are the best kind of animals to care for. We can do more with boys than we can with men, so I am all the time working with the boys. With your young animals, keep pushing them and strengthening them and helping them, and remember that your feed never goes so far as when you are pushing young animals ahead with it.

Supt. McKerrow—Be sure to put a railing about eight inches above that trough or the little rascals will be

over in the trough all the time. And then be sure not to feed any more at a time than they will eat up clean in an hour, or they will spoil a lot of food and you will get disgusted.

Mr. Bradley—We have a better way than the Professor suggested. We have a trough nailed on the wall, so the little fellows can get their heads in there, but they can't get into it with their feet at all, and there are four different partitions into which we put different kinds of food, and they will take out a mouthful of one and a mouthful of another and satisfy themselves in that way. The Professor says that the ewes at the Experiment Station are dropping on an average of two lambs to the ewe. It has been said that there is one thing the American citizen is not prepared for, and that is twins, but a sheep grower ought to be prepared for twins.

Mr. Convey—I want to know if Mr. McKerrow breeds from a dual-purpose standard in raising sheep. I know he will say he wants the carcass well covered with wool, but what I want to get at is whether he breeds his sheep from a dual-purpose standpoint and is

satisfied with an inferior carcass because it has a little more wool on its back.

Supt. McKerrow—Yes, I breed all my sheep from the dual-purpose standpoint, that has been my ideal for thirty-five years, the production of the largest, strongest, best formed lamb and the production of a very large amount of milk to grow that lamb, just the same as you are after in a good cow. I want the best lamb and the best milk to grow it.

Mr. Convey—They claim at the University that those western ewes that did not have much breeding were better to raise winter lambs from.

Supt. McKerrow—People who go to buy large bunches of ewes to produce spring lambs, cheap ewes, can usually go into the markets and get western ewes at a low price that give very fair results, but they do not give the results in producing a quick-growing fat lamb that my grade mutton ewes did, that can be picked up in smaller quantities at much longer prices. They take them because they are the best they can get for the money.

COWS FOR DAIRYMEN.

F. H. SCRIBNER, Rosendale, Wis.

The cow for the dairyman is the cow that can make the most profit in milk, butter or cheese for feed consumed; just what breed does not matter so much, it depends entirely upon the disposition, taste and education of the dairyman. There are some people who are naturally fitted to take hold of the special-purpose dairy cattle and make a success of them, while others require a fitting before they will be successful, and perhaps never will reach the state of perfection that

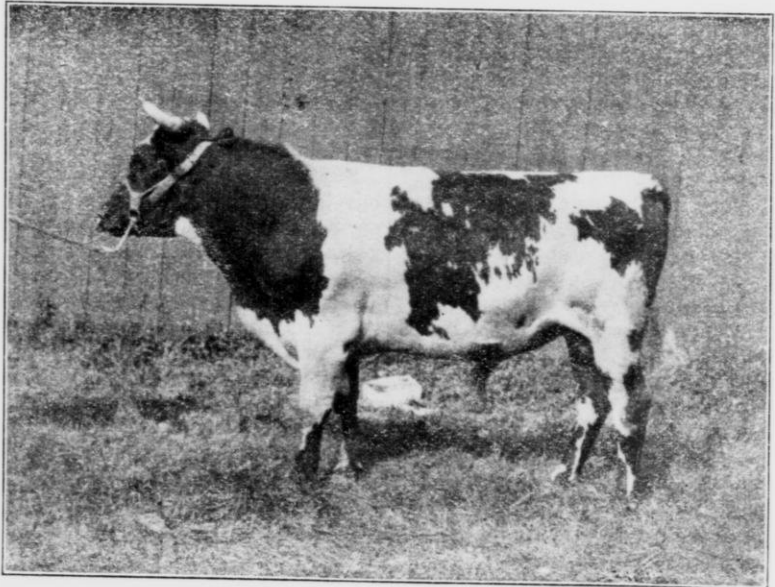
some do. The man that is progressive enough to get started along some dairy line of breeding, has born or created in him something of the next essential element to successful dairying, and that is good feeding. To be a good breeder, then, is to be a good feeder, and the reverse, to be a good feeder is to be a good breeder; the two are inseparable; one cannot exist to the highest point of perfection without the other; the well bred animal in the hands of a poor feeder is a

far worse proposition than the poorly bred one in the hands of a good feeder.

It has been my ill fortune to do some judging at fairs of different dairy breeds, and I have judged them all from the standpoint of a dairyman, the cow that in my judgment could bring in the most dollars with the least cost.

thing to the make-up of a good dairy cow.

In looking over many of the reports from men who have been through the country taking a cow census, I find that the dairyman who has tried to improve his stock by introducing into his herd a thoroughbred sire of some of the distinctly dairy breeds, is the one who has realized the most profit



"Wm. Pender," First Prize Yearling Ayrshire and Junior Champion Bull, Wisconsin State Fair, 1904, owned by Ed. Finn, Whitewater, Wis.

It is often said that the dairyman does not need to look so closely after some of the fancy points of breeding. This is true in a measure, but I think today the two classes, the breeder and the dairyman, are more alike than they have ever been before, the breeder giving in to some of the more non-essential points, and the dairyman who is looking out for his best interests and for the best production from his cows has his eye out to a large number of the so-called fancy points, which after all do contribute some-

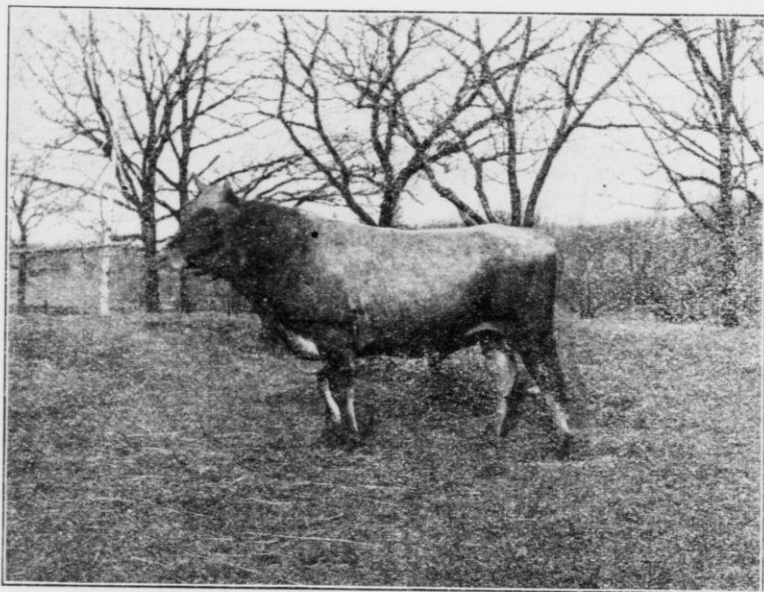
every time. I want the dairymen to have the best cows, and if I speak for the special-purpose cow and do it forcefully, I do it because I believe in her, and because I believe the dairyman who is doing anything short of this is not living up to the full possibilities of his business.

Special-Purpose Dairy Cows Should Have the Best Kind of Care.

As I travel through the country and see the condition stock is in, how it is cared for and the feeds used, I am in-

clined to think that perhaps there is a place for the common or dual-purpose cow, until such a time as the breeder shall turn over a new leaf, "quit his meanness," as Sam Jones says, and improve his way of feeding and caring for his stock. I have been in places this winter right here in the state of Wisconsin, where cows were kept out of doors all winter, with a run in the old corn field, a little poor

economy and profit of those who are breeding along dairy lines, would be convincing evidence enough that the average farmer should not throw away time, feed or money on mongrel or dual-purpose stock, when the same has not the capacity or ability to serve but one, so by all means discard the mongrels and start right by getting a good dairy sire and join the procession of prosperous, advanced husbandry.



The Sire is Half the Herd.

hay, and the straw stack for shelter. Would the strictly dairy cow be able to do business under these conditions? She might possibly survive, but the idea of profit would be entirely out of the question, for it would take at least the first half of the summer for her to pull soul and body together, and by that time she would have gotten all out of the notion of giving much milk.

It seems as though the experiences we have given from time to time in our different publications, as to the

The True Dairy Type.

Dairy type is not an accident and there is good, sound sense in every point of make-up. In the matter of judging dairy cows, there is nothing so reliable as the milk scale and the Babcock tester, but a prospective buyer in some cases, or a judge in the show ring, must have a quicker way of judging, and he must have the ability to recognize at a glance the signs which have proved to be the evidence of the true dairy type. The Short

Course at Madison has been a great educator for the young men in this respect, and the teaching they have received there has been very helpful; they are able to select and pick out according to points the best dairy cattle, and I find that about seventy-five per cent of the boys were right in their judgment and selection as to the best producers, judging merely from outward appearances. I know of a case of judging at fairs where, after the judge had placed the ribbons, an official test was arranged, and it proved out that the judgment of the judge was correct.

Invariably the leading characteristic of a good dairy cow is a strong development of stomach and udder, not over-development, but enough to indicate ability to do a lot of good, hard work. Large, mild and prominent eyes, broad forehead, broad muzzle and wide nostrils, the wedge shape of the body, large milk veins, constitution indicated by plenty of room for heart and lungs, and general appearance. The dairy cow is bred to yield all that is not absolutely necessary to her support in the milk pail, and if any one will follow these indications, they will not go far wrong in their selection.

The matter of persistency, which we consider one of the essential points, is probably a matter of education as well as heredity. Mrs. Howie says, "A man is what a woman makes him," so a cow is what a man makes her. Cows like petting and appreciation as well as a man, and why not give it? A balanced ration is not complete without it.

The whole thing is a matter of adaptability, the man to his business, the cow to the man, and the feed to the cow; with such a combination a man is sure of success. It is no one thing that we are going to do that is going to bring us success, but the constant attending to the little wants and comforts of the stock from day to day

and from year to year that will win out in the end.

DISCUSSION.

Mr. Philips—I want to say a word on this cow question. At our Institute at Bangor, I was glad to hear Mr. Bradley say that we had one of the best dairymen that there is in the state and the best herd of cows. I find in the constitution of our county agricultural society that it is formed for educational purposes. I have been secretary of that society for a good many years and it is supported by the farmers. Last year, in order that our young men might have the benefit of the instruction, I asked the owner of this herd what he would charge to bring his whole herd onto the fair grounds. He never would bring one cow, because he knew it would injure her producing qualities, but he said he would charge \$15.00 to bring the herd. Then I wrote to Governor Hoard and negotiated with him to come. The cows were brought there, and were brought into the ring, so that everybody had a chance to see them and learn about their records. One cow had produced over 705 pounds in a year; another one had made a thousand dollars worth of butter in twelve years. We stopped the trotting horses for an hour and a half from using the track and we never had an exhibition of more value to our people. I read those records, then I turned to Governor Hoard and I said, "Here is a text for you to talk from." And he did talk, and I never heard him deliver a better discourse. I would not serve as secretary another year and when they met this year they resolved to have no more stock exhibitions on that track on account of stopping the trotting.

Mr. Foster—That is where Mr. Goodrich's speed cow would come in.

Mr. Philips—I was hoping that that

would lead up to something else in the way of regular exhibitions of dairy cows.

Mrs. Howie—Mr. Scribner, you say that in selecting your good cows you look at all these dairy points and consider them, but after all have you ever found exceptions to that rule, and when you found exceptions, what would you make the test of the real dairy cow in your herd?

Mr. Scribner—Of course we do find exceptions. We find occasionally an animal with a little beefy tendency that makes a remarkable record, but they are not the type we care to breed to get the perfect type of dairy cattle. The main thing is a good producer. We want individuality with good breeding. We want a type of cow of good dairy form. I used to go out with my father to buy dairy cows, and he didn't buy those broad-backed, beefy fellows, by any means; he bought those wedge-shaped cows, well cut up in the flank, with large udders. That is the kind that is making the money for us, and those are the ones we are after.

Mrs. Howie—Yes, supposing you had four or five cows in a row, and you wanted to tell which was the best cow, and they were all perfect in dairy type and all that, how would you go to work to find out which was the cow that was making you the most profit and the one you wanted to keep in the herd?

Mr. Scribner—Then the only way would be to weigh the milk and test it with the Babcock test.

Prof. Henry—Do you weigh the milk and test it in your own herd?

Mr. Scribner—We do. We have followed that practice for a great many years and I would not be without it for a great deal. The milk sheet in a barn is worth everything to a man, not only in the satisfaction he gets in knowing what each individual animal is doing and how she pays, but it

makes your hired men better men, better milkers, more interested in the work, and incidentally makes you more money.

Mr. Imrie—How long do you have cows go dry?

Mr. Scribner—We prefer to have a cow thoroughly dry six weeks. We commence about eight weeks, it takes about two weeks to dry a cow. We think we get more milk in the year and we certainly get a stronger, healthier calf.

Mr. Convey—How do you dry off a cow?

Mr. Scribner—You take a very persistent cow and it is quite a difficult matter sometimes. We have to take away all food having milk-producing qualities, and keep them on dry food, starve them if it is necessary. Perhaps Mrs. Howie won't like that idea, but we have to put them on food that will not make milk as far as possible, and milk them only once a day, then after awhile skip milking for a day. Sometimes it is quite a difficult piece of work.

Mr. Foster—You would avoid that trouble by keeping dual-purpose cows.

Mr. Convey—What harm is done if you fail to dry your cow off and milk her from one period to another?

Mr. Scribner—The chances are we would not get nearly so much the next year. If by some mistake you do not commence to dry your cow off in time, better then milk her right through, because she begins to secrete milk for her next calf and you don't want to try to dry her off at that time.

A Lady—Would you dry off heifers as early as six weeks after the first period of milking?

Mr. Scribner—No, that is where the persistency comes in in the education of your animal to give milk longer. I prefer to have a heifer milked eleven or twelve months the first time, but I would give her six or eight weeks just the same after that making the

first milking period longer for the purpose of establishing the habit of persistency. I remember a few years ago we made the mistake of drying off a heifer a little too early and ever after that she wanted to dry off at the same time. Of course a record should be kept so you know exactly when to dry off. Keep a book account with every cow.

Mr. Jacobs—What do you place the most importance upon in judging a cow?

Mr. Scribner—I go a great deal by the form of the cow; I want to see a deep body; I want good storage capacity, a large dinner basket. Then I look at some of the minor points, the udder, which is not very minor either. We want an udder that will milk out soft and pliable, so that we can get the last particle of milk out. If you do not get it all out, the cow will not secrete only so much after awhile, and in order to be able to get it all out, you must have the right kind of an udder. Then we want a cow that milks easy. If not, the milker doesn't like to milk her, the cow doesn't like to be milked, and there is not the mutual affection between the cow and the milker that there should be.

Supt. McKerrow—Do you pay any attention to the size of the cow?

Mr. Scribner—I do like to see size. I like to feed for size. Mr. Goodrich came into my barn a year ago and remarked that my cows were remarkable for size. I think if an animal is going to build up a constitution, it must do it in the first two or three years of its life, so I want to feed in such a way as to get a lot of growth and constitution. Constitution is the main thing in any animal.

Supt. McKerrow—To what points do you look for constitution?

Mr. Scribner—General appearance is one thing; wide through the heart and lungs, plenty of room for the heart and lungs. It is indicated in

the looks of the hide. You can generally tell if an animal is in good condition by the appearance of the skin. You look at a woman in the face, and if she looks white and pale, you say, "You are not looking well;" so we judge animals by the appearance of their skin and the hair, and if they are all right we say they are healthy.

Mr. Jacobs—Isn't there a difference between healthiness and constitution? A cow may be out of condition from some temporary cause and her constitution be all right.

Mr. Scribner—Anything that is out of condition injures the constitution.

Mr. Foster—You have told us what kind of cows it is nice to have, but we haven't them. The average cow of the state of Wisconsin does not give 200 pounds of butter a year, does not pay for her keep. Now, tell us what shall be our first steps toward reform. Shall we kill off these unprofitable boarders and buy a lot of new cows and get soaked on every hand? What shall we do to reform?

Mr. Scribner—Educate yourself, that is the main thing. It is the education of the farmer, the dairyman, that we want more than cows. There are lots of good cows in the state of Wisconsin if they only had the right kind of treatment, somebody that understood how to feed and take care of them. I have heard Prof. Carlyle say we could take a calf of any breed, born in the state of Wisconsin, and make a 300-pound cow from it by taking care of it properly. There are a great many animals, of course, that are not good producers. We have got to select, we have got to take our common stock and breed up. You cannot go out and buy thoroughbred stock from anybody, unless you pay a long price for them.

Supt. McKerrow—From what you said about care, you mean feeding?

Mr. Scribner—Yes. I calculate

there is just as much in feeding as there is in breeding.

Question—How many do you have to weed out of your herd after you have bred up?

Mr. Scribner—That depends upon the man behind the gun.

A Member—You are the man behind the gun; I want to know what you are doing.

Mr. Foster—We want to know how you got your good cows and got rid of the poor ones. How long did it take you to find out that you had a good cow?

Mr. Scribner—It takes about a year, sometimes we have to wait longer. Some cows develop quicker than others; it may be their third or fourth calf before they are at their best.

Mr. Foster—How many out of ten would it average that you would have to discard after you have been to all the trouble of raising them?

Mr. Scribner—It depends on what your ideal is. My ideal is pretty high, may be a little too high for some of you fellows. I have got my ideal up to 400 pounds. A cow that can't make 400 pounds a year when she is mature cannot stay on our farm. A few years ago I had it 250; the cows got better and I had to raise it to 300. I have raised it to 400, and now I have got to go higher. We have some that make 450, 500, 600, 700, 740. Where am I going to place an ideal? I have got to have it above me, or I will never improve.

A Member—What is the paying point?

Mr. Scribner—A cow has to more than pay for her food.

Mr. Foster—But I want to know how many you will have to discard entirely, what per cent will be profitable to keep?

Mr. Scribner—I can't answer that question, because I don't think I ever had a half a dozen that I discarded in

my life that were not profitable, that did not reach the 400-pound mark.

Mr. Philips—Mr. Griswold says that six out of ten he keeps.

Mrs. Bates—When a cow is reduced in flesh, does it reduce the per cent of butter fat?

Mr. Scribner—Not necessarily. That per cent of butter fat is fixed in that cow the day she is born, and you can't change it very materially. You may change it for a little by changing the conditions, but it will go back to its normal condition pretty soon. Of course when a cow gets out of condition, reduced in flesh, I don't think she gives as much milk, and perhaps her test might run up and perhaps it might run down.

Mrs. Bates—The same amount of milk will have the same amount of butter fat?

Mr. Scribner—About the same. We find in feeding cows to make a high butter record for a week, or a year, by feeding the best food that we know how to feed, we cannot change the per cent of butter fat very much, but we can change the per cent of butter fat by good breeding, good feeding, and selection.

Mr. Nordman—You say your ideal is 400 pounds. Do you keep in your herd any calves that by good feeding and care you cannot get up to 300 pounds?

Mr. Scribner—No.

The Chairman—I had to do some rejecting when I commenced to grade up from pretty good common stock with a thoroughbred sire. The first set of heifers that I had, after testing them I rejected thirty per cent of them, and I always had some to reject. They might pay for their feed all right, but they didn't pay as much as I wanted, I wanted those that would pay the most possible, so that I always rejected as many as fifteen per cent and some of them better than scrub cows.

Mr. Convey—Mr. Scribner's rejections make a very small per cent. for he has been grading up with pure bred stock. He is trying to get the very best he can and he takes special precaution against the introduction of poor blood in his herd, so that he would naturally have a higher per cent.

Mr. Scribner—It does make a difference. If we have even a little of the mongrel blood, we have a larger per cent which we have to reject.

A Member—At what age do you prefer to have heifers freshen?

Mr. Scribner—I have changed my mind a little on that. We used to say at two years, but I am inclined now, and I think all of the breeders of the strictly dairy type of cattle are inclined to think the way I do, that perhaps it is better to have them come in at two and a half years of age. We get a little more size and constitution, and my young heifers at two and a half that have freshened this winter I am very well pleased with. They have very large udders and we think we are making improvement along that line. Remember, I am speaking of the strictly dairy type, and if we tried this on some of the beef breeds, a mistake would be made. Then, as I said, we would want to milk them pretty nearly a year before freshening again.

Prof. Henry—There is another point of great importance to this subject. It is so common in farming districts to find a mixture of breeds. For instance, one farmer thinks he will adopt the Holsteins; he goes and buys a Holstein sire; he keeps the bull a year or two and he says, "I have heard at the Institutes that Jerseys are pretty good. I am going to try Jerseys." So he tries Jerseys for awhile and he gets tired of them and he decides that he will have some beef, and he goes and buys a Hereford bull and a grade at that. Going over

the state it looks very much as though just such ideas prevailed over a good deal of the state. Now, farmers, get out of that habit. If you go among the farmers on the other side of the water you will find that they adhere to types. You go into any district in England and you will find cattle, sheep, or pigs of one type in that district, the climate, the soil and the ideals of the farmers have combined to bring about those results. The farmer who was breeding Southdown sheep continues to do so. The farmer who is breeding Hereford cattle, goes on breeding that way. The Jersey cow is good enough for them and if they like that kind of a cow, and good enough to hold onto by a whole community. And so are the Herefords, and so are the Shorthorns good, if you like them, but they are all poor if you mix them up. Our stock is ring-streaked and speckled; our butchers cannot buy good steers; a dairyman cannot buy a carload of dairy cows, and that method of doing business is costing us tens of millions of dollars a year, and we ought to get out of it as fast as we possibly can. Now, how can we do it? Take the best we have in our community and stay by that. For instance, your neighbor is breeding Jerseys, don't go on and buy a Holstein just so as to have something different from your neighbor, but if your neighbor has Guernseys or Holsteins, make up your mind that you will have the same thing, then one bull will do for both farms; you can buy a better bull, or three or four can use the same bull, and when a buyer comes around there is something in that neighborhood to choose from. Let me illustrate one case. It happens that at Lake Mills, in Jefferson county, many years ago several men began to breed Holstein cattle; the farmers around used the bulls from those herds and the result is that down there the cattle are nearly all black and white, many pure

breeds and nearly all grades. Now, what happened? I get letters from men every little while,—Hoard's "Dairyman" gets letters saying, "We want to buy some Holstein cattle. Where shall we go in your state to look them up?" And I respond, "Go to Lake Mills." Now, if there was one herd at Lake Mills and one at Kaukauna, and one over at La Crosse, a man coming from Montana, or California, or Mexico, or New York, looking for Holstein cattle, after looking it up on the map, would say to himself, "I don't know whether I want to go into that state to buy cattle," and he would go some other place, if he could find some other place where there were several herds together. I took the train not long ago with two gentlemen from California, and they told me that they had come east to buy Holsteins and were on their way to Lake Mills. I rode down to Lake Mills with them, and in two hours they had left \$2,200 there for cattle. While we were driving around we came across a man who said that he was buying cows and that if they would give him a dollar a head he would go around and buy cattle for them and put them on the cars. He was buying calves, two-year olds, yearlings, strippers, anything that was wanted, at a dollar a head, and he told us that in eight months he had bought 800 head and shipped them out, nearly all grade Holsteins. That community

at Lake Mills has taken in \$60,000 for Holsteins. A man will pay from \$50.00 to \$500.00 for pure bred. Now, supposing that one farmer there had Shorthorns, another had Guernseys, another Jerseys, and another Red Polled, and a man could not buy more than two or three of a kind, they never could buy them by the carload as these California men were doing. They wanted to get them as nearly in a bunch as possible.

We are a great people to stand apart, to fall asunder, we do not cooperate, we do not work together as we should. We are too blamed independent. Independence is a good thing, but our independence in these matters costs us in the state of Wisconsin millions of dollars every year. Let us be rational and stay by good lines of live stock and join with our neighbors and have a community interest and work together. I found down in the horse districts of Kentucky that those men did that; when they found they could not trade with a man, they would pass him along to their neighbors; there was never any back-biting, or anything of that sort. Let us work up that pleasant spirit of neighborly help and community of interest, all working together to get the money of these men who want to spend their money here, and get it honestly and fairly, because as a community we have got a lot of good stuff to sell.



RAISING CALVES.

Mrs. ADDA F. HOWIE, Elm Grove, Wis.

On noting my subject and the allotment of time allowed for its presentation, my first impulse was to briefly suggest that the surest and quickest method would be to raise the calves by dynamite, and, after careful deliberation, I am fully convinced that if the average calf of Wisconsin and all those that fall below this standard, were to be finished by so rapid and effective a means, the farmers of our state would be greatly benefited thereby and might then be able to devote more time and thought to the skillful breeding and better rearing of the goodly number of youthful bovines that may safely be classed above the average, for the progressive dairyman of today must not only give consideration to the care and feeding of an animal in order to secure the most desirable type, but will find it quite as necessary to study intelligently the records of previous generations, that he may be enabled to perpetuate or eliminate characteristics that may prove either desirable or detrimental to the live stock interests of our land.

Care of the Young Calf.

If sire and dam have been wisely selected and the mother has been properly fed and cared for, the little creature that comes to the herd will be a bright-eyed, lively little thing, and one of the most important lessons in its education is that from the very first it should be taught to regard the dairyman its friend. Three days is not too long a time to leave it to a mother with a maternal instinct that strengthens its body and regulates its digestive organs by furnishing meals at all hours of a kind and quantity

provided by inimitable Nature; and when the time arrives to separate the mother and her little one, the herdsman should remember that a calf's stomach is of small dimensions and that to distend it unnaturally by a too liberal allowance of milk would result in impaired digestion; therefore, a well-grown, thrifty calf should be given no more than two quarts of milk at a single feeding, and for the first three weeks it should be fed, at regular intervals, this amount, and no more, three times a day. The milk must be warm, ninety-eight degrees, and fed from a strictly clean pail or pan.

At the end of the first week a small portion of the milk may be skimmed; by the end of the second week, the entire amount may consist of skimmed milk, and, while a little later the quantity may be raised, it will not be found necessary to do so, for as the calf grows older and requires more liquid, water may be added, and from the very first a calf should be offered at least twice daily fresh, pure water, in order to accustom it to drinking large quantities of water, which will aid materially in digestion and at the same time act as a valuable agent in flushing the system.

From the day of its birth, it may be given some bright, clean hay, for I have seen calves when a few hours old trying to imitate the mother in chewing hay. Now, on no account throw the hay down on the floor of the calf pen, where it may become trampled and soiled and, consequently, unfit or even dangerous as a food. Make a little rack in one corner of the calf pen, from which the hay may

be pulled in small quantities. A calf may be safely given all the roughage it cares to consume.

When ten days or two weeks old, a little box may be placed in one corner of its pen and in this may be put a handful of whole oats. After it has finished drinking its milk, a few oats may be rubbed on its nose; it will soon find the box.

Good Housing Important.

Now its ration is skimmed milk, whole oats and clean hay—all that is necessary to insure a steady, natural growth, and one calculated to provide the requisite bone and muscle-forming elements so important in the construction of a hearty, healthy animal, and, while the proper amount of food, systematic care and invariable kindness must rank as important factors in raising a model calf, a clean, dry pen, flooded with sunlight and large enough to afford ample exercise, is a positive necessity to insure best results, for neglecting will prove more detrimental to the health and welfare of a young animal, or an old one for that matter, than filthy, damp quarters.

Pasture.

The fall and winter calves should not be put on pasture until the succulence of the grass has somewhat dried out, and never in a pasture unprovided with shade, shelter and pure water. Spring and summer calves are better for being kept indoors during the heated season and should not be turned out until late in the fall, when a couple of weeks on pasture may prove beneficial.

These simple rules, when carefully followed, have given most excellent results and I can unhesitatingly recommend them to those who earnestly desire to improve the quality of their herds.

DISCUSSION.

The Chairman—I notice you do not approve of turning your calves out on pasture. I have found that to be injurious myself. I always keep them on dry feed if they are spring calves.

Mr. Martiny—What do you think of silage for calves?

Mrs. Howie—After they are three or four weeks old, you may safely give them a moderate allowance of silage, and it is good for them.

Mr. Scribner—My experience would differ a little. I think silage is a good deal of the nature of grass, and I should think it would be detrimental until the calf is six months old. I never turned out a calf before that, and I think ensilage would have the same effect as grass.

Mr. Imrie—I think that would depend on the condition of the silage. Do you think well matured silage would have a bad effect on calves?

Mr. Scribner—Yes, I think so.

Mrs. Howie—I was very skeptical on that point myself and would not allow the calves to be fed any silage whatever until after they were a year old. Finally we began feeding a little when they were younger, and at last I commented on the fine appearance of some of the young calves, when my son began to laugh and said, "They seemed to enjoy silage so much that we give them a handful every day," and it keeps them in good condition—however, we do not feed a great amount.

Mr. Scribner—That might do if you do not have nice clover hay. My experience is that good clover hay and skim milk is enough.

Prof. Emery—Do you feed any oil meal, or anything like that?

Mrs. Howie—None whatever. We do not want to get them in the habit of taking on fat, therefore we confine them to skim milk, hay and the whole oats, and then this last year we have

given this ensilage in very small quantities, more as an appetizer than anything else.

Mr. Scott—We feed silage in connection with our clover hay and we have not noted any bad results; in fact, it has been satisfactory.

A Lady—How long do you feed that milk?

Mrs. Howie—We feed it a long time. We have had calves that were fed milk up to fifteen months old and they were almost ashamed to come and get it. We sell cream and have all the skim milk left on the place, so we can afford to be liberal after they are older, but until a calf is pretty well developed one should be cautious about the kind and quantity of food it takes, and when you raise the amount of milk do so gradually and watch the result very carefully, because one may easily overfeed a calf.

A Member—A neighbor of mine has some very fine looking calves about sixteen months old and he tells me he is feeding skim milk that he brings back from the creamery.

Prof. Emery—What is the maximum amount of milk you feed a calf?

Mrs. Howie—After the calf is about two or two and a half months old, we begin raising the quantity gradually, as I have before stated, up to about ten quarts, that is, five quarts in the morning and five at night, and they get that until they are twelve or fifteen months old.

The Chairman—At what age do they commence eating oats?

Mrs. Howie—We have found them at ten days nibbling at the oats. We like to encourage them to chew these oats, because it develops the glands which secrete the saliva and this saliva will aid the digestion. We want to get them in the habit of chewing their cuds and secreting this saliva at an early age in order that they may be 400-pound cows later on. We have

found them at three and four days old munching hay. They don't get much, of course, but it is developing the cud chewing propensity. Sometimes when a calf is not as strong as we would like, it is fed whole milk for two or three weeks, but at three weeks there is hardly a calf on the farm that is not fed on skim milk, and many of them receive no whole milk after they are two weeks old.

Prof. Emery—You spoke of the space being sufficiently large for exercise. Is that in your barn?

Mrs. Howie—Yes. We keep them in the summer in a place where it is shaded, but in the winter let them run in a large pen flooded with sunlight. We turn them from the small pens into the larger runs during the day.

Prof. Henry—One of the great troubles in calf raising, where skim milk is used, is through scouring. Now, will you bring out some of the points that must be watched for, or the method by which they can avoid this scouring of calves?

Mrs. Howie—In the first place, you must have the proper kind of milk and then the proper amount, and you must have it at the right temperature. You cannot give a calf cold milk and expect good results. It will certainly affect its digestive organs. You cannot put milk heated to ninety-eight degrees in a cold pail and expect it to remain the same temperature. When the milk is given to the calf, it must be the right temperature. A thermometer costs but twenty-five cents and anyone will save money and perhaps the calf's life if he will use it for the first three months. Another thing, one must be careful to note that the milk is fed from clean vessels. Germs of disease are in dirty dishes and a calf will begin to scour at once when given milk from an unclean dish. Another cause is opening barn doors when turning out the cows and thus rapidly lowering the tem-

perature of the building, therefore it will be better to have the calf pens in a separate room, even if the temperature is lower, so long as there is no sudden change, because so soon as you lower the temperature of the cow barn by putting the cattle out, the calves may become chilled, and that will cause scours. A draft coming across the calf pen will also have a tendency to bring on this trouble. Every time the constitution of a calf is injured, it will leave an effect that will show later on when that calf is a cow, therefore one should guard against a blemish in the constitution of a calf from the day of its birth to the day of its death. We like to keep our cows until they are fourteen or fifteen years old. Another point I might make, and an important one, is above all keep the calves' pens clean. I have seen places where the people said the barn was in good condition, plenty of bedding in the pens, etc., but if one was to take a pitchfork and stir it up a bit he would find filthy, damp bedding below, and this injurious condition will have a detrimental effect on the health of any young animal.

Mr. Convey—Do you not consider that most of the troubles that arise in connection with feeding skim milk grow out of the fact that the milk when it is brought back from the factory is not in proper condition and not of the proper temperature?

Mrs. Howie—we have had no experience of that kind, because we have a separator at the farm, but I have heard many complaints of this nature during our Institute work, and it is easy to see that sometimes the farmer himself is to blame for bringing the milk home and allowing it to stand for several hours in the can it was brought in, which more than likely is not thoroughly clean and may contain numerous germs that will affect the digestive organs of any calf.

Mrs. Bates—Do you recommend the patent calf feeders?

Mrs. Howie—We have never found it necessary to use them. I believe in having everything as simple as possible on the farm. I have been told that they were good, but if one is careful and has the sympathy and wisdom of a real dairymaid, he will find it profitable to stand and feed a calf and while doing so rub its back and talk to it; then there will be little danger of its eating too rapidly and it will thrive quite as well without a calf feeder.

Prof. Henry—Let the patent calf feeders alone. We have them sent to the Experiment Station two or three times a year, and every inventor is sure he has the only practical calf feeder that was ever put on the market. Those devices nearly always have places in them where the milk sours and putrefies, and you can't get it to clean them properly. The simplest kind of a pail you can get, with the least creases and places for dirt, is the best device you can use. Or, if you use a trough, have it as simple as you can, and be sure that it is scraped and kept clean. Do not put any money into these nonsensical things. Our farmers generally earn quite a little money, but there are so many people trying to get it away from them.

The Chairman—Let it go with the milking machine. I have tried the calf feeder and discarded it. I tried the milking machine and discarded it. If I hadn't I wouldn't have any cows that would give much milk.

A Member—Why is not grass good for calves?

Mrs. Howie—It is not a balanced ration when fed with milk.

Prof. Henry—I believe in keeping a calf in the barn as the easiest way out. I think the trouble is not because the calf is out and eating some grass, but he is out in a place where

the grass is often poor, because it is too long, or too rank, or too dirty, and especially because of the flies. A calf's hide is very thin. A fly will draw a drop of blood and often there are hundreds of flies on the calf at one time, and they get full, and another hundred come along and another hundred, and the calf is bled to death by blood-sucking flies. When you keep a calf in the barn, you are pretty sure to darken the barn and the calf is not bothered. If there was any way of keeping a calf out of doors, where the grass is all right and the flies don't bother him, it would be all right, but with those other conditions prevailing, the simplest way is to keep him in the stable.

The Chairman—Skim milk is largely protein and if we feed anything with it, it ought to be something of a more carbonaceous nature, and grass is not carbonaceous enough. That is the reason why a combination of skim milk and fresh pasture grass is not a good combination for a calf. Out of doors is not a good place for a calf to be. It makes my heart bleed to see a poor calf tormented with flies.

Capt. Arnold—I have always kept

our calves off from grass, but this last year I turned them on grass, well matured grass, where the sugar was in the stalk, and I have come to this conclusion, that we must feed a calf some matured food for roughage, therefore I believe that well matured grass, or ensilage that is fully ripe, in limited quantities, is good for the calf. We are liable to go to the extreme, and so it is safer to keep them off the grass entirely, but if we have that kind of pasture, I don't believe it would hurt them to go on the grass. Of course the flies are bad, but in order to have good constitutions, our calves must have plenty of sunlight and air.

Question—Did I understand you that you do not allow your calves out of the stable at all?

Mrs. Howie—Not out of the stable at all. They have a large run that they are turned into in the daytime after they are five or six months old. That is inside also. If the day is bright, the windows are opened. There is sunlight in this pen, and I think if you were to see them you would readily agree with me as to their thrifty appearance.

Recess to 1:30 P. M.



AFTERNOON SESSION.

The Institute met at 1:30 P. M., same day. Mr. DELBERT UTTER in the chair.

ANIMAL DISEASES.

Dr. A. S. ALEXANDER, Madison, Wis.



Dr. Alexander.

Abortion of a contagious or infectious character offers such a menace to profitable dairy and beef cattle breeding that stockmen generally are studying the matter diligently and seeking far and near for a remedy. Thus far it must be confessed that but little progress has been made towards eradicating the disease or actually curing a cow infected by the disease, but much has been learned relative to the course taken by the malady and one measure at least has been devised whereby affected cattle may in time become immune to the effects of the germ.

Cause.

Difference of opinion exists in this country and Europe regarding the exact identity of the microbe causing infectious abortion, and little is known as to the exact manner in which it produces the abortive act. Evidence leads to the supposition that the European disease is even more virulent than that experienced with us, but, so far as America is concerned, scientists have about decided that the germ is a bacillus akin to bacillus coli, that its habitat is the womb, and that it doubtless invades also the horns of the womb, the Fallopian tubes and the ovaries themselves. This bacillus (germ) may be found in the discharges of a cow that has aborted, upon the lining membrane of her vagina and womb, and, in some instances at least, between the cotyledons of the womb and the membranes containing the unborn calf. In Europe it has been found in the alimentary canal of the calf, but our scientists have not made a similar discovery.

Spread.

The disease gains access to a herd in one of several ways. The commonest manner of introduction is through an affected cow or bull. From these the disease is spread to sound cattle, until from one to another it may affect the entire herd. The cow discharges matter from her vagina in which germs abound. This falls upon

the ground, dries, and may be conveyed to the vagina of a healthy cow. Where cows stand in a stable, the gutter catches the impregnated matter, which is moved back of sound cows as the manure is shoveled out daily. Thereupon cows switch their tails into the gutter, wet them with tainted material, contaminate their vaginas

cars and similar places in transit, at fairs, sales, etc.

Effects Produced by Germ.

Soon after the introduction of the germ, small blisters may be seen upon the lining membrane of the vagina and a discharge of varying appearance follows. As the blisters (vesi-



Young shorthorn herds being judged at Wisconsin State Fair, 1904. First prize herd on right headed by World's Fair first prize winner, "Whitehall Marshall," owned by F. W. Harding, Waukesha, Wis.

and so contract the disease. The germs are living organisms and when introduced into the vagina multiply rapidly and find their way into the inner parts of the generative organs. The bull by serving a cow affected with the disease contaminates his penis and by this means inoculates cows subsequently served. The germ may also be contracted from the clothes of an attendant, tainted hands, or instruments, and is doubtless frequently contracted in shipping chutes.

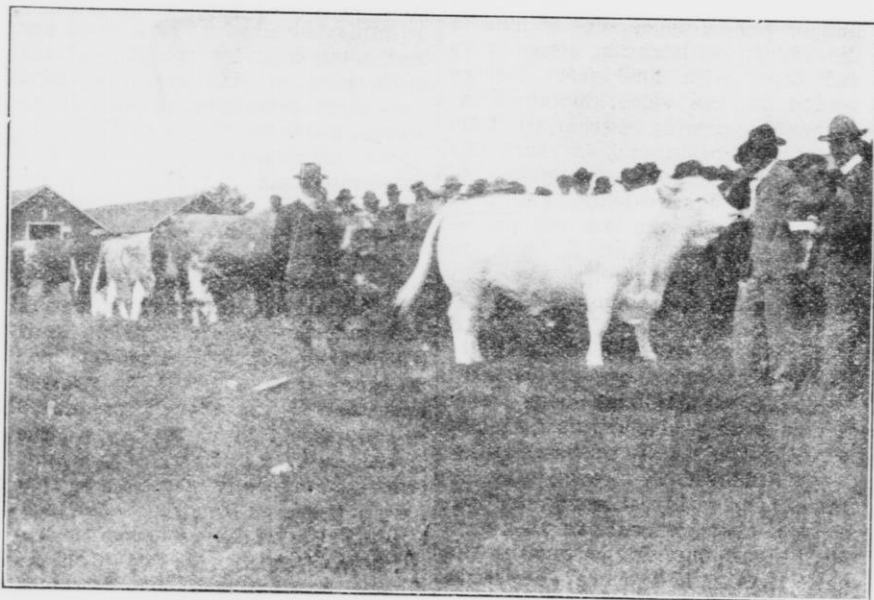
cles) burst, ulcers form and gradually heal, while fresh clusters of vesicles appear or may be found further in. According to the severity of the condition created by the germs and the irritation consequent upon inflammation, abortion then takes place early or late in the period of gestation.

Gradual Immunity of Cow.

Having become infected and having aborted once, the cow continues affected, but aborts later during next

gestation and later the following one, until after several abortions she may carry a calf the full period, but is still infested by the germ of the disease. Experience goes to show that affected cows in time become immune to the irritating effects of the germ and are then able to successfully withstand its presence and consequently become regular breeders.

tible cows with which she is stabled or pastured and bulls with which she is mated. For these reasons the disease continues to make itself evident in a herd so long as fresh material is introduced upon which the germs can act. As a fire dies out when combustible material is exhausted, so infectious abortion ceases to detrimentally affect cows when all have become



Graded shorthorn herds being judged at Wisconsin State Fair, 1904. First prize herd on right headed by "Whitehall Sultan," a winner at World's Fair, owned by F. W. Harding, Waukesha, Wis.

There is an exception to this rule, and that is where the Fallopian tubes become invaded by the disease and are so altered in function—which may include the ovaries—or obliterated or blocked up by the products of inflammation that they cause barrenness. Such causes are seen in most outbreaks of the disease. During the time that a cow is becoming immune, she continues to discharge germ-laden material from her vagina and this discharge contaminates suscep-

germ-impregnated and immune. Each cow, however, will have aborted several times before this stage of immunity is arrived at.

Staying the Effects of the Germ.

While working towards final immunity of each cow in the herd, much may be done to lessen the irritation caused by the germ's presence, and if successful such measures prevent abortion when its premonitory symptoms are detected in time. Where

abortion happens at a very early stage of pregnancy, threatening symptoms are difficult to detect, but later symptoms sometimes precede the abortive act by several days, and in such instances the act may itself be aborted by suitable treatment.

The following symptoms may be taken as indicative of threatening abortion: Sudden relaxing of the vulva and pelvic ligaments; increase in milk flow or sudden appearance of milk in the udder; restlessness; stepping up and down with hind feet; looking around at the sides; increased or changed appearing discharged from vagina; bellowing, and, in short, any of the characteristic symptoms of either "heat" or calving. Following these symptoms, the cow commences to strain and the calf is born. In early gestation the calf is usually aborted without straining.

Treatment of Threatened Abortion.

Instantly isolate cow in secluded box stall and administer one ounce of fluid extract of black haw. If she is restless, add a wineglassful of laudanum. Repeat dose every two or three hours until restlessness and aggravated symptoms subside, then drop out the laudanum and go on with the black haw in half ounce dose three times daily until vulva purses up and all remaining symptoms of threatened abortion disappear.

When cow is again in the condition existing prior to the alarming symptoms, she may be returned to the herd and will then as a rule go through safely to her proper time of parturition. In extremely urgent cases, the above mentioned doses may be doubled, or given once an hour until the desired effect is obtained. Fluid extract of cannabis indica is as effective as laudanum if of first-class quality. It is, however, more expensive and less reliable in quality.

General Preventive Measures.

While we do not consider it possible to kill out the germ present in any cow fully impregnated so that the womb and Fallopian tubes have become invaded, disinfectants may afford some hope of lessening irritation and preventing further contamination or spread of germs to less affected or clean cows. Carbolic acid has been much used with these ends in view: injecting two drachms of a three per cent solution under the skin of the cow's neck or side every ten days throughout pregnancy is alleged to prevent abortion. The administration of pure carbolic acid is feed also has its devotees and we have for years advocated the administration of this preparation in the following way: One-half drachm every other day, night and morning, to pregnant cows from first to last of pregnancy, mixing it with water and then with feed, if they will take it that way, or as a drachm in water from a bottle or sprayed upon their hay or other food, or mixed in salt when they are at grass. One drachm twice daily every day for cows that have recently aborted, or that have a discharge from the vagina, constituting the discharge known as leucorrhoea (whites); in the first instance, the treatment to be continued for at least two weeks and then given every other day until again bred, and in the second instance to be kept up until leucorrhoea disappears.

In addition to this precautionary treatment, the cow that has once aborted and is again in calf may be kept isolated and treated with black haw and laudanum for a couple of weeks at the time when she would be liable to abort during the second pregnancy. This time is about one month later than the period at which she aborted during the previous pregnancy.

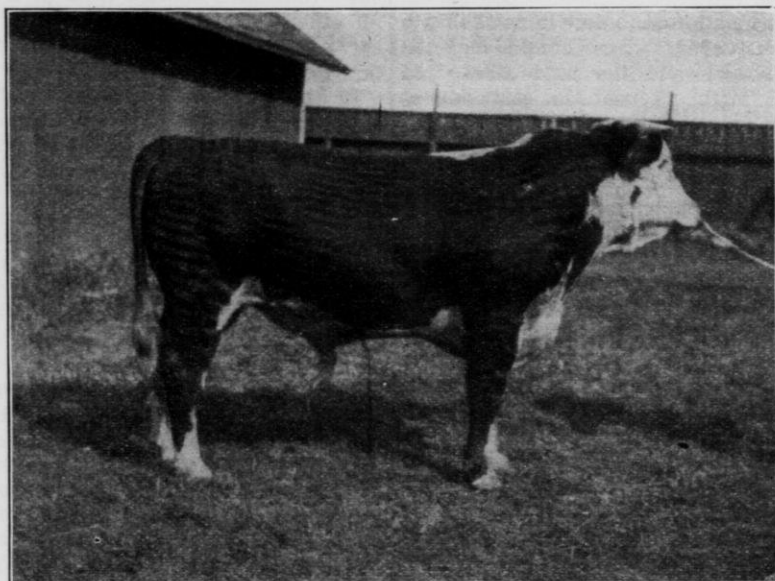
External Preventive Measures.

Scrupulous cleanliness must be maintained in the stable occupied by cows. Every day the vulva, inside of tail and thighs of each cow should be washed, sponged or sprayed with a two per cent solution of zenoleum, or similar tar product disinfectant, or with a 1-1000 solution of chloride of

be frequently whitewashed with a mixture of ordinary lime wash containing a quarter of a pound of chloride of lime to the gallon. A spray pump may be used for this purpose.

Disinfection of Bull.

The bull is to have a large box stall to himself with ample yard attached



"Bonnie Lad," First Prize Yearling and Jr. Champion Hereford Bull, Wisconsin State Fair, 1904, owned by J. C. Robinson & Son, Evansville, Wis.

zinc, or 1-3000 solution of bichloride of mercury. Gutters should be cleansed daily without moving manure along gutter from one cow to another, and the cleansing should be followed by the free use of a strong disinfecting solution such as 1-50 solution of zenoleum, or "four pounds each of powdered bluestone (sulphate of copper) and fresh lime in forty gallons of water."* Walls and woodwork should

for exercise, and is not to run with cows at pasture. Service to neighbors' bulls is to be avoided and herd bull should not be allowed to serve strange cows, or home cows having a discharge from the vagina, or known to have recently aborted. After each service the sheath and penis of bull are to be thoroughly flushed or washed with a disinfecting solution. For this purpose use half a gallon of a 1-1000 solution of chloride of zinc, or a two per cent solution of zenoleum or other tar product disinfectant. It is best

*Bulletin 125, Alabama Experiment Station.

introduced into the sheath by means of a nozzle attached to a six-foot length of half-inch rubber hose fitted to a spout let into the rim at bottom of a large, clean pail, to be hoisted above the animal's back by means of a small rope and pulley. Insert one end of nozzle in end of sheath. Hold skin tightly about end of nozzle to cause retention of fluid, which should then be allowed to flow in until sheath is distended, when nozzle may be withdrawn and the fluid allowed to gush forth. Repeat the cleansing at least twice at each time of operating.

Treatment Following Abortion.

When a cow aborts, burn foetus and heading, remove her to a box stall, and by means of the apparatus already described flush out womb and vagina with two gallons of milk-warm disinfecting solution (1-1000 solution of chloride of zinc preferred), remove afterbirth by hand, if it does not come away promptly, repeat irrigation of womb once daily for two weeks, then every other day for two weeks, then twice a week until time arrives when cow would have been bred had she not aborted and at which time she should again be bred, if perfectly free from discharge.

Additional Management.

Quarantine each newly purchased cow and bull and prove former to be free from taint of abortion before she is allowed to enter herd, and at that time commence and persistently follow instructions as to external disinfection and internal use of carbolic acid. It is best, however, to avoid purchase of new stock as much as possible where treatment has been commenced towards the attainment of immunity.

Treat sheath of new bull with disinfecting solution for at least ten days before he is allowed to serve a cow in

the herd. Follow above instructions in clean herds to avoid introduction of abortion.

Disinfect clothing and boots of new herdsman or other assistant before he is allowed to go among the cattle for the first time.

Keep pregnant cows together; heifers in separate enclosure and stables; cows that have aborted isolated from all other cattle and allow no cow to calve in sight, sound or smelling distance of pregnant cows.

Lastly, protect pregnant cattle against all conditions, circumstances and influences liable to cause abortion in animals known to be especially susceptible to that accident.

DISCUSSION.

Mr. Jacobs—In a herd that has become immune in this way, in what condition are the heifers that come up in the herd?

Dr. Alexander—If the heifers have gone with the infected cows, they, too, will be infected. Where a herd is infected, the heifers should be kept separate, and if possible a separate bull should be used. When the same bull is used, he must be thoroughly disinfected after serving each cow. In some cases abortion seems to die out of its own volition. The more we study it, the more helpless we become in regard to coping with it.

Question—What would you recommend as a common remedy?

Dr. Alexander—There is no common remedy.

Question—Would it not be better to kill the cow and burn her?

Dr. Alexander—Where you have only one infected cow in the herd, it certainly would, rather than communicate the disease to the balance of the herd.

A Member—We want a way to get rid of it.

Dr. Alexander—Beef the infected

animal. Keep her a prisoner in the farm "penitentiary" and feed her off. The milk or meat will not be in any way affected.

Mr. Duggan—Is there any part of the state where it is more prevalent than others?

Dr. Alexander—It seems to be uniformly common everywhere. It is more prevalent in pure bred herds in Missouri, Kansas and parts of the Dakotas, where they do not give as close attention to their cattle as we can here.

The Chairman—How many in attendance have not had trouble with abortion? Raise hands. (About six hands were raised.)

Mr. Scott—How many have had trouble? (Many more hands were raised.)

Mr. Duggan—I have lived here forty-seven years and there is none around here. There is not a farmer in the town of Holland whose cows are troubled with abortion. I pay no attention to my cows at calving time. They are a reasonable distance apart, but there are no partitions between them. I go to bed at night and often find that a cow has calved in her stall and the calf may be sucking another cow.

Dr. Alexander—I think the Lord has been wonderfully good to you. Many men tell me they have not had a live calf in three years.

Mr. Scott—There is lots of it among the best dairy herds in Wisconsin.

Mr. Duggan—There is none of it around here.

Prof. Henry—I would not boast too much. I would keep right still.

Mr. Duggan—All right, Professor Henry, we know what you say is right.

Dr. Alexander—Perhaps when you know me a little better you will take a little advice from me, too. There is scarcely a day that I do not have a letter regarding abortion.

Mr. Scott—We do not want to belittle this. I know a man who has lost

eight calves out of fifteen. A man in Durand lost fifteen out of eighteen. In Calumet county four or five of the best dairymen have had trouble. A man in Winnebago county lost sixty calves.

Dr. Alexander—It is impossible to belittle this disease. It is one of the most serious afflictions the cattle industry has to contend with.

Mr. Duggan—Are not some breeds more susceptible than others? Are not our common cattle less susceptible than the pure bred?

Dr. Alexander. No. The germ is no respecter of breeds.

Mr. Utter—Prevention is better than cure.

Mr. Rice—I am over sixty years old and until this year it has never appeared in our herd, or in this county; now every manure pile in this section is covered with aborted calves about the size of a cat or a rabbit.

Mr. Duggan—Well, if he says so it must be around here, but we have not been troubled yet.

Dr. Alexander—Lots of farmers have not had their barns struck by lightning, but you cannot tell where it is going to strike. And let me say to you privately, my friend, on general principles it would be a good deal better for you and your cows if you would give them closer attention and provide better hygienic conditions.

Capt. Arnold—Does not plenty of sunlight and fresh air help to prevent abortion?

Dr. Alexander—Assuredly. Germs love darkness and dirt.

Mr. Scott—Do not many cows abort on pasture?

Dr. Alexander—Certainly, and the accident is often unnoticed by the owners.

Mr. Duggan—Is not that on account of the green, sloppy grass?

Dr. Alexander—The disease may be induced by so many different causes

that we should take every possible precautionary measure.

Mr. Foster—Do you want us to wash out all our cows every day?

Dr. Alexander—Certainly not, unless the herd is contaminated.

Mr. Convey—Do you think that ergot is responsible for much of the abortion trouble in low lying lands in the southwest?

Dr. Alexander—Well, Uncle Willie Watson, who made a special study of the disease, used to tell me that he had seen cattle on pastures practically black with ergot, yet without abortion. It seems to me that cattle may in time become immune to the effects of ergot, as far as abortion is concerned.

Mr. Convey—I have seen lots of ergot in the west, and I want to corroborate the doctor's statement. The old cows do not abort, but those newly introduced into the herd where ergoty feed is fed do so in a short time.

Capt. Arnold—Does not high feeding and lack of exercise predispose to

a disease like abortion by weakening the system?

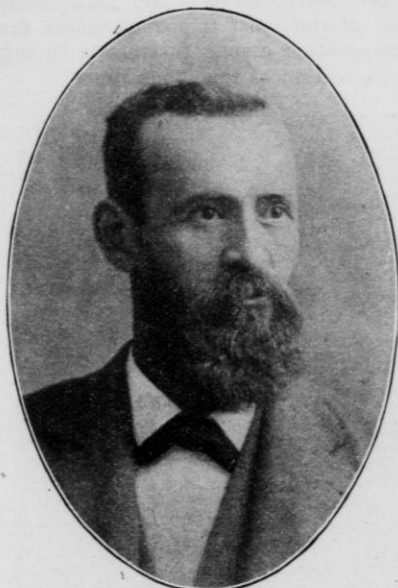
Dr. Alexander—Certainly it does. A cow in either over fat or emaciated condition is more susceptible than one in normal condition. Remember also that abortion does not affect dairy herds alone, but is also fearfully prevalent in beef herds.

Mr. Goodrich—I want to corroborate what the doctor has said in regard to the bull as a cause of infection. While abortion had been prevalent around me for years, I had kept my herd free from it, because, while generally good natured, I was a crank on this subject and would not allow my bull to breed neighbors' cows. Finally, when my son was in charge of the herd, he allowed the bull to serve a cow from a neighbor's herd. Neither of them suspected that the cow had abortion, but she did just the same. The disease was introduced and it took many years to get rid of it.



ORGANIZING A CO-OPERATIVE COMPANY.

D. IMRIE, Roberts, Wis.



Mr. Imrie.

What do we mean by a co-operative company? We mean a company of individuals that operate together for their mutual benefit, so, in organizing a co-operative company, all members should have an active interest in the company. To have this interest, they should all own stock of about an equal amount, therefore limit the number of shares that any one member can hold, so that the business cannot be monopolized by one or two members. I think it advisable, as a rule, to have the stock transferable only by the consent of a majority of the board of directors, or have this clause inserted in the by-laws: "If any member wishes to sell his stock it shall first be offered to

the company at its face value," so that the company can buy the stock and sell it to whoever they wish.

Do not place the management of the company in the hands of several committees, as it always causes confusion and more or less trouble.

The Board of Directors.

In electing a board of directors, see to it that you get the best business men in the company, then stand by them. This board of directors should meet immediately after election and from their number elect a president, vice president, general manager (who shall also be secretary), and a treasurer. The treasurer and general manager shall each give bonds for the faithful discharge of their duties, to be approved by the board of directors. Let the general manager have the management of the business under the supervision of the board of directors.

Duties of the Board.

The board of directors should meet every three months, at least, to look over the business of the company and to give the general manager such advice as they deem necessary as to the management of the affairs of the company. At least once a year, the board of directors should meet to examine the books and accounts of the general manager and treasurer, making a complete summary of the year's business, to be presented to the members of the company at their annual meeting, making a full statement of the moneys received and from what source; the moneys expended and for what purpose, so that all members will know just how the business

stands. Make it just as plain as possible; have no secrets; if you do, they will be suspicious. Make everything free, open and above board and you will get along better.

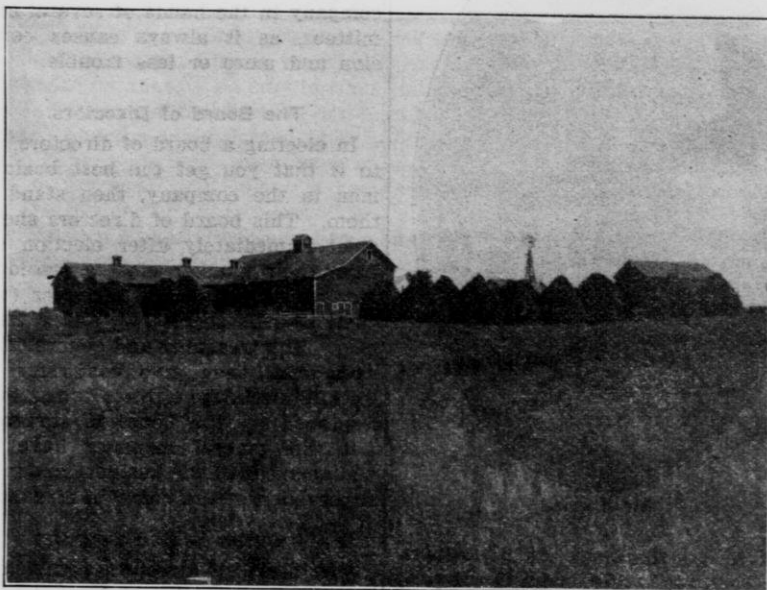
Legal Incorporation Most Satisfactory.

A good many co-operative companies have failed simply because, after getting them started, the officers

DISCUSSION.

Mr. Imrie—There is no class of people so little organized as the farmers. If, by co-operation, we can improve our conditions, this is a very important subject.

Mr. Jacobs—Don't you think that one of the most important fields for co-operation among farmers is in the organization of telephone lines?



Stack yard at "Bonnie View," home of David Imrie, Roberts, Wis.

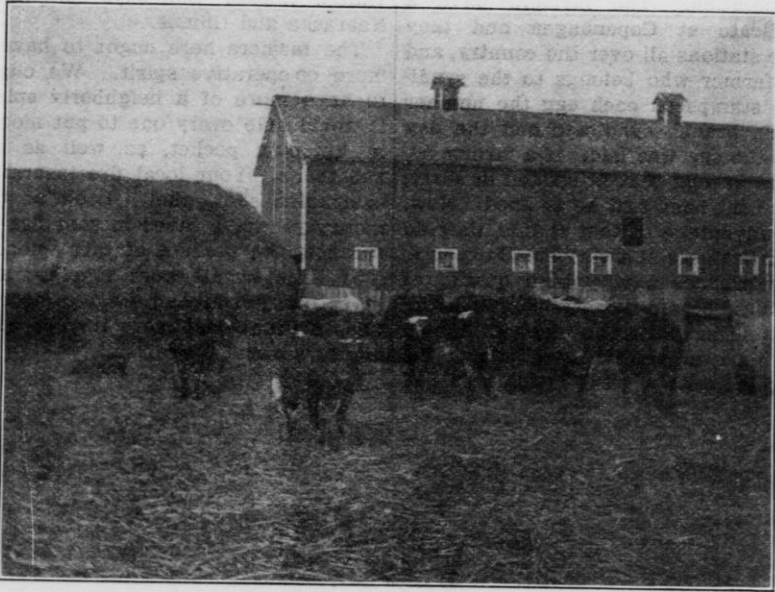
neglected their duties and let the company run itself, so to speak, but, on the other hand, if organized properly (and by all means incorporate under the laws of the state, so that you have a legal company) and conducted in a businesslike manner, there is no reason why a co-operative company cannot be a success, especially among the farmers with their creameries, cheese factories, telephone lines, and, in some cases, stores, in this country "of the people, by the people, and for the people."

Mr. Imrie—Well, I don't know as I would say that. We have co-operative creameries and cheese factories more universally than telephone lines. Some of them are not running as they should, simply because the officers of the company are not attending to their business in a businesslike way. There are men who are trying to get the farmers to co-operate, not for the farmers' benefit but for their own, for instance, as was spoken of the other day, to buy stallions for a community. If you are going to do anything of that

kind, first organize your company, elect its officers, select some one to go to the breeders or the importers and select the horse. Do not let a man come around with a few horses and show them off at the public expense and get twice their value from the farmers. That is being done all over the state. The organization of telephone companies is easily done

ought to. There are too many of them finding fault, and it is so all over the United States. If the farming community would hang together, they could run this United States and all of the business in it, but they won't do it, too many of them are constantly finding fault with their neighbors.

Prof. Henry—I have not studied co-



Steers fed at "Bonnie View." Silage part of ration.

among the farmers, and it is a nice thing.

A Member—As near as I can understand co-operative creameries, in order to go at it to organize in a new country, we have got to take the experience of those who have tried it before, and see what percentage of those have been successful in co-operative creameries. There are so many little things come up, one farmer wants one thing, another wants another, and it is hard for them to join together and stick together as they

operation as a special study, but I have watched it somewhat and know a little of its work in other countries. In France, the co-operation of the farmers is enormous. There are millions of letters written every year and hundreds of millions of dollars of business done every year in France through co-operation among the farmers. I saw a great wheat elevator in Germany owned by the farmers. In Denmark the farmers make all their cheese and butter in co-operative factories, also in the pork packing busi-

ness. Eighteen hundred farmers bring their hogs to one place to be killed, they are turned into bacon and other products, all done by co-operative work. The eggs that the hens lay in Denmark are handled co-operatively. Now, what has Denmark done? In the last twelve or fourteen years she has increased her egg exports enormously, and it is largely done through co-operation. The farmers have a syndicate at Copenhagen and they have stations all over the country, and the farmer who belongs to the syndicate stamps on each egg the number of his branch syndicate and the day that the egg was laid. If a farmer delivers an egg that is spoiled or dirty, it is sent back and he is fined. Now, the advantage of that is that they do their business at a very small expense, they produce a very high quality of product, because every person is interested in getting as much as he can for his own product and helping his neighbor. Now, what is the result of

that little egg business? Denmark exports about ten times as many eggs as the whole United States, and she is a quarter as big as the state of Wisconsin. She sends out more pork from that little country, ships out more bacon and probably more pork products, or about as much, as the state of Wisconsin, and she is doing part of that work on grain shipped from the United States. She buys corn from Nebraska and Illinois.

The farmers here ought to have a more co-operative spirit. We ought to have more of a neighborly spirit, it would help every one to put money in his own pocket, as well as his neighbor's. Your local fire insurance companies show that. Look at the money you have saved in your fire insurance, the product of this splendid idea. Let us all work together and unify our labors and we can accomplish a great deal more than if each one is working for himself.



A FARMERS' CLUB.

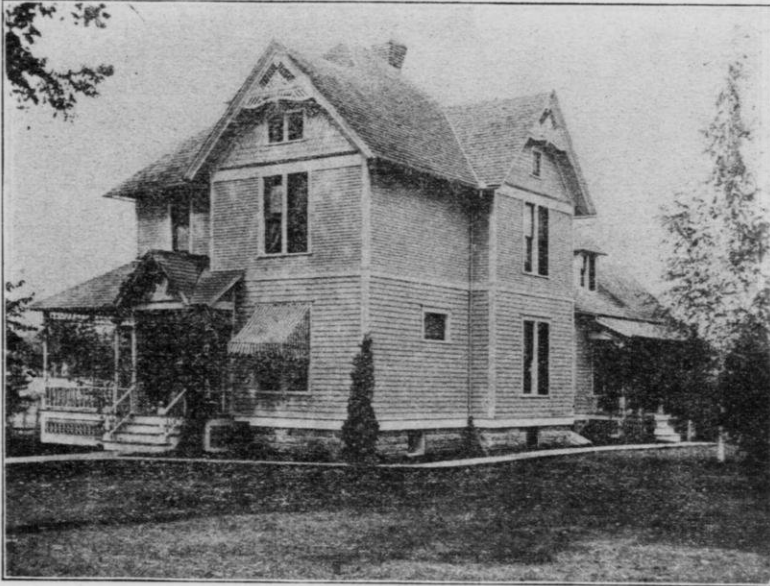
GEO. C. HILL, Rosendale, Wis.

A farmers' club is an association of farmers organized to promote the interests and welfare of the farmer, his family and the community.

The Rosendale Club.

Such a club was organized in the village of Rosendale in 1865. The

on according to the rules of order. This was helpful to all who took part; farmers improved in debate, learned to think while on their feet, and to express themselves more easily and properly. Often the topic for the day was introduced by a paper, the topic and person to lead in the discussion



Farm Home of Geo. C. Hill, Rosendale, Wis.

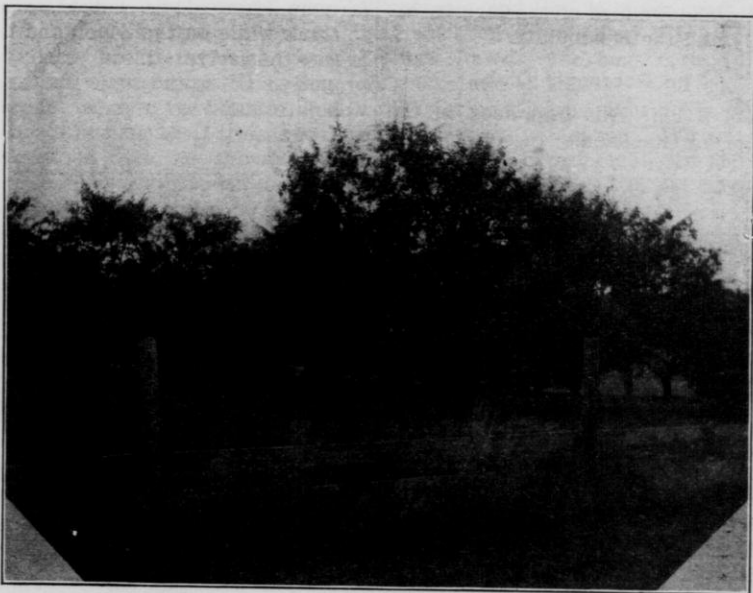
club at first held weekly meetings from November to April and occasional meetings during the summer. The public were invited to attend and take part in the discussions, but only members could take part in matters of business. A constitution, rules of order and order of business were adopted and put in printed form. All business and discussions were carried

being chosen at the previous meeting.

After a few years, the club realized the lack of the social element, because of the absence generally of the farmer's family. Then a change of place was made and the club met at the homes of the members. Occasionally an all day meeting was held with dinner served, picnic or otherwise. Often, too, subjects were chosen in

which the ladies were especially interested and then they would lead and take part. Advantage was taken of the opportunity to look over the premises, stock, barns, tools, etc., and the entertaining farmer generally got his place pretty well slicked up for the occasion.

Farmers' Institutes before the Wisconsin Farm Institutes were heard or thought of. These meetings were addressed by prominent farmers and professional men from different parts of the state. Prof. Henry spent a day with the club at a time when he was pretty near the whole College of Agri-



View in Mr. Hill's Orchard, showing 25-year-old trees loaded with Snow apples.

Some of the Topics Discussed and Work Accomplished.

A wide range of topics are discussed, agricultural, horticultural, improved roads, better schools, farm buildings, farm sanitation and village improvement. The club has had occasion to act as anti-saloon league, it has not discussed party politics, but has advocated best policies; has sent petitions to the legislature and been in correspondence with the members of congress; maintained an agricultural and horticultural library from surplus funds. It sent to Canada for a carload of seed wheat; held county

culture. He saw at that time where the system of producing young beef originated and was practiced by members of the club. Professors Morrow, Daniels and Goff came to help the club hold some of its larger meetings.

In later years, the club has provided locally for successful meetings of the Wisconsin Farm Institutes; it entertained the summer meeting of the Wisconsin Horticultural Society; it took the initiative in organizing the town fire insurance company, which has had an existence of thirty years and carries policies amounting to nearly two millions.

Some Objections Made to the Club.

But not all the farmers joined the club. Some would sit around the stove in the village store (we have no saloon) and say funny things about those fellows over in the school house, the place where the club held its meetings, who must stand on their feet when they talk and talk by rule, too. "They did not need a club to

nive to six bushels in favor of farms or the members of the club. The club early advocated improved live stock, and some of the noted herds of the state are owned by members of the club. Three of its officers are now working for the state, with Institutes or other associations.

A farmers' club could be profitably sustained in many Wisconsin vil-



Barns and straw stacks on the farm of Geo. C. Hill, Rosendale, Wis.

show them how to farm it." Their method was cheaper, too; they did not have any membership fee to pay, and had so much more for tobacco.

Some of the Benefits to the Community.

At that time, wheat was one of the leading crops. The secretary gathered statistics from the farmers of the locality, members of the club and otherwise, showing the yield of wheat on the several farms. It was found that the yield was an average of from

larges and country districts. Its success will depend on having the offices filled with good farmers, who are interested in the work and will conduct its affairs in a businesslike way. Such a club will not run itself, unless it be to run down. It can be made a power for good in a country place, supplying wholesome sociability. This element should be made prominent, and the young people enlisted. In fact, the social, moral and educational welfare of the family is the chief end of the club.

The club is a good medium for the purchase of fruit trees; for the introduction of improved live stock, seeds and machinery. Clubs can be formed for agricultural papers and other literature. The club is a local Farm Institute, practically a better school than the State Institute, in that its sessions are more frequent and meet local conditions. Doubtless it is more difficult to sustain farmers' clubs now than formerly, on account of the increasing number of insurance societies of various names being organized. I cannot speak from experience as to their value, but of a farmers' club I can say, I know it is a good thing.

DISCUSSION.

Mr. Philips—After they quit the Grange in our county, we got together and organized the Horticultural Society, but that had to depend on a few people to keep it up. Then, it was made broader, the La Crosse County Agricultural and Horticultural and Dairymen's Association, and that brought all the farmers in and it has been kept up for over twenty years in that neighborhood. They have four

meetings in the course of the winter, the ladies bring their dinner and they have a good dinner, and wonderfully good meetings. Now I will tell you what you can do in every neighborhood, and that is what we have done in La Crosse county. We have been giving premiums to the children so long that we have really raised there a fair-going generation. These people have kept that club up so long that they have raised a generation of farmers' club people and it is doing a lot of good for those people. You can do it in any neighborhood, but the first thing you want to do is to get the women interested.

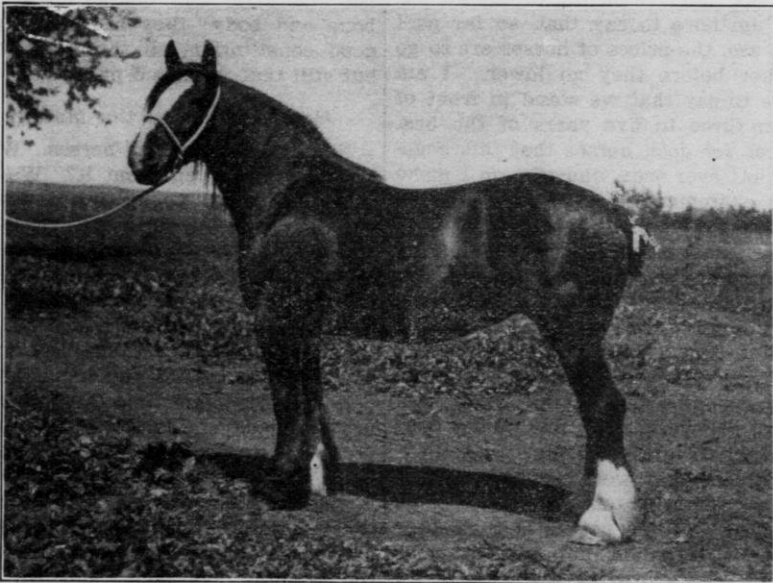
Mr. Jacobs—We are having about the same experience in Dunn county, although the work is very new and is done through the Agricultural School. Institutes have been held all over the county. It has been a great help in this way, that to the men who are elected as officers of that club falls the duty of circulating petitions for Institutes, to entertain Institutes when they come, and it is a great help. They work with other clubs and that kind of organization is centralized through the county.



OUR HORSES.

Supt. GEO. McKERROW, Madison, Wis.

I placed this subject last on the program and assigned it to myself for two reasons, the first of which was, that I could cut it short or make it longer as time might demand. The second reason was that I could not hire a noted horseman to come here expenses, because there was no business doing down at Chicago at that time in that line. I could secure the services of Mr. Galbraith, of Janesville, and Mr. Briggs, of Elkhorn, and Mr. Stericker, from Springfield, Ill., gentlemen whose names and ability



"Princess Goodwin," 9849, first prize and champion Clydesdale mare at World's Fair, 1904. Owned by McLay Bros., Janesville, Wis.

and talk to you at this time because they are all too busy pushing the horse business for themselves. It is only a few years ago that I could get such men as John S. Cooper, of Chicago, the largest commission horse salesman in the world, in the largest horse market in the world, to come up to a Wisconsin Institute with pleasure, for a very small sum, or even his are well known upon both sides of the Atlantic, but today I cannot secure the services of these men because they are doing a rushing business for themselves, so I come to you to talk horse as a third-rate horseman.

Good Horses Scarce on the Market.

I have handled a few good horses, some of them have been prize win-

ners in this country, but only a few, and yet I am here to give you the best there is in me. I am here to say to you, as I have said many times during the last seven or eight years, even when horses were very low, that we are going to see much higher prices for good horses, therefore, the farmers of Wisconsin who have good stock upon their farms should be breeding a few horses to take advantage of the good prices that are coming. But many of my friends would not listen; I meet some of them today and they tell me they are having to buy horses.

I am here to say that, so far as I can see, the prices of horses are to go higher before they go lower. I am here to say that we stand in front of from three to five years of the best prices for good horses that this country has ever seen, and why do I make this statement? As I go over the state of Wisconsin and surrounding states, and travel in our neighboring country of Canada, and as I have been across the water, I find that the work, not only of this state, but of the United States and of other countries, is being done by old horses that are fast dropping out of the traces and there are very, very few young ones in sight to take their places.

When horses were so cheap in this country eight or ten years ago, people stopped breeding horses because they thought it would not pay to raise them. Our cheap horses were heard of over in Europe, the horse buyers crossed the Atlantic and came to the Chicago market and bought a few hundred the first year, a few thousand the second year, and they ran along, buying up to many thousands that have been shipped across the water to those foreign countries, and when our cheap horses reached those markets, prices went down; foreign breeders said, "We cannot compete with these Americans on their cheap horses," and they quit breeding, and the result

is the whole horse breeding world has stopped business for a series of years and there is to be a lack of young horses for just as many years as they ceased breeding. As the old horses drop out, people are coming into the market as competitors for the younger horses. Only two weeks ago last Saturday, I saw unloaded from the car in the city of Milwaukee a pair of draft horses just bought by a leading business firm at a price of \$700, \$350 apiece for draft horses. Of course, they were draft horses, they had finish and style and quality, foot and bone and body; they had nerve and good constitution, all these qualities, but still that is a good price.

How to Remedy the Matter.

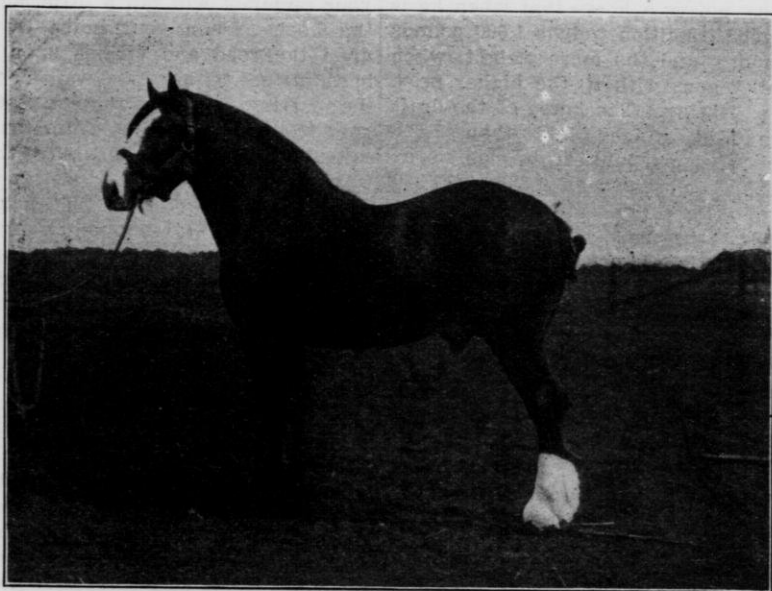
Now, we are short on horses. What are we going to do about it? We are short on good, young brood mares upon our farms, because we sold those we had to those fellows that wanted them and they have gone out of the country, have been used up in the city, have been shipped away to Europe, and we have to depend upon such stock as we have upon our farms.

About that same time there was no use for good stallions. I kept upon my farm two good stallions, able to go out and win the prize anywhere in the northwest, but it didn't pay to keep them, so I sold them to somebody else, and so every stallion owner through the country has done, and we are short of good sires.

Of course, as Mr. Imrie stated in his paper on "Co-operation," there are men organizing companies and sending good horses into the country, but I think as Mr. Imrie does, that where the farmers do not have brains enough to organize themselves into a company in a community and buy the good horse they want, they do not have brains enough to run that horse, or to run a cheese factory, or any other co-operative organization, after

they have it organized. I believe in co-operative organizations, I know of some that are working well, but such an organization must have brains in itself to do the work and not let some man be paid two or three thousand dollars to come in and organize you and sell you a horse and give him another thousand for the horse—probably a good deal more than the horse is worth. I have seen a great many

importers' barn; let them go to two or three, several barns, until they find what they want, so they can see a dozen, twenty, forty or fifty horses together and have a chance to pick and choose, and you can buy them for a great deal less money. You can buy first-class draft stallions in the barns of these importers and breeders at \$1,500 to \$2,500, better horses a good deal than these companies often pay



"Gov. Tillman's Match," 9432, first prize aged Clydesdale stallion at World's Fair, 1904. Owned by McLay Bros., Janesville, Wis.

horses sold to companies in the last three years in the state of Wisconsin and I have not seen a horse that was worth any more than half the money he was sold for. If any have been sold in the state that were worth their price, I have not seen them, judging from my standpoint.

Organize yourselves into a company—that is the best way to own a stallion—all have an interest in him, send one, two, three or four of your best norsemen down to some breeders' or

three or four thousand dollars for. I saw one early in the winter sold for \$4,200 to a company that was not as good a horse as I could have bought at the Chicago International Show for \$1,800 the day he won the blue ribbon. After he won the blue ribbon, he sold for \$2,000.

How to Select a Good Horse.

Now, how are we going to select a good horse? I am going to talk quite largely on the draft horse, because he

is the best horse for the majority of Wisconsin farmers. A large roadster is a good horse for some men, the coacher is a good horse for some men, and the trotter is a good horse for some men, but they are scarce, because you have to have a fortune to keep him up. We will talk about the drafter.

Look for weight and quality. The market, when it talks about a draft horse, means a horse that when he is in good condition weighs 1,600 pounds or more, and the more weight, when quality goes with it, the higher price he will bring. The horse of the draft type that weighs less than 1,600 pounds drops into such classes as chunks, and down to 1,200 or 1,300 pounds they are called chunks. If pretty, trim and active, nery and nicely finished, with style, he will come into the class of expresser, fire department horse, etc., for which there is more and more demand, but they must be choice and full of nerve. Then there is the buser, what they use on buses in foreign countries, and to some extent in this country. There is a demand growing up for these smaller horses of the draft type.

I learned a little adage when I was a boy that has saved me some money in dealing with horses, and that is this: "No feet, no horse." When I judge a horse, when I buy a horse, when I look at a sire to use for breeding purposes, I really look down at his feet first, then I look up at his top lines, and then at the fat on his body.

You may buy a horse that is not quite perfect in body and his top lines and with plenty of care and corn and clover hay and some molasses if necessary (if you are going to let the other fellow have him pretty soon), you can fill up the weak places in his body, but I never have found any way of filling up the places in his heels or his hoofs. So, starting at his feet, I want a high, strong heel; a heel that will

not spring as that horse moves along on the road, I want a full, plump, well-rounded foot, not too narrow at the heel and not too wide, with a good, tough shell upon it, and that shell thick and well fastened to the body of the hoof. I want a properly sloping pastern, that is, a pastern that slopes possibly at an angle of forty-five degrees, or, if you drop a plumb line down the center of the leg, so that your plummet will fall a little behind the heel. When your horse travels upon the road and strikes upon the hard surface, either at a walk or trot, the jarring on a straight pastern goes from joint to joint, from tendon to tendon, clear up the leg, but if there is a springiness in that pastern between the first two joints, that jar goes no further than the first joints. Again, when we are speaking about the pastern on the hind leg, if it is a straight pastern and you put that horse to a hard pull, the tendons naturally harden up and shorten up with the hard work and pretty soon you will have a horse that knuckles over and he cannot pull as much as if he had some slope to that pastern.

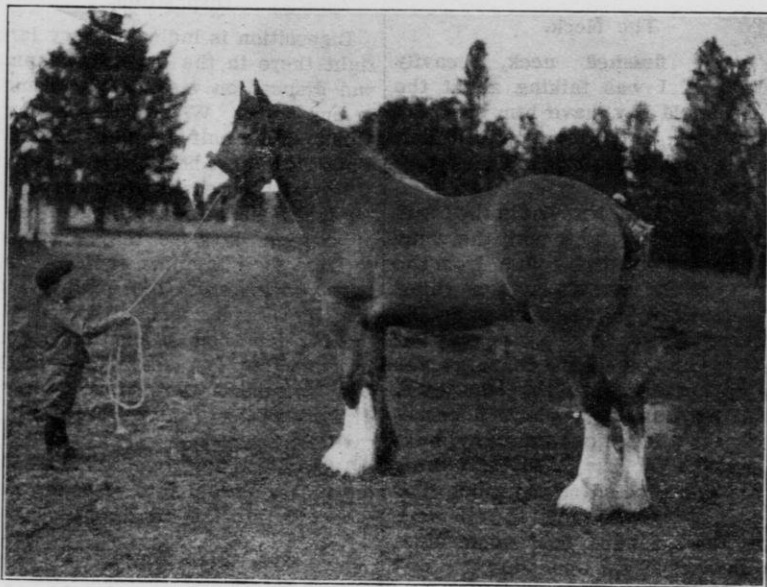
A clean, fat leg, showing the tendons standing out, and, if he is the class of horse that carries hair on his legs, then be sure that the hair covering upon that leg is soft, silky and wavy, not the short, kinky kind, such as a negro grows on his head. The silky, wavy hair indicates a good quality of flinty bone underneath and the short, kinky hair indicates a coarse, porous quality of bone underneath that covering. I do not mean to say that the negro's brain is necessarily that way under his hair, but the horse's leg is that way, because I have cut them myself, I have seen them cut, and I have seen invariably that very coarse and rough hair on the leg shows a coarse, porous bone, and clean, silky hair on the leg shows a flinty form of bone.

A good, broad, flat knee. A wide

hock. I am the most particular about the hock joint of any joint on the horse—fully as particular as about the sloping pastern. Why? The hock joint has to stand the hardest strain of any joint in your horse when you put him at hard work. I want it wide from the point of the hock, from the rear to the front. I want it comparatively thin, flat and clean the other way through, especially free from any

The Back.

I want a short back; but, you may say, how are you going to get a big, solid horse with lots of weight and power and have him short? No, I would have him comparatively long from the point of his shoulder to the point of his hip, but I would have him short in the back, compared with his length on the lower line, and you can get that by having a pretty long hip



"His Royal Highness," 10798, first prize two-year-old Clydesdale stallion at World's Fair, 1904. Owned by McLay Bros., Janesville, Wis.

looseness of joint and from puffiness and meatiness. I want the tendons large, both below the knee and above. I want him well muscled on the gaskins and up over the croup, and I do especially want him well covered with muscle over that loin; to my mind the next place that receives the hardest strain after the hock is the loin. Besides, there are two very vital organs under those loins, the kidneys, that need to be well covered with muscle.

and having a shoulder with some slope. You may say that will do very well for a trotter that has to throw his leg out on an angle with the sloping shoulder, but a draft horse not having to do that ought to have a perpendicular shoulder. We will admit that just for the sake of throwing weight into the collar that a horse should have a perpendicular shoulder, but American and foreign buyers want even a draft horse to have a good

walking gait, a free gait, and the horse that has a perpendicular shoulder never gets his foot out freely and straight, he is apt to have a bad gait, waste action, he throws his toes in or out. If he has some slope to his shoulder and some height to his withers, then he will get his feet up and get them straight ahead without waste action, therefore, I contend for a moderate slope to the draft horse's shoulder.

The Neck.

A well finished neck, heavily crested. If I was talking about the sire, I should say, have him specially well crested, as I have noticed that that is a good thing and indicates prepotency.

I want them as clean cut in the throat as I can have them, with the windpipe showing out pretty plain from the muscle. You cannot have a thick, muscular draft horse as clean in the throat as your trotter or your coacher, but have him as clean there as you can. Watch and see that the windpipe is not hampered where it passes in between the forks of the jaw, have him wide in the jaw. Why? If these tarcats are affected at any time, it is apt to leave them thick in the membrane, thick winded, so I would lay a good deal of stress upon that.

The Head.

Then we want a medium-sized head, with a large and bold eye, standing well upon the outside of the head, leaving a good width between the eyes, which I would have well rounded out. I would have it full also from the eyes up to the ears, giving lots of room for the brain, for we want brains in the horse as well as in the man or woman. I would have a medium-sized pair of ears, pretty well apart, on top of the horse's head. Occasionally we see a horse's ears too far apart, lapping over. Look out for that fellow,

he is apt to be sulky. Again, we see the opposite condition, a pair of ears that are close together, and especially if they work nervously back and forth, look out for that horse, for you will have a horse that is not very safe as a rule, one that if you put a balky driver up behind him will balk; one that will become rattle-brained if something comes along that he isn't used to.

Disposition.

Disposition is indicated very largely right there in the brain development, and disposition means lots of money in our horse. When I was a boy we didn't think half as much about the disposition of a horse as we do today. Millionaires, people who are looking for fancy teams, are willing to pay for disposition, because they don't want to have their families, their children's lives endangered by having rattle-brained horses, and other men are looking for good dispositioned horses because they don't care to have their fine turnouts, their fancy wagons, broken up by a horse that will get rattle-brained.

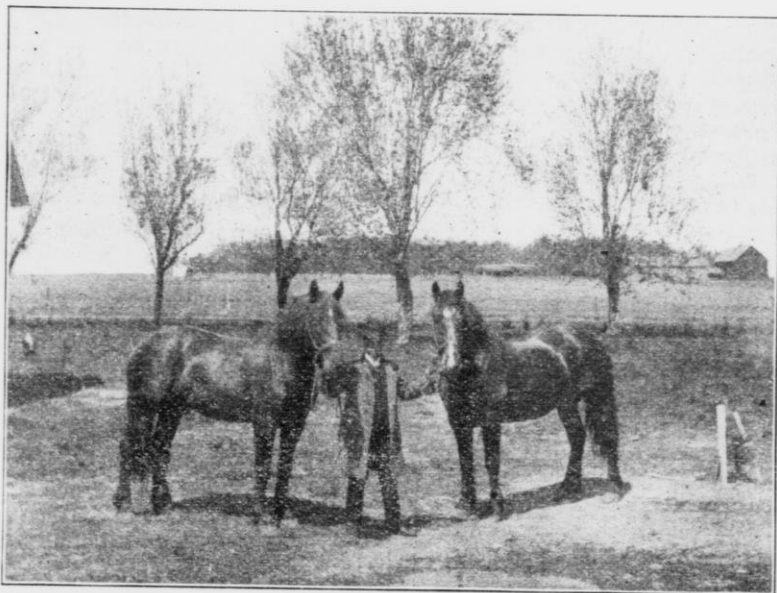
We want a large pair of nostrils to let plenty of air into that big windpipe and into the big lungs.

Side Bones.

Now I have mentioned a few of the important points, but I forgot to say you should look out for the side bones on your draft horse. Foreign buyers have been more particular than Americans on the question of side bones, and it is only a few years since some of our best judges in America have been looking out for side bones at all. It is said that only a few years ago a judge who has considerable reputation as a horseman in this country, was judging at a western state fair. An exhibitor whose horse had been turned down to second place objected that the judge had put the first prize

upon a horse with side bones, and it is said the judge went over to the first prize horse and began to feel along his ribs, and he said, "This horse has no side bones." I saw another judge who was called down in the same way by placing the first prize on a horse that had side bones, and he went to feeling for the splints just below the knee on the inside of

here, and when they are bony and hard you have a horse that to some extent will get sore as he works. You can see it in the gait, and you can find it when you take hold of those cartilages and try to move them. Do not confound this side bone with a ring bone, or a partial ring bone. Ring bone is supposed to go clear around, though not always. I have seen peo-



Grade Percherons at "Bonnie View," Farm Home of D. Imrie, Roberts, Wis.
Weight at 2 yrs. 10 mos., 3350 lbs.

ple confound a side bone with a ring bone.

the leg, and he found none. The side bone is just above the heel of the horse, it is a mere cartilage; it is put into the heel, we believe, to give springiness to the heel, to save inflammation there when the horse works and travels. Now, on low heels, and especially on heavy horses, they put a good deal of weight on the heels, they get feverish there, and inflammation sets in. Those cartilages harden and become bone in the effort of nature to mend up the little strain, or make good the work of inflammation.

Another thing I should have mentioned in relation to this is the hock joint. It is the joint that throws out three-quarters of the troubles on the limbs of our horses. If it is loosely made, the chances are there is a sprain and nature in mending that sprain produces what is called a bone spavin. Sometimes we get a blood spavin, or it may be an enlargement of those sacs that hold the oil to lubricate the joint, and we usually call it a

wind puff, but it comes from a loose joint as a rule, and a sprain upon the loose joint, and gives us thoroughpin and bog spavins.

The Sire.

If we are going to raise horses, we should select our best brood mares and get the best sire we can secure and do not stop for a matter of five or ten dollars in the service. I have bought a few horses in my time. I remember two farmers who raised a good many horses. One secured the service of a cheap sire, so long as he was big enough he did not care whether he was perfectly made or bred, or not. His neighbor was always particular to secure the service of a horse that was well bred and full of quality, and the result was that, notwithstanding they both fed about the same, the man who paid the highest service fee and secured the service of the best sire, sold his colts at least \$25.00 in advance, and I think they averaged up to \$40.00 or \$50.00 above those of the man who used the cheaper horse, and this demonstrated to my mind that every farmer should be very, very careful about the kind of sire that he uses in breeding his colts, as well as in breeding cattle, hogs and sheep.

I was so much impressed with this thought from that time to this, that I have been an advocate of the French system, which is followed in some other foreign countries, that is, of inspecting the horses that are to go out for public service. In France, they have to pay an inspection fee, and all these horses are inspected by competent horsemen; they are given a license to do business and they must be up to a certain standard before they can do business. An unsound horse cannot be used for public service in France. He must be sound, he must be quite good in conformation, and I think if we had such a plan in the state of Wisconsin we would not

have bought more than one-third of the horses that have been sold to companies, because most of them have some kind of a blemish, or some kind of a malformation.

Care of the Young Colts.

When you have bred your best mares to the best sire you can secure, then make up your mind to take proper care of the offspring. It does not pay to go to that expense, to lose the use of the mare and put up the service fee, and then raise a poor, scraggy colt. See that the mares have sufficient exercise, good, nutritious food, though not enough to make them fat, and before the colt is to be born, if it is to be born in a box stall in the winter time or early spring, have the stall disinfected with some good disinfectant.

Have your bedding clean and all the surroundings clean, as there is danger of there being blood poisoning germs attached to the navel string of the colt, even in good surroundings. I would dust it with some iodoform and boracic acid, half and half, that is a good powder to have in your barn to use on cuts and sores at all times.

How to Train a Colt.

As the colt grows up, start his education when he is quite young. When he is only a few hours old, I like to put my arm around his neck and teach him that I can control him, do it quietly and carefully, and he will not struggle very much. You have given him one lesson; it is a step in the right direction, and a horse never forgets a lesson of that kind. I believe that is true if he gets a bad trick, and you want to remember these things in educating him. I like to put a little halter on him when he is a few days old, and teach him I can control him that way. Do not put your strength against his, handle him quietly, pull him forward by degrees, and when he

comes to you, pat him and give him a little sugar. Treat him kindly; he will want a little of his own way; give him a little, but give him a little more of yours, outwit him. Treat him just as you would your wife if you wanted your own way and differed a little bit with her, on the principle that you can catch a good many more flies with molasses than you can with vinegar. Teach him, as he grows older, to get used to straps, educate him little by little, put the bit in his mouth and get him accustomed to that. Next you check him up a little and then a little more. Don't jerk him up hard, but get him used to the bit gradually, and if he is a little obstreperous and don't come up promptly, put your ropes on him and teach him that you can throw him down if you want to, and keep him down as long as you want to. Some day just slip the halter rope through a ring in his tail, so that he will have to walk in a circle, and he will begin to think that his master is a wonderful man, and it will do him good to think so. It won't do him any harm once in awhile to take him out and slip a big handkerchief over his eyes, sometimes that will work wonderfully on a horse that balks with you. You must outwit these horses, teach them in that way and they will get confidence in you.

Never whip a horse, unless your best judgment says that one good, sharp cut with the whip is necessary to teach him some lesson, and then do not do it unless you have him where he can't get away from you or get into trouble.

Teach him to pick up his feet, so he can learn to be shod, and then always notice if they have not grown too much on one side, so as to throw him out of balance, and if they have, trim off the parts that are too long, so as to keep him standing squarely on his feet. Many colts' feet are spoiled by carelessness in letting them break off

the weakest side of the hoof and allowing the other side to grow too long.

Keep him growing all the time, from the time he is born until you are ready to put him on the market. If possible, do not let him lose his colt flesh that he put on with his mother's milk.

The Brood Mares.

Now, if you are going to use these brood mares to do some spring work on your farm, feed them lightly through the winter. Do not start in and feed them grain heavily just before you put them into harness. Increase their grain food a little, gradually, until you get them on a fair feed and work them through their spring's work, and do not say, "I am going to turn them out in the pasture today." Bring them in once a day and feed them a little dry food, and then let them out in the pasture in the warmth of the day and change their food gradually, both when you begin to feed them and when you quit feeding them on this grain. If you make these sudden changes, you are almost sure to have a lot of weak colts.

Keep this colt growing; teach him to eat oats and clover hay and to drink a little skim milk. If you are going to show him at the county fair, the poorer your milk is skimmed the better, so that when you wean him from his mother, he won't know that he is weaned. It is better to wean the mother from him, leave him in the old stable and take her out, so he is at home and knows where the oat box is and where to get water.

The first year of the colt's life is very important, therefore keep him growing the first year, keep him growing the second year, keep him growing the third year, and keep him growing the fourth year, and in that same year, if you are going to put him on the market in the fifth year, feed him up

and get him fat. Fat covers a lot of defects with horses. I don't want him too fat if I keep him to work, but when the other fellow wants him, he wants him fat.

DISCUSSION.

A Member—What do you think of the Belgian horse?

Supt. McKerrow—I have seen some very good Belgian horses and I have seen some not so good. There are poor horses of all breeds.

Mr. Duggan—If you believe in this draft horse business, there are a great many farmers with probably eighty acres. Now, there are a good many fellows going around selling horses and they make the farmers think they are pretty good fellows, and they don't look at the horses, they look at the man.

Supt. McKerrow—You get lots of poor horses, do you?

Mr. Duggan—Yes, we do.

Supt. McKerrow—You spoke about farmers having eighty acres. I am not advising anybody to go into the horse business, but most any man with an eighty-acre farm might keep a brood mare and raise a colt each year.

Mr. Duggan—These other fellows are advising us that we can keep forty or fifty head of cattle and not bother with horses.

Supt. McKerrow—Well, we have to have some horses to do the work. A gentleman over there asks the question as to which breed is the best. I have already said that there are good ones in every breed. I am not here to say that any one particular breed is the best. I used to think when I only had Percherons that that was the best breed or draft horses on earth, and I hated Shires, but since that time the best horse I ever owned, and one of the best in the country, was the Shire stallion Jim Corbett, that I

sold to Burgess & Son. He was the champion horse for two years all over this country. I have come to the conclusion that there are good horses in all breeds, but it is a good plan in one community to breed one breed, then when you come to sell, teams can be sold and matched up better in the community, and let some other community take another breed.

Mr. Duggan—The Shire, I believe, is a pretty good horse. If one farmer in a community would put \$2,000.00 into a horse, wouldn't it be better for the farmers to deal with him, knowing him to be a strictly honest man?

Supt. McKerrow—Yes, if you have a man who is public-spirited enough to put up a couple of thousand dollars and buy a good horse, he certainly deserves the patronage of the community, but if you can't get some fellow to put it up, club together and put it up among you.

Mr. Brill—What was the color of the team you saw sold in Milwaukee for \$700.00?

Supt. McKerrow—They were a pair of dark grays.

Mr. Brill—And their weight?

Supt. McKerrow—About 3,800 pounds I should think they would be, from guess. They were very fleshy. They were horses that on our farms would weigh about 1,650 pounds, but they had a couple of hundred pounds of flesh on them that really would not be necessary on a farm.

Referring to this chart, this horse was a prize winner. I think the artist has made a little more slope from the hip down to the tail than there really was. We prefer, even in these breeds, to have them just about as straight on the hip as we can get them.

Here is another one that shows a little better in that respect. That is a Clydesdale. Clydesdale and Shires, so far as general characteristics are concerned, are very much alike. Here we

have another chart representing a high stepper, one type of coachers, coming near the heavy road horse type in general conformation, only with the heavy road horse we do not expect to get his knees and hocks so high, but the high stepper must bring his knees and hocks high.

Mr. Jacobs—That is of no value for utility. That is simply because it is wanted by a certain class of people.

Supt. McKerrow—It has utility because it brings us dollars. That is all of utility for us, if we raise them to get the dollars.

Mr. Scott—Isn't there utility in the snow?

Mr. Jacobs—I don't think it. I think, so far as service is concerned, we are not getting any better, and that is what I call utility.

Supt. McKerrow—It means service before the millionaire's coach, and the dollars we get out of it.

Mr. Jacobs—Isn't that action got up a good deal by practice?

Supt. McKerrow—By education, yes; but if there is not natural action in the horse, you cannot educate him to step high. Heavy shoeing in front will get him to pick his knees up, but if you shoe him heavy all the time he will get used to it, and then he won't pick them up. Stepping him over soft ground when you are exercising him will do it, and then laying down poles that he has to step over will give him that action, but the kind of action that is natural to the animal is the kind that stays.

A Member—Will that help a horse any that stumbles, driving him over poles?

Supt. McKerrow—Such a horse don't usually have action enough to step over poles.

A Member—How much do you feed your colt, how much can he stand in the winter?

Supt. McKerrow—He can stand all he will eat up clean when he has lots

of exercise. It is the business of the colt to grow bone and muscle as strong and fast as he can. I would give him a good feed of oats, and I like to put some bran and a little oil meal in those oats to keep him healthy, and plenty of clover hay is a fine thing for the colt, both for muscle and bone.

A Member—A neighbor asked me about a horse that stumbled, wanted to know why, and I looked at it and in front of his knees was callous and stuck hard with manure all the way down. I told him that was the cause of the stumbling.

Mr. Foster—At what age would you start filleys to breed?

Supt. McKerrow—I would not under any condition breed a filley before she was three years old. She might be large and well grown, but I would prefer that they would drop the first colt at four years.

Question—Can you feed your colt too much oats?

Supt. McKerrow—Yes and no. If your colt lacks exercise, then you can feed him too much, but if he is getting all the exercise he will take every day, I don't think that you can. One of the best colts I ever saw had a self feeder and had all the oats he wanted, but he also had lots of exercise, and he grew up a wonderfully well proportioned, well muscled and boned colt. I would not say to feed them any more oats, of course, than they can relish, that they will take readily and greedily, but enough to keep them smooth. That colt I speak of, I expected to see its legs go wrong, it was too fat, and if it had not been a remarkably good, active colt, they would have gone wrong.

Mr. Jacobs—Would you feed him this way until he became a fully developed horse?

Supt. McKerrow—No, that colt only had it until he was a year old.

Mr. Jacobs—This kind of feed just applied until he was a year old?

Supt. McKerrow—Yes, he had oats after that. I would keep them all in good growing condition, but the first year is the most important year. That year they are the most easily stunted, and therefore they should be the most carefully fed.

Mr. Jacobs—He will require as much grain the first year as he will ever before he goes to market.

Supt. McKerrow—Yes, that is true.

Mr. Jacobs—What would you do with a stunted colt to start him growing again?

Supt. McKerrow—If I had skim milk I would give it to him, and I would put some oil meal and bran into his feed. I would feed him some roots if I could, I would feed him up and

loosen him and start him again. I would not advise buying stock foods.

A Member—At what age do you wean a colt?

Supt. McKerrow—All the way from three to five months old. A three or four year old colt should not be worked hard, because he is shedding teeth and is apt to get in a feverish condition that requires careful feeding, some roots or oil meal, and such hays as part clover and part alfalfa, to keep him laxative and cool.

A Member—They generally run down about that time. What is the best to keep them up?

Supt. McKerrow—I don't know of anything better than a little oil meal. If they get down pretty bad, flax seed will be good, and a good pasture.

RESOLUTIONS.

The following resolutions were submitted by the committee and adopted by the Institute:

Resolved by the Wisconsin Farmers' Institute in annual session at Kaukauna,

That the thanks of the convention be extended to the people of Kaukauna and vicinity for the cordial reception and entertainment of visitors and members of the Institute workers' force; also for good hotel accommodations; efficient work of the local committee in securing reduced rates, and help extended in carrying through one of the most comprehensive programs ever presented at a Round-up Institute, and especially thank the KAUKAUNA SUN for the enterprise displayed in furnishing daily reports and programs of the sessions.

Whereas, Dairying being the leading industry of Wisconsin, it behooves the dairymen to keep pace with the leading states and countries of the

world in the quality of our butter and cheese. Canada and Denmark are now getting better prices for butter and cheese than we are, due, we believe, to a system of inspection by which they are able to have cleaner and more sanitary creameries and cheese factories and purer milk. Therefore be it

Resolved, That we favor asking the next legislature to pass a law providing for an adequate system of inspection, to the end that the milk supply shall be purer, and the demand for our dairy products greater, benefiting not only farmers, but all residents of the state.

Resolved, That in view of the great good to the agricultural interests of the country already accomplished by the Experiment Stations of the several states, and because of the steady increasing demands made upon them by the farmers for still greater service, we heartily endorse Bill No. 8678

now pending in the House of Representatives and increasing the income of the stations, and most earnestly urge its early passage.

Resolved, That the Superintendent of Farmers' Institutes is hereby directed to forward a copy of the above resolution to the President of the Senate, the Speaker of the House, the Chairman of the Agricultural Committee of both Senate and House, and to each Senator and Representative from Wisconsin.

A year ago we asked the State Commission in charge of the Wisconsin exhibit at the World's Fair to make liberal provision for our live stock exhibit, and it is now

Resolved, That we extend our thanks to said Commission for the generous manner in which they have responded to our request.

Whereas, The northern part of Wisconsin is rapidly filling up with actual settlers and home-makers, and

Whereas, The State Horticultural Society is making an effort to have those people informed on the subject of fruit growing, so they will not be imposed on by buying poor varieties; therefore,

Resolved, That the Superintendent of Farmers' Institutes be instructed to send competent persons to examine the work being done in the trial orchards of northern Wisconsin and report on the same at the next Closing Institute, so it shall appear in the following Bulletin.

Resolved, That the farmers here assembled commend the Wisconsin State Board of Agriculture for their efforts to maintain a high moral tone to our State Fair.

The purposes of such an exhibit are and should be progressive and educational in their nature and anything of questionable morality has no more place upon our Fair Grounds than upon the campus of our University.

Resolved, That we favor a change in our postal laws that will establish a parcel post and postal savings banks. We are paying the express companies large sums for carrying small parcels that should be carried through the mails, and now that we have the rural delivery, it is of more importance than ever that we have a parcel post.

Resolved, That Superintendent McKerrow send copies of this resolution to our Senators and Congressmen.



WOMAN'S DEPARTMENT.

COOKING SCHOOL.

Held at Kaukauna in Connection with the Closing Farmers' Institute, March 15, 16 and 17, 1904.

Conducted by MISS ADELLA SATER, Orfordville, Wis.

Assisted by MRS. J. W. BATES, of Broad Ripple, Ind., and MRS. ADDA F. HOWIE, of Elm Grove, Wis.

Stenographic Report by MISS NELLIE E. GRIFFITHS, Madison, Wis.

FIRST SESSION.

Tuesday Afternoon, March 15, 1904.



Miss Sater.

Miss Sater—It has been said: "One of the most remarkable things in the world is the never-ending quest for food. Mankind has ransacked the whole earth; he has searched the animal, the vegetable, and the mineral kingdoms; he has ascended to the very mountain tops, has gone down into the valleys, has dredged the ocean bottom, in his hunt for food. This quest began ages ago and it still continues with all the keenness and anxiety of the past."

Of course, food at first was eaten raw. That goes without saying if man invented fire. We have been told that tribes that cook their food are better off than eaters of raw meat; they are more enterprising and energetic.

Cookery is the art of preparing food for the nourishment of the body. Many kinds of food which in their natural state hold valuable nutrients in such form that the digestive juices

cannot easily work upon them, are so changed by cooking that they become easily digestible.

The cooking of food has much to do with its nutritive value, therefore the importance of proper cooking can hardly be over-estimated. It is a matter of common experience that a well-cooked food is wholesome and appetizing, while the same material badly cooked is unpalatable.

Food is cooked to create a better flavor, to make it more digestible, and to kill parasites and disease germs. Cooking swells and bursts starch granules, softens cellulose in vegetables, and hardens albumen in eggs and meat. It has been stated that a large percentage of all illness may be traced to improper diet. Either the food principles have not been maintained in proper proportions, or the food has been improperly cooked, hence a knowledge of the composition and digestibility of foods is certainly very essential.

The classification of foods and composition of some of the common food materials will be discussed tomorrow afternoon.

Our program for this afternoon will be as follows:

Potato Soup

Baked Fish Egg Sauce

Corn Meal Gems Boiled Custard

We will begin with getting the fish ready for the oven first, so it will be ready to serve.

Baked Fish.

Recipe.

Clean first, sprinkle with salt (inside), stuff and sew. Shape in form of letter S. Place on greased fish sheet in a dripping pan. Sprinkle with salt and pepper; dredge with flour. Bake in a hot oven, basting often. A four-pound fish requires about one hour.

The first thing will be the dressing of the fish. Fish is cleaned at market as ordered, but usually needs additional cleaning before it is ready for the oven. See that all scales are removed and then wash inside and out with a cloth wrung out in cold water. Do not leave it in water any longer than absolutely necessary. The juices are extracted by keeping it in water, the same as in meat. After seeing that the fish is scaled and cleaned, we shall proceed to bone it, which is not as difficult a task as a great many housekeepers think. Indeed it is very simple. Remove the membrane which we find covering the ribs by scraping with a knife; then put the finger under the first two or three ribs and follow to the end. Continue in this manner until the bones have been freed from flesh on both sides. Then loosen the backbone. If the fish is in good condition, there will be little or no flesh adhering to the bones.

Question—Are you doing both sides at once?

Miss Sater—I slip my finger in and trace the rib right along, one side at a time.

When bones have been removed, sprinkle inside of fish with salt and stuff.

Stuffing.

Recipe.

One cup cracker crumbs; one-fourth cup melted butter; one-fourth teaspoon salt; few drops onion juice; one teaspoon finely chopped parsley.

Onion juice may be obtained by rubbing the onion over a coarse grater. I do not like the extracts; they do not give the flavor that the fresh onion does.

This dressing may seem to you to be very dry, but I think a dry dressing preferable for fish. You see the crumbs are not very fine. In getting crumbs ready for croquettes, I put them through the Enterprise chopper,

but I do not like them too fine for dressing.

Sew and shape in the letter S. I do not like skewers, as they are more difficult to remove. Dredge the fish with flour and salt and cover head and tail with greased paper to prevent scorching. A four-pound fish should bake in one hour. Baste frequently with water, butter and salt.

To Determine Freshness of Fish.

The eyes and gills should be bright and the flesh should be firm.

Fish, with but few exceptions, is less stimulating and less nourishing than meat of other animals, but is usually easier of digestion. It is less stimulating on account of the small amount of extractives and less nourishing owing to a deficiency in proteids. Fish meat is generally considered cheaper than beef. This is true when compared with the more expensive cuts of beef, but not so when compared with the cheaper cuts.

We will now make the custard, so it may be chilled before serving.

Boiled Custard.

Recipe.

Two cups scalded milk; yolks of three eggs; one-fourth cup sugar; speck salt; one-half teaspoon vanilla. Beat eggs slightly; add sugar and salt. Stir constantly while adding gradually hot milk. Cook in double boiler until mixture thickens.

Put milk in a double boiler to scald. The scalding point is reached when bubbles appear around the edge.

Beat the eggs slightly, as a smooth consistency is obtained. Add sugar and salt and when milk is scalded add it to the egg (instead of egg mixture to the milk) to prevent the egg from hardening into lumps. Stir constantly while cooking. You will notice after the eggs and sugar are added to milk a foam appears on the top. When the

custard cooks the foam disappears, which is one indication that the custard is done. Another indication is the coating of the spoon. This should be watched carefully, for if the custard is over-cooked it will curdle. Should this happen, it may be restored to a smooth consistency again by beating with a Dover egg beater, but it will not be as thick as if not curdled. Add vanilla after custard is cooled, because much of the strength of the vanilla will escape with the steam.

Meringue.

Recipe.

Beat the white of eggs stiff. Add one tablespoon powdered sugar for each egg. Put by spoonfuls on water which is hot enough, but not boiling. Remove from water with strainer and place on custard.

We will make the meringue from the whites of the eggs. We used the yolks for the custard. I think more meringues are spoiled by using too much sugar than not enough. Allow one tablespoon of sugar for each egg. Adding a little salt to the egg makes it beat up quicker and lighter.

Question—Do you take a teaspoon or a tablespoon of sugar for each egg?

Miss Sater—I take a perfectly level tablespoonful. All of my measurements are always level, whether a spoonful or a cupful. Just a word about the measuring cup. I know you all use them. They are a one-half pint cup and you can get your measures very exact by using them.

Do not place the meringue on boiling water, as the albumen will become tough and hard. There is one general rule to remember regarding foods containing albumen. All foods rich in albumen, such as meats, eggs, milk, old peas, beans and lentils should be cooked below the boiling point. If cooked so the albumen will be coagulated, but will not be tough and hard.



A Convenient Work Table and Cupboard.

Albumen coagulates at a low temperature. The white of egg is the purest form of albumen.

I think it is a little more dainty to have this meringue white instead of brown, otherwise we could put it in the oven and brown it, as we do for pie.

The age of the egg has a good deal to do with how it beats. A real fresh egg beats up very easily. Insert a knife and if it comes out dry the egg is beaten enough. Another test is to beat the egg until the plate can be tipped without the egg sliding off.

Question—Do you prefer the powdered sugar to granulated?

Miss Sater—The powdered sugar makes a smoother meringue. I have used the granulated sugar, but the powdered sugar is better.

Question—I think what you are making now is what we call "Floating Island," is it not?

Miss Sater—Yes; I have not known it by that name, but I think it is. I believe for floating island the meringue is cooked by placing it on heated milk instead of heated water, but the result is the same.

Question—Why do you use water instead of milk?

Miss Sater—I think it answers the purpose just as well. It is cheaper to use water than milk, especially where city people have to buy their milk.

We will remove the meringue with the egg beater. I generally use a split cake spoon, but I will use the egg beater today to save dishes. A part of a housekeeper's work is to save time, but we want to do our work in a practical way.

Question—How many seconds should the meringue be left on the water?

Miss Sater—That depends on the amount; the size of the egg has a good deal to do with it. You will have to tell by the looks of it, it will look dry. Be careful about using too much sugar in meringues. When meringues

are not satisfactory, the cause is usually too much sugar, or are cooked too long.

Question—Would you use the same amount of granulated sugar as of powdered sugar?

Miss Sater—Yes. the same amount; one level tablespoon to each egg.

Drain the meringue to remove all the water. We will set the custard aside until it cools.

Corn Meal Gems.

Recipe.

One-half cup cornmeal; one cup flour; three teaspoons baking powder; one tablespoon sugar; one tablespoon melted butter; one-half teaspoon salt; three-fourths cup milk; one egg. Mix and sift dry ingredients. Add milk gradually, egg well beaten and melted butter. Bake in hot oven in buttered gem pans twenty-five minutes.

Baking powder is composed of sodium bi-carbonate, cream of tartar, and a drying medium, either flour or corn starch. Cream of tartar is obtained from argols which are found in wine casks. These specimens show the steps in the manufacture or refining of cream of tartar. The first bottle contains argol, the second shows where all impurities have been removed, and the third contains the powder.

When moisture is added to baking powder, or to a mixture containing baking powder, a mixture known as carbon dioxide is given off and a solid known as Rochelle salts is formed. Mixtures should not stand long after adding the liquid, as the gas which is to make the mixture light will escape before it reaches the oven. Always keep baking powder cans closely covered, as the moisture of the air will react with the baking powder, thereby losing strength.

Question—Do you use any particular kind of baking powder?

Miss Sater—Any good baking pow-

der. I generally use Price's. I have used all kinds this winter, some of them I have never heard of before, but Price's is what I generally use, although the Royal is very good.

We will mix and sift the dry ingredients first, then add the milk gradually, the egg well beaten and melted butter.

Always measure flour after sifting. If the recipe calls for a cup of flour, it means sifted flour. In measuring flour, be careful not to jar or shake the cup, because it will settle and you will get more flour than by handling it as lightly as possible. One cupful does not mean a heaping cupful, but one level cupful.

Chemical analysis shows that maize is fully as nutritious as wheat in all except its mineral ingredients. Maize is not only a highly nutritious cereal from the chemist's point of view, but has the further advantage of being very well digested in the human body. It is also an economical food. We have white cornmeal and the yellow cornmeal, but there is no difference so far as the nutritive value is concerned.

We will add three-fourths of a cup of milk quite gradually, the egg well beaten and melted butter last, because when butter gets into cold mixtures it hardens.

Grease gem pans with clarified butter. Clarify butter first, because the salt in the butter may make the mixture stick to the pans. Clarify by melting butter so the salt will settle to the bottom of the dish. If iron gem pans are used, they should be heated first. These gems require a hot oven.

Question—Do you ever use sour milk in making cornmeal gems?

Miss Sater—Not for this recipe.

Question—Do you ever use it for graham gems?

Miss Sater—Yes; I have used it.

Egg Sauce to Serve with Fish.

Recipe.

Two tablespoons butter; two tablespoons flour; one-half teaspoon salt; one cup milk; two hard boiled eggs.

Melt butter and when hot add flour, and cook until it bubbles. Then remove to double boiler, add the rest of the ingredients, and stir until thick. The hot fat reaches a higher temperature than water, consequently the flour is cooked quicker. The eggs should be dropped in boiling water and then set back where the water will not boil, but be kept just below the boiling point for twenty minutes. That rule given awhile ago applies to eggs cooked in this manner as well as in making the meringue. Boiling water hardens the albumen and renders it less digestible.

Question—How long does it take to prepare a medium cooked egg when cooked in water below the boiling point?

Miss Sater—That depends on various conditions; on the number and size of eggs, on the temperature of eggs (whether taken from ice box or from warm room), and on the kind of vessel used. Experience will determine this for most housekeepers.

Question—In making this sauce, do you have the milk heated?

Miss Sater—It may be, but it is not important.

Question—You add it cold?

Miss Sater—Yes; I add it cold.

Of course we have different kinds of sauces and different degrees of thickness. For a thin sauce we use one spoonful of butter and one of flour; for medium thickness, two tablespoons of each to one cup of liquid, and for a very thick sauce, for croquettes, etc., we use one-third of a cup of flour and three tablespoons of butter. This sauce should be stirred constantly until thick.

Question—Why do you not make the

white sauce against the flame instead of in the double boiler?

Miss Sater—Because milk is very easily scorched.

Question—Is there any danger of the odor of the fish getting into the gems, baking them together?

Miss Sater—I think not.

Potato Soup.

Recipe.

Cook three potatoes in boiling salted water; when soft, run through ricer. Scald one quart of milk with two slices of onion and a few pieces of celery and add to the potato. Melt two tablespoons butter, add two tablespoons flour mixed with two teaspoons salt and a little pepper, and stir into the boiling soup. Cook one minute, strain and sprinkle with one teaspoon chopped parsley.

Just a word about the boiling of the potatoes for the soup. We know the potato contains a great deal of starch, so should be put in boiling water. If we examine a slice cut across the potato we will find it consists of three layers. The first layer is very thin, containing an acrid or poisonous juice, which is destroyed by boiling, or escapes with the steam in a baked potato. The second layer is also a thin layer containing the mineral ingredients of the potato, so by paring the potato too thick much of this is lost. The third layer contains the starch.

Scientists tell us that "The starch grain of the potato is of specially large size, and seems to be more easily attacked by the ferments than most forms of starch, probably because it does not contain much starch cellulose. Potatoes are, however, by no means suited to constitute the sole, or even the staple, diet of man. They are much too bulky, and contain too little proteid in proportion to their starch."

We have two classes of soup—those containing stock and those without.

Stock soups do not contain as much nourishment as was thought some time ago, because very little of the albumen is found in stock. Only the organic salts and extractives and a little of the soluble albumen (which we usually remove by straining) are found in stock. Stock soups are stimulating and appetizing. Cream soups contain more nourishment.

In combining this soup, we will melt the butter and add the flour and then add to the soup. We combine butter and flour in this manner for two reasons. As I said before, the flour is more thoroughly cooked by adding it to the hot fat. Secondly, if we dilute the flour with milk and add to the soup and then add the butter, the melted butter would float on the surface of the soup, which would be objectionable to most people, but if the flour and butter are combined in this manner this may be avoided.

For seasoning, we use a few slices of onion and a little celery. The amount of celery and onion used may be increased or diminished according to the tastes of the family.

Cut onion and celery in small pieces, because it will not be boiled. In using celery, it is better to use the outer stalks for flavor, because it will be strained out. You may use the celery salt, about one-half teaspoonful, but it is not quite as satisfactory as the celery. You can also use dry celery leaves, which a good many housekeepers keep on hand for flavoring.

Question—Do you mash the potatoes?

Miss Sater—I put them through the potato ricer.

Always use the white pepper for white sauces and cream soups. Black pepper is the whole pepper corn ground, while in the white pepper the outer husk has been removed before grinding. It has a milder flavor.

Croutons are very nice served with cream soups.

SECOND SESSION.

Wednesday Afternoon, March 16, 1904.

THE RELATIVE COST OF FOODS.

Miss ADELLA SATER, Orfordville, Wis.

It is a common observation that no more wonderful change has been wrought by the civilization of the last century than the substitution of machine power for man power in the work of the world. Within the memory of people now living the change has come with all its stages, from the flail to the smoothly running steam thresher; from the carrying of grain up the long flights of stairs of the elevator building to its elevation by steam or gasoline engine.

This emancipation of man from so much drudgery of life has given greater opportunities than ever before for study and research. In no field has this study been carried on with greater care and patience and in no field have more interesting and useful results been obtained than in the study of human physiology and foods.

Importance of Proper Food.

The human body is a machine and a very complex one. The energy of our bodies depends as much on the food supply as the engine depends upon coal. We can no more expect to get the best results from the human machine if supplied with insufficient or improper food than we can expect the engine to raise steam on poor coal. In several important particulars, however, the body is very different from the engine; one of these is that the body is self-building and self-repairing. The two purposes of

the food then are to build up and repair the various tissues of the body and to supply heat and energy for the running of this bodily machine. The chemists, by analyzing the food, find of what elements each is composed and whether it can be used to build up the body and by more intricate experiments whether it is useful for the production of energy.

We shall consider, briefly, the different food substances and for what each is fitted.

Classification of Foods.

Foods are divided into five classes: water, salts, proteids, carbohydrates and fats.

Water comprises nearly two-thirds of the weight of the body; from this alone its importance as a food is obvious. Further, nearly all the food products must be in a liquid form in order to be taken up by the blood and nearly all waste products excreted from the blood are in the liquid state; it is water that acts as the solvent in both cases. Few of us drink any where nearly as much water as we should; one reason for this is the time-honored belief that the drinking at meal time is injurious to digestion, because of its action in diminishing the secretion of gastric juice. Raymond says: "This idea is entirely erroneous, as water, even when cold, stimulates the gastric glands and more of their secretion is formed."

Since water is one of the most important ingredients of the body, it is essential that it is as nearly pure as may be; the impurities of water are of two kinds, inorganic, or mineral, and organic. The mineral matter in water is what gives it hardness, and while a small amount of it is not undesirable, excessively hard water often produces disorders of the stomach and intestines. But more to be guarded against are the organic impurities, among which are the bacilli or germs of many diseases, such as typhoid fever.

While as a general thing the dangers of contaminated water are not so great on the farm as in the large cities, the conditions on many farms are far from good. Often shallow wells near barnyards receive seepage from them, or poor pump platforms give opportunity for toads and other small animals to fall into the wells. If there is the slightest reason for suspecting the water supply, the only safe way is to boil the water. One way in which many people are very careless in this matter is in the use of ice; people who would not think of drinking water from a pond do not hesitate to put the ice from it into the water which they drink. Freezing does not kill all the bacteria in water; it has been found by experiment that the bacillus of typhoid fever retained its vitality after being frozen 120 days.

The Minerals.

Another group of food stuffs are the inorganic salts or minerals. Of these there is not much need of speaking, as the body is abundantly supplied with them from an ordinary diet.

Protein.

This class contains some of the most valuable of the food stuffs. The importance of the class is readily understood when it is known that the

principal ingredients of the blood and the muscles are supplied by this class of foods. This is the only class whose members contain nitrogen, so it is therefore spoken of as the "nitrogenous" class. The most important sources of proteid are the albumen or white of egg, the casein or curd of milk, and the gluten of wheat. Proteids are also found in some vegetable foods, as the leguminous plants, such as peas and beans.

The main work of the protein class is to build up the tissues. They are sometimes called "muscle formers," because the lean flesh—the muscle—is made from them. They may also be used to produce heat and energy, but this is of secondary importance. It is of especial importance that growing children should be supplied in sufficient quantities with nitrogenous foods, for in the growing body the tissues are being built up with more than usual rapidity.

Carbohydrates.

Carbohydrates include such compounds as starches, the different kinds of sugar and cellulose. They are especially abundant in vegetable foods and milk. Milk contains considerable amounts of lactose or milk sugar, which is a carbohydrate. Starches and sugars which are very abundant in food materials, are important food ingredients, because they form an abundant source of energy. Nowhere in the animal body is cellulose found, but it exists in many of the vegetables upon which man relies for his nutrition. It doubtless has very little nutritive value.

Fats.

Fats are found in milk, in butter, in cheese, in the fatty tissues of meat, and also in some vegetables, such as the cotton seed and olives, and in various kinds of nuts.

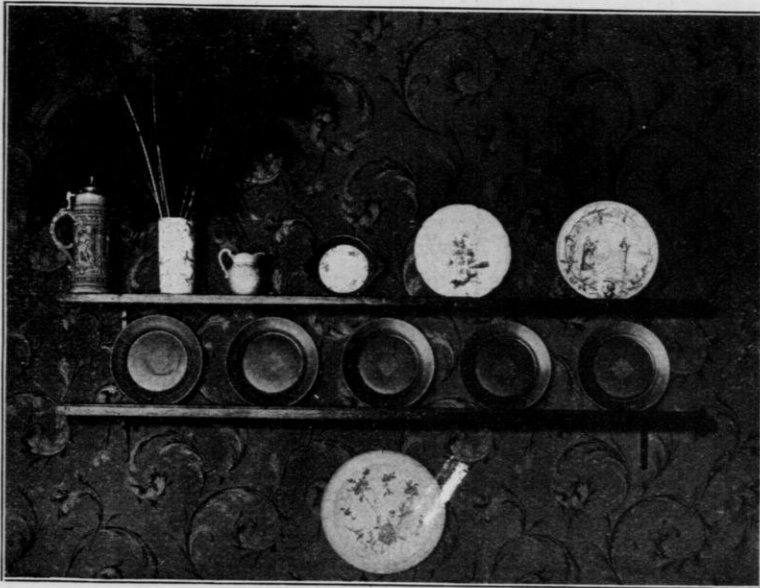
Fats and carbohydrates are the chief fuel ingredients of food. Sugar and the starch of bread and potatoes are burned in the body to yield heat and power. The fats serve this purpose, only they are more concentrated fuel than carbohydrates.

Cost vs. Nourishment.

If we wish to know which of several foods furnishes the most actual

he lives. A glance at the chemical composition of milk, which is the sole food of the infant, shows that the amount of proteids and fats is very much above that in the food of the adult. In early life, not only must the waste of the tissues be met, but there must be growth by increase of tissue.

We might live entirely on proteids, or very nearly so, but it would involve a heavy strain on the digestive sys-



A Home-made Plate Rack.

nourishment for the least cost, we must not only consider the cost and the amount of nutrient in each, but also the digestibility and the amount of the nutritive constituents that the body is able to use.

We learn that a proper diet must contain not only the various food-stuffs but must contain them in proportion. These proportions will vary considerably according to the age of the individual and his occupation, and also according to the climate in which

tem and would require the body to use the more expensive proteids to produce heat in place of carbohydrates, which are cheaper and are suited especially for the production of heat. Again, a person might live entirely on potatoes, but in order to get a proper amount of proteid from them he would consume a disproportionate amount of starch. There is a good reason for the popularity of such combinations as bread and cheese, meat and potatoes, corn bread and bacon—

the meat and cheese supply the tissue-making foods, while the bread, butter and potatoes supply the energy.

We admit that it would be difficult for a housekeeper to weigh each ingredient of the food she prepares, but any one is able and ought to be able to give a little thought to getting something like a fairly balanced diet. Farmers are giving thought to this matter for their stock—might it not be well also to give some thought to a balanced diet for our families?

In the study of foods, careful comparisons have been made of the amount of nutrient furnished by different articles of food in proportion to the cost. When we buy food, however, we give little thought to nutritive value, but think almost entirely of flavor or novelty. It is the demands of the palate and not the stomach that we pay for to a great extent. It has been conclusively shown that a pound of round steak, if properly cooked, contains exactly as much nourishment as a pound of tenderloin, which costs a great deal more. You will be surprised to hear that cornmeal contains nearly as much nutriment as wheat flour, and if we take the amount that one dollar will buy, we shall buy more of food value in cornmeal than in wheat flour. Still we use very little cornmeal.

Langworthy says: "Compared with other foods, eggs at 12 cents a dozen were found to be a cheap source of food value; at 16 cents a dozen they were fairly expensive, and at 25 cents a dozen they were very expensive." But the value of eggs as a food cannot fairly be measured by the amount of nutrient furnished alone. Many families of moderate means buy fresh meat for but one meal a day, usually dinner, using for breakfast, bacon, codfish or left-over meats, and for supper, bread and butter and cold meats remaining from other meals. It is the thrifty housekeeper who makes

such use of all her materials who is likely to make the mistake of leaving eggs almost entirely out of her food supply, when they become expensive. If this economy were directed mainly to limiting the use of eggs in desserts or cakes, the economy might not be regrettable, but the saving is usually made by the more obvious method of omitting eggs altogether as a substitute for meat. The statement that eggs at twenty-five cents a dozen are cheaper than meat is true in a sense, though not in the actual amount of nutrient obtained, as a smaller amount of money is needed for the meal.

Too often we have the idea that whatever is expensive is best. The old maxim that the most expensive is cheapest may be true in other things, but is not true in case of foods. The best food is that which will furnish the most nutriment for the least money.

Of course it is impossible for people to analyze the food that they buy, but if a person is intent on going about the purchase of food intelligently, there is abundant material for information. All of the researches of the United States Department of Agriculture are available in the form of bulletins, which any one can get on application.

A. N. Atwater says: "It is commonly remarked by those who study the conditions of living of people of limited means in different parts of the country that for substantial improvement of their household economics two things are needed. They must be informed as to the high nutritive value of the cheaper foods as compared with the costlier kinds, and the methods of cooking must be improved. A great deal of fuel is wasted in the preparation of food, and even then a great deal of the food is badly cooked. To replace dear food badly cooked by cheaper food well cooked is important for both health and purse. To make

the table more attractive will be an efficient means for making the home life more enjoyable."

Refinement in matters of diet is quite as commendable as along other lines; and when possible an attractive article of food should be given the preference over the one which merely satisfies hunger.

DISCUSSION.

Question—Would you have as much meat in summer as in winter? Does the difference in temperature make any difference in regard to diet?

Miss Sater—Yes, it certainly does. Age, occupation, climate, etc., have a great deal to do with it. We do not need so much heat, especially the fat foods, in the summer as in the winter.

Question—Do you think raising water to the boiling point destroys the typhoid bacteria?

Miss Sater—It is usually considered so if boiled long enough, but from the bacteriologist's standpoint, it is better to boil water ten minutes three different times. Most germs are killed during the first boiling, but those that are in spore form will develop after the first boiling, so it is better to boil the water three times to be entirely safe.

Question—Do you recommend hard or soft water for cooking purposes?

Miss Sater—Usually soft water, if you can get it in good condition. You know frequently we add soda to hard water to soften it.

Question—What would you do if you had to drink real hard water?

Miss Sater—It depends on the degree of hardness.

A Lady—There is a great deal of lime in our city water here and it is very difficult to boil beans and peas in the water. Some people seem to think it is injurious. I think lime is the principal ingredient.

Miss Sater—We have two kinds of hardness, the temporary and permanent. Temporary hardness is removed by boiling, but the permanent is not.

Question—Supposing your tea kettle was to become heavily coated with lime? What would you do to prevent that?

Miss Sater—I think I should be very careful about washing my tea kettle and not let the crust form too often. To keep our tea kettle in good condition is the only way to avoid it.

Question—What do you consider the best method of preparing eggs so as to get the greatest amount of nourishment out of them?

Miss Sater—Put them in boiling water and set them back on the range where they will not boil but be kept just below the boiling point.

Question—Do you consider hard boiled eggs indigestible?

Miss Sater—I think it is said when the digestion is finished there is no difference between hard boiled eggs and those cooked in any other way; the greatest difference is in the length of time of the digestion more than the amount. I think they are just as well digested in the end as any other kind, only it is a question of time, it takes a longer time.

Mrs. Church—You just touched on the subject of drinking water while eating. That is a subject that has been discussed a great deal. Do you not think they mean, when they say not to drink with our meals, that they mean not to wash the food down with water? I feel just as well to drink water with my meals, but I do not wash the food down with it, I think that is when it is injurious.

Miss Sater—I think it is as you say; I do not think the drinking of water with our meals is injurious, but washing the food down with water. I think most scientists tell us that we should drink from three to five pints of water per day.

Mrs. Howie—Would not that afford quite a good deal of nourishment? You know in cases of fever, cases where people are dieted, they are not re-

stricted as to water and come out without loss of flesh; they can keep up by drinking water.

PRACTICAL TRAINING FOR WOMEN.

Mrs. J. W. BATES, Broad Ripple, Ind.

A few years past it was thought all the chemistry a girl needed was to keep the dinner pot boiling, sufficient geometry to go from one room to another, and that science in its various forms was wholly unsuited to woman, but woman has so thoroughly demonstrated her ability to cope with the practical issues of the day, that an education, or training, is almost absolutely necessary to her individuality. As a rule, a training that is suitable to one sex is helpful for the other, and the education and culture that is derived from a practical training for men, will prove equally wholesome for the woman, and in all departments of home work, a practical education will add to woman's usefulness and efficiency; it will enable her to suggest improved methods of management, and give her strength in every way.

When Napoleon said that the great need of France was mothers, he meant the French people needed educated homes, presided over by women who had been practically trained, and the woman in New York who knew her baby by the nurse who was caring for it could well be an example of the mothers of which Napoleon spoke.

Practical training increases the usefulness of labor, and so contracts the habit of indolence that idleness becomes intolerable, and when driven by circumstances from their own special line, they readily find refuge in other pursuits. Practical training gives method, punctuality and precision to all lines of work, which is not only

useful in business affairs, but brings peace and domestic prosperity to the home.

The Siamese tailor was in need of a practical training when he made twelve pairs of trousers with a small, round patch in the left leg of each pair, precisely the same shape and in the same position, because the pattern pair had a patch in like manner. The same with a girl who was to patch a triangular rent and because the pattern was round, she cut the triangular rent round.

The Divine Ambition of Woman.

It is the ambition of every normal girl to be the mistress of her home and the mother of a family. The slum children of London play a game called "Fathers and Mothers," in which they depict in their childish and vivid manner the horrors of their surroundings, whereas, if an education of usefulness could be brought about, the scenes of the play would be changed entirely.

The greatest wrong a mother can commit is not to train her daughter to some useful avocation. Education is a running start, and the one with a practical one quickly distances the one without it. Like the boy during an icy winter, the uneducated person takes one step forward and slips back two. Practical training is the mother of invention; preparation is the key to success. It is the well trained athlete who wins in the race, but the practically trained woman

who balances the home. Almost any woman can cut out a garment when material and patterns are at hand, but it is the trained seamstress that puts it together in a well tailored model.

Practical Training Develops Power of Adaptation.

In practical training the "why" is made known, and the power to reason is developed, rather than the power to memorize. Practical training teaches the eye to see, the ear to hear, the tongue to taste, the hand to model, and the soul to penetrate the Divine in all things. The late famous Professor Dawson, of the Ohio Medical College, said the laws of surgery have not set rules that can be applied to every case, but the surgeon's training must be of such quality that he can improvise and use his brain to bring about first-class results under various conditions. The surgeon called to some remote hamlet to perform some difficult operation knows he will not have all the modern appliances for his patient that the hospital would give, yet his training is such that he knows that certain drugs will act as disinfectants, a certain diet can be used with impunity, and that certain conditions will yield certain results, whereas, if his patient had been in the hospital, he would have changed his method of treatment. His training is such, that he can apply his science in any manner where found needed.

Practical training does not mean we must constantly work the tread-

mills of manual labor and not indulge in the fine arts; to the contrary, it teaches us to enjoy the fine arts the more. Recently I visited a home where the young matron served me to a delicious dinner, prepared by her own hands, and then entertained me with delightful interpretations of Beethoven.

Some Avenues of Work Open to Women.

A number of practical avenues of work have been opened for women that are peculiarly adapted to them, other than the shop and factory, which the greater influx of women have sought, work that is conducive to good health and good morals, better associations, and a broader field for usefulness. While a girl may become an expert and make twelve shirts in one day, or one garment in eight minutes, far better had she been studying horticulture, dairy work, poultry raising, bee driving, or the cultivation of roses or violets, for in these lines of work she is putting herself above the dollar value.

The Law of Compensation.

We get in this world what we put into it; an eye for an eye, or a tooth for a tooth, and the world judges us according to the mark of usefulness we wear. The world is not asking you, who were your ancestors, what did they do to enlighten humanity, but it is pounding at you, what can you do?

SOME DOMESTIC PROBLEMS.

Mrs. ADDA F. HOWIE, Elm Grove, Wis.

It gives me much pleasure to meet with the ladies of Kaukauna this afternoon and to find in this audience representatives of both farm and city, with the one laudable object foremost in mind, and that the betterment of our home life. When first informed that I was placed on the woman's program for a talk, I felt greatly flattered and when I still further learned that my talk would be designated as an "address," in order to permit me to say whatever I liked, my pleasure knew no bounds, because in this Institute work I am usually kept in the cow barn or poultry house, and, when allowed an opportunity to air my views on any other topic, I felt quite confident that at last the time had arrived for me to distinguish myself, until now, when I stand before you a rueful example of the old adage, "The best made plans o' mice and men aft gang a-glee," for when I search my brain for the beautiful thoughts and helpful suggestions I would gladly give to the women of Wisconsin, I find it quite another proposition, for the coveted eloquence intended to charm all ears and stimulate your ambition, has failed to come at my call, so, with your permission, we will put aside the word address with all its ponderous significance and call this a "heart to heart" talk on some of the perplexing problems of home life, for, after all, it is the seemingly commonplace things that wield the most weighty influence in moulding the purpose of our existence and yet sometimes it seems to me that with all our earnest striving for enlightenment and progression, we American

women are fast losing the sweeter and better part of life, for with the modern demands of clubs and social duties pressing hard upon the time and strength of any ambitious, popular woman of the present time, she must of necessity waver in her devotion to none interests and, if her husband's means be limited to the modest income of a monthly stipend, the problem of keeping up a creditable appearance is of so vexing a nature as to defy all the subtle arts known to the up-to-date "beauty doctor." For, what woman who truly loves her husband, can complacently see him sacrifice not only health and worthy ambition, but drop to the level of a veritable toiler in the monotonous tread-power of existence in order that he may provide the flimsy rounds to the social ladder from which his wife and daughters look down upon the more securely footed few who above all things appreciate love and home.

Some women have formed an erroneous idea of marriage and its obligations. They cherish the belief that a man should deem it a privilege to be permitted to wear out his very soul and body in an effort to provide them with a life of indolent ease and luxury. Yet, if one will stop to think, she must quickly realize that there are two sides to the matrimonial contract and the wife's mission is equal to, if not greater than the husband's, for there is no more exalted calling than that of the home-maker, and the true home-maker not only contributes to the betterment of her own family, but holds in the hollow of her hand the destiny of a nation.

One of the Vital Questions of the Day.

One of the vital questions of today is, Are American home-makers being lured by the will-o'-the-wisp pretext of superficial intellectual advancement from their posts of duty? Is not a cultivation of heart and morality more essential to the youthful education of a wife and mother than a later day cold-blooded absorption of dead languages? What matters whether the Greek temple of the past century was supported by five pillars or by as many thousand, so long as the Johns of today are supplied with comfortable abiding places and well cooked, nourishing meals, served on time with the accompaniment of a cheery wife to pour the tea and dissipate the clouds of business despondency? What matters how many wives a degenerate king of a by-gone period might have seen fit to take unto himself, so long as the wife of the present time, by loving, thoughtful deeds and womanly wiles may make her husband so comfortable and content that he will readily believe her superior to all other women? What matters if the hat and gown are not the latest mode so long as she can make herself pleasing in John's eyes and her conscience is not chaffed by the certain knowledge that, in order to compete with others whose dollars far outnumber her own, her extravagant demands are sapping the very heart-blood from his precious life? O, what are all these senseless cravings for undue knowledge and power compared to the peace and happiness of a husband one loves!

Another Pertinent Question to Consider.

Another difficult question to consider is, Are we bringing up our daughters in a manner that shall best fit them for home-makers? Are they being trained to acceptably fill all the

requirements of what by rights should be a woman's life book? Have they been taught the masterful advantage of self control? Have they been duly impressed with the golden value and the necessity of cultivating a cheerful nature? Have they been trained to respect the homely labor of housekeeping, or have some of the most important practical requisites been overlooked and neglected in a less worthy ambition to endow them with superficial accomplishments, that shall but momentarily appeal to reckless, unstable manhood?

The average mother-in-law of today exactly requires that her son's wife possess all the virtue of the past and present generations. She must practice the frugality and industry notable in the Puritanical genealogy; she must ever be mindful of John's needs and wishes, cheerful and dignified under all circumstances; her financial ability must be quite equal to the strain and test of making one dollar do the work of two, for in no case must the earnings of a son be flipantly wasted by any one, above all by one who, even as a girl, might have fallen short of the ideal type evolved in the mind of John's mother.

It is so easy for one to point out the rigid lines of duty for a neighbor to follow, but let us be honest with ourselves and pause to ask if we are rearing our own daughters to a similar standard of usefulness, in order that they may make suitable help-mates for our neighbors' sons? Have we taught them to regard the practical duties of home-making as commendable accomplishments, rather than debasing drudgery? Have they been so thoroughly instructed in the higher branches of housewifely education that they can readily recognize the ethics of art and science in expert cookery, dishwashing and scrubbing? Have they been taught to carefully

discriminate in the nutritious values of different foods so that our neighbors' sons may not suffer impaired digestion and see their incomes squandered by a thriftless companion who, because it is an easily and quickly prepared meal, will substitute a baker's loaf and a can of meat or fish for the less expensive but far more satisfying soup bone, wisely simmered into a delicious broth and served with wholesome vegetables? Have they been given painstaking instructions as to the best methods of sweeping and dusting a living room, of ventilating and caring for a sleeping apartment, to properly air and make a bed and the numerous other requisites to good housekeeping? Yet, even the most perfect housekeeper may be an utter failure as a home-maker if she has not been taught from infancy to respect the rights of others and the real value of a sunny disposition. Until we have mastered these urgent problems, let us not delve into the mysteries of past ages.

A Third Vexatious Problem.

Another trying question of the day, and one that is proving vexatious to those who live in cities, as well as to those who live in farming districts, is the difficulty experienced in securing desirable help, and the housewife who sees the needs of her family rapidly spreading beyond her own strength and time beseechingly turns to those who are willing to exchange brawn and skill for an equivalent in hard, cold dollars, and voices her disappointment in a wail of reproach, for only too often is the service as unyieldingly rigid as the coin itself.

If we stop to reason a bit, we will in the first place ask, what do we expect for the money we must give? The composite answer undoubtedly will be, a girl of good moral character, skillful, economical and neat, re-

spectful, quick, willing and obliging, a girl of intelligence, one who will take a personal interest in all family affairs, yet of sufficient tact to draw the line so deftly that there shall never be the slightest hint of undue familiarity, and, with these modest demands standing out boldly and clearly, the self-satisfied American housewife of today fretfully or earnestly wonders why young women whose social and financial status has clearly designed them for cooks and housemaids, should unhesitatingly prefer the mechanical toil of shop or factory, when so many homes stand woe-fully in need of their service and, with the American estimate of money, cannot comprehend why the generous offer of a stipulated sum, together with board and washing and a home, should be promptly scorned by those who are evidently intelligent enough to appreciate the offer. The aggrieved housewife is unable to fathom the perverseness of a nature that will be content with less wages and that places no value whatever on the three other enticing advantages.

While we consider this perplexing subject, let us turn back a few leaves in the history of an independent nation, for somewhere in the constitution may be learned that the birth-right of all men is to be born free and equal, and, while progressive women have been eager to claim every right, many have never recognized this great boon as a universal privilege. This is America and in our land there is supposed to be no class distinction, for the humble plowboy of today within a decade may occupy the presidential chair with dignity and honor. Yet we women, in our wild, stampeding flight of progress, have cast a smirch upon the most exalted sphere of womanhood; we have placed the galling brand of a menial servitude that savors of bondage upon a call-

ing that by rights should rank with the fine arts.

It is the commendable ambition of every womanly woman to be esteemed and, so long as an ignominious ban is indiscriminately placed on those whose natural inclination might lead them willingly to adopt a calling that must serve to better qualify them for their future life work as wives and mothers, they will stubbornly rebel at accepting service under such conditions and learn to distrust the womanly instinct that prompts a thoughtful interest in the manifold details of housework, for if the mothers and daughters shrink from performing the practical labor of housekeeping and regard this work as debasing, can they expect in this age of liberal free education that any self-respecting American will deliberately select a vocation that is shunned by those whose personal interest, if nothing more, should seek to uplift even the commonplace duties of home-making?

What reward do we offer for the intelligent, capable housekeeper of today? A few paltry dollars and an indifference bordering on contempt. The opera singer who takes our money in exchange for a few hours of amusement, the artist, the writer, all toiling for the dollars, may be feted and dined. One will go to no end of trouble and expense to show due appreciation for ability and talent of this order, and yet even in our elastic, democratic scale, there is no place whatever for the young woman who skillfully prepares the meals, keeps the house immaculate and comfortable, and by her cheerful willingness to cope with emergencies adds daily to the welfare and happiness of a family. She may be intellectual and modest, her morals above criticism; she may dress neatly and with becoming taste, but, so soon as she has accepted a place in the average household, she

is branded with a mark that forbids all social recognition. It is expected that she will lay the table with the practiced eye and delicate skill of an artist, and, in this hour of scientific research, a thought must also be given to nutrition as well as appearance in the masterly cooking of the viands, and after we have good-naturedly praised or irritably condemned, in accordance with our mood, she is permitted to snatch a hasty meal from the bare boards of the kitchen table. Her room, if it may be dignified by that name, is usually the storehouse for such rickety furnishings as have ceased to be desirable in any other part of the dwelling. Too often it is sparingly warmed and poorly lighted. Of course, after her work is done, she may sit near the open door and listen to strains of music that come from the room where, by her effort, the family have been made comfortable and cheerful, but even then she runs the risk of being classed an eavesdropper. She may scrub the front porch with the skill of an adept, and polish the doorknob until it joyously reflects her honest face, yet her entrance and exit in this home must ever be through its rear door. The young man who contemplates removing her in the far or near future to more congenial surroundings, may find himself embarrassed while stammering out his carefully rehearsed proposal by the sudden appearance of ill-mannered, giggling children, who later, when the couple go for a quiet stroll, are quite likely to shout at the top of their lungs, "there goes our hired girl!" Can we wonder that a sensitive nature, or a self-respecting woman would prefer less humiliating, if not more congenial employment, and the girl who is sufficiently intelligent to meet our requirements will not be apt to seek a situation that is looked upon as beneath the consideration of

cultured womanhood, while many a weary toiler at desk and counter has paid from meagre earnings the price for a term of physical culture lessons, when the same amount of exercise devoted to wielding a broom or brush in the practical course of caring for a home would have resulted in a two-fold benefit to the family.

It is true that a few trustworthy foreigners are now to be found in the American kitchen, but the class distinction of a monarchical government has been so thoroughly bred into their lives that it has deadened a sense of value for equality so dear to the American heart. Another generation reared under the influence of progressive snobbishness will evolve a factory girl, who will heartily loathe the mere mention of her mother's early day employment and who, in turn, will guide her own daughter into almost any other channel rather than the womanly vocation that should be carefully fostered.

The Solution of These Problems.

These are some of the problems of

the day and hour to which we should give our most earnest thought and when the women of our land, the rich as well as the poor, shall make housewifely accomplishments, the sword and buckler of their independence, when womanly justice shall triumph over degrading tyranny, when they shall loyally uplift, not by expressed sentiments alone but by actual example, the standard of home life, when we shall eliminate from the American vocabulary the word "servant" and substitute the more acceptable term of "help," when we have unsparingly catechised our better selves and learned to respect the intelligent brain and trained hand, when morality shall be esteemed above wealth, when we shall place the one who wisely ministers to our physical needs on a par with those who cultivate the mind and stimulate the ambition, then, and not until then, will this land teem with willing, cheery home-makers, to whose loving hearts, dainty hands and practical wisdom may be safely entrusted the honor and welfare of a nation.

THIRD SESSION.

Thursday Afternoon, March 17, 1904.

We shall begin this afternoon by making the chocolate cake. This is not a Devil's Food, but just an ordinary chocolate loaf cake and is a very satisfactory recipe; is made quicker than Devil's Food, and may be made in layers and with a boiled frosting, or a White Mountain frosting, but this afternoon we will bake it in a loaf.

Loaf Chocolate Cake.

Recipe.

One and one-half cups sugar; one-half cup butter; one-half cup sour milk; one teaspoon soda dissolved in milk; two eggs; four tablespoons grated chocolate. Pour over the chocolate a scant one-half cup boiling water, two cups flour, one teaspoon vanilla.

We start with one and one-half cups of sugar and a half a cup of butter. I do not melt the butter, but soften it a little, so I can measure it easily. I try to pack the butter in measuring, so there will be no openings, for if there are we do not get a half a cup of butter.

Question—Is there any objection to melting the butter?

Miss Sater—No.

This is one advantage of having a tin measuring cup. In measuring liquids it is all right to have a glass cup, for you can look through it and see whether it is just on the line, but for measuring butter it is better to have a tin cup, so you can put it over the flame and turn the butter out easily and not have it sticking to the sides of the cup. I am not going to melt it, but just heat it on the sides, so it will turn out.

There are two kinds of cake mixtures, those containing butter and those without butter. Some cakes are raised by air. Sponge cake is an example of this, as genuine sponge cake contains no rising properties, but is made light by the quantity of air beaten into the mixture. Some cakes are raised by carbon dioxide. Butter cakes are an example of this. The method of making butter cakes is as follows: Cream the butter and sugar, then add the egg well beaten, if the whole egg is used. If eggs are separated, add the yolks at this stage and the whites after the flour has been added. Then add the flour and milk alternately. If you add a little flour before the milk the mixture will not curdle.

Good butter, fine granulated sugar, fresh eggs and pastry flour are essentials for the best cakes. Pastry flour makes a more tender cake, but very satisfactory results are obtained from bread flour.

In making this chocolate cake, I do not separate the egg, but beat the whole egg very light before adding it to the butter and sugar and then continue beating the mixture until very light. I find the results are equally as good as when the eggs are separated and there is surely a saving of time. Loaf cakes require rather more flour than layer cakes, for the reason that it takes longer for the heat to penetrate the loaf and this addition of flour holds up the air cells until the heat sets them.

I know that great care must be taken in the measuring and combining of the ingredients, but the baking of the cake is more critical than the mix-

ing. I think more cakes have been spoiled in baking than in mixing. If cake is baked in too slow an oven, it will rise over the sides of the tin and become very coarse grained. If baked in an oven that is too hot a crust will form before it has risen sufficiently and in its attempts to rise breaks through the loaf. Cake will also crack on top when the mixture is too thick.

In baking a cake, the baking is divided into four periods. The first quarter it should begin to rise; second quarter should continue rising and begin to brown; third quarter should continue to brown, and fourth quarter should shrink from the sides of the tin.

Question—How can you tell when the cake is baked?

Miss Sater—I think a very good test is that when the cake is done it will shrink from the pan. This is not a sure test for rich cakes, as pound cakes and fruit cakes. Some test with straws. I think it a very good plan to sterilize a great many straws at once and keep them in a tin box ready for use.

Question—Do you always beat your eggs whole for cake?

Miss Sater—For some kinds of cake.

Question—Don't you think it improves the texture of the cake to add the whites last?

Miss Sater—Not necessarily.

Question—Does it make any particular difference whether you always stir your cake one way?

Miss Sater—It is more natural to stir a cake that way. When the whites of the eggs are added last, they should not be beaten but folded in.

Question—In order to fold a cake, don't you always have to have the flour and baking powder thoroughly sifted?

Miss Sater—Yes, when we use baking powder. I am going to use soda in this cake.

Question—Do you use Baker's chocolate?

Miss Sater—Yes.

Question—Have you ever used sweet chocolate?

Miss Sater—I never have; I do not think it would be as good in the cake.

Question—Do you ever use cocoa in cake?

Miss Sater—I never have. It is not as rich as the chocolate, as much of the fat has been extracted in cocoa, but some people do use it.

In greasing your cake tins, you know that salt makes the mixture stick to the tin, but if you will melt the butter you can use the clear grease that floats on the top. I have a new tin today and I suppose it will stick, it usually does.

Question—Do you ever use cake pans with removable bottoms?

Miss Sater—Sometimes.

Jerusalem Pudding.

Recipe.

One tablespoon gelatine dissolved in four tablespoons cold water. Add to one-fourth cup chopped dates and three figs chopped fine. Set in double boiler and heat until soft. Boil one tablespoon rice in one-half cup water fifteen minutes. Drain. Whip one cup cream and add to it the rice and one-third cup powdered sugar. Lastly add the chopped fruit and the gelatine. Flavor with one teaspoon vanilla.

Before whipping the cream, we will put the gelatine to soak and boil the rice. After the gelatine is dissolved, we will heat it with the chopped fruit in a double boiler until soft.

Question—Could you use Jello instead of gelatine?

Miss Sater—No, because Jello is flavored and is sweetened and we just want this to stiffen the pudding.

Question—What kind of gelatine do you use?

Miss Sater—This is Knoxes. This will dissolve very quickly, because it is the granulated gelatine. Dissolve it in four tablespoons of cold water.

For this pudding we use boiled rice. Just a word about the boiling of rice.

When rice is boiled properly, the grains will be whole and white and not the dark colored, mushy mass which we so frequently see. Rice should be boiled in a large quantity of water. Do not put the rice in until the water boils, because, as we have heard repeatedly, all starchy foods should be cooked in boiling water. Do not stir while boiling, at least only a very little to keep it from sticking to the bottom, but there is not a great deal of danger of it doing this if plenty of water is used.

Question—Do you soak your rice before you cook it?

Miss Sater—No, but I wash it.

Question—Do you boil it in a double boiler?

Miss Sater—No. If you watch it, it will not burn.

Question—Can you use rice that has been boiled the day before?

Miss Sater—Yes, if you have enough.

Question—Would you like a hint from the "Heathen Chinese" about how to cook rice? They parboil it and then steam it. It is so much easier, you don't have to watch it and you will have it just exactly as you want it.

Miss Sater—Yes. It is said no people cook rice so deliciously as the nations of the orient. At the Columbian Exposition, the Japanese not only brought their own rice, which they think superior to any other, but also their cooking utensils.

As the fruit and rice are nearly ready, we will begin to whip the cream. The fruit has been dissolved with the gelatine in the upper portion of the double boiler. In making lemon jelly, we add boiling water, but for

this we heat the fruit with the gelatine.

Question—You could use sheet gelatine if you wanted to, couldn't you?

Miss Sater—Yes, and it is cheaper than the granulated, but a little more difficult to handle and measure. Three level tablespoons of gelatine equals one ounce; one ounce equals six sheets; one sheet equals one and one-half teaspoon. Do not use a preparation that is sweetened or flavored, because we want to flavor our pudding.

We have two kinds of cream, the thin or strawberry cream, and heavy cream. Double cream should be diluted. Real heavy cream should double and sometimes treble its bulk when whipped. It is rather difficult to whip thin cream, unless it is thoroughly chilled. I think the most convenient way of whipping cream is in a double boiler, putting ice water in the outer dish.

Question—Is it better to have cream twenty-four hours old for whipping than fresh cream?

Miss Sater—Very much better.

Add to the whipped cream the rice which has been thoroughly drained, the sugar, the chopped fruit and gelatine, which should be folded in, and lastly the flavoring. Set away in a cool place until the mixture stiffens.

I am frequently asked how many this single recipe will serve. It will serve six or eight. Of course it will depend on how much you serve, but it is a very rich pudding and after a hearty dinner I do not think you would want a very large amount. This may be moulded and is very pretty in a melon or ring mould.

Question—Can you make it on Saturday for the Sunday dinner?

Miss Sater—I think in the winter it would be possible to do so, but I would not like to do it in the summer time on account of the cream.

We use one-third of a cup of powdered sugar, but you can use the granulated sugar, although it will not be as smooth as with the powdered sugar.

Question—Is that the same kind of sugar that you use for frosting?

Miss Sater—No. If I make boiled frosting, I use granulated sugar, but for frosting made with cream we use the powdered sugar.

Question—The recipe calls for one-fourth cup chopped dates. Is that before they are chopped or after?

Miss Sater—After they have been chopped.

Question—Could you use any other kind of fruit that you would like?

Miss Sater—I am frequently asked if you could use pineapple, but if I did I should use more gelatine, because there is more juice. I have not tried it, but I think it might be very good.

It is better to stir this pudding once or twice until it begins to stiffen, so the fruit will not all settle to the bottom, then leave it so it will mould.

I will make the salad dressing now, because I want to chill it before we add it to the fruit.

Boiled Salad Dressing. Recipe.

Mix one-half tablespoon flour; one-half teaspoon salt; one teaspoon mustard; one tablespoon sugar; and a sprinkle of pepper. Add yolks of two eggs; one tablespoon melted butter, and one-fourth cup of vinegar. Cook over boiling water until mixture thickens, strain and cool. After the dressing has cooled, whip one-half cup of cream and add to it.

Question—Could you make a quantity of this dressing and keep it any length of time?

Miss Sater—Yes. A good time to make salad dressing is when you are making Angel Food, or when many egg yolks are left. You can use the

yolks of the eggs for the dressing, put it in a quart or pint can, seal it up and keep it in the refrigerator. The cream, however, should not be added until the dressing is to be used. I think dressing made with just the yolk of the egg is better than that made with the whole egg, it is smoother.

Question—Do you use dry or prepared mustard for the salad dressing?

Miss Sater—I think dry mustard is preferable to the prepared mustard, as it gives a better flavor and a better color.

Question—Do you use any particular brand?

Miss Sater—Any good brand.

In cooking the salad dressing, it is placed over boiling water and cooked until the mixture thickens. The dressing should be stirred constantly, because the egg will thicken and stick to the side of the dish and it is better to stir it continually. A salad dressing is something like a custard. If you cook it too long, it will curdle. It is always better to cook it over heated water.

For this salad we shall use celery, apples and nuts. The apples are cut into small cubes and the celery in small pieces. The nuts are broken into small pieces. Today I am using about equal proportions, although the proportions may be varied. I seldom chop ingredients for a salad, as a mushy looking salad is not appetizing.

Question—What kind of nuts do you use?

Miss Sater—English walnuts.

Question—What proportions do you use?

Miss Sater—Equal proportions of apple, celery and one cup of walnuts.

Question—How much have you there?

Miss Sater—Five or six apples, about two bunches of celery and one cup of nuts.

Apples discolor very quickly when pared. This may be prevented by sprinkling with lemon juice.

This salad may be served on a bed of lettuce leaves. Lettuce should be allowed to stand in cold or ice water until crisp, then drained and spread on a towel and hung up in the refrigerator, or cold place, before serving time.

In preparing salads, remember to have all the ingredients used fresh, crisp and cool, and then put them together quickly and lightly. Chill before serving and aim to have the salad dainty and appetizing.

Bresleau of Beef.

Recipe.

One pint chopped beef; one-half cup milk; one-half cup stock; one teaspoon chopped parsley; one-half cup crumbs; two eggs; one teaspoon salt; one-half teaspoon pepper. Mix meat, bread, seasonings, add beaten egg, then milk and stock.

Tomato Sauce.

Recipe.

Melt two tablespoons butter, add two tablespoons flour; cook till it bubbles, stirring it all the time, then add one cup strained tomato. Season with salt, pepper and onion juice.

Warmed-Over Beef.

Recipe.

Melt two tablespoons butter, add two tablespoons flour, and pour on gradually one-half cup stewed and strained tomato and one-half cup stock or water. Season with one-half teaspoon salt, one-eighth teaspoon paprika, and a few drops of onion juice. Add one cup chopped beef; cook one minute. Serve on toast.

Our lesson in meats this afternoon is a warming-over lesson. Most housekeepers will at times have rem-

nants or pieces of meat left from one or two preceding meals, and it is the thrifty housekeeper who will use this cold meat so that the results will be wholesome and palatable. Of course, she will also use other remnants as well as meat, but as meat is one of the most expensive materials we use, my recipes will be confined to the meat alone.

It has been said, "An economical housewife can, with careful planning, save enough from the fragments of two meals to prepare a dainty and palatable third meal."

How to Prepare Meat to be Warmed Over.

Remove all bones and gristle, and when the meat is to be chopped, trim off the fat. Save the bones for soup stock, the fat for trying out. Cut the meat in cubes, or thin slices, or chop it fine. If tender and well cooked, take care to reheat it only, not recook it; if tough or underdone, simmer it until tender, saving the cooking water to make a sauce. Season it rather highly, since meat after cooking is less savory than when freshly cooked.

In making the Bresleau, I will mix meat, crumbs, seasonings, add egg, then milk and stock. We will bake it in a loaf this afternoon and serve it with the tomato sauce. It will bake in thirty minutes. You may also take this same recipe, shape into balls and fry in butter.

Question—If you do not have stock, what do you do?

Miss Sater—Use milk or water.

Question—Could you use extract of beef?

Miss Sater—Yes.

Question—Can you use this same recipe with fresh meat?

Miss Sater—I use different proportions with fresh meat.

Question—Is the milk cold?

Miss Sater—Yes.

Question—Are you going to bake that?

Miss Sater—Yes, about one-half hour.

Question—When you make a veal loaf, do you put bacon on top of it?

Miss Sater—Yes, or add a little salt pork to the veal.

Question—Can one use veal in place of beef in this recipe.

Miss Sater—Yes; any left-over meats. It does not need to be boiled beef, but any left-overs that you may have.

The tomato sauce is made like the white sauce we made Tuesday, using strained tomato in place of milk.

Another way of using cold meat is in croquettes, but they take more time for preparation.

Croquettes.

Recipe.

To two cups cold chopped beef add one-half teaspoon salt and a little pepper, a few drops of onion juice, yolk of one egg, one cup thick white sauce. Mix thoroughly together, make into croquettes and roll each in very fine crumbs, then in beaten egg and again into cracker crumb. Fry in deep fat.

Thick White Sauce.

Recipe.

Three tablespoons butter; one-third cup of flour; one cup milk or stock. Cool before using.

A perfect croquette should be soft and creamy inside and have a thin and delicate crust. The mixture should be quite soft. This makes it more difficult to shape into croquettes. I always use a spatula for shaping them. The thin crust may be obtained by diluting the egg with water or milk in the proportion of one tablespoon to each egg. By doing this, there will not be so many crumbs adhering to the croquette. The object in dipping croquettes in egg is that

the albumen coagulating so readily forms a coating which prevents the croquettes from absorbing fat.

Be sure to have the fat hot enough. If it is not, they will soak grease. Drain on brown paper or cheese cloth, so as to absorb the fat that may be on the outside. Have plenty of fat, so the croquettes are well covered.

Question—Do you use a deep frying pan?

Miss Sater—Yes, and a wire basket.

Rules for Frying.

1. Temperature of fat should be high enough to prevent articles soaking fat. Test for uncooked articles: hot enough to brown a piece of bread in one minute. Test for cooked articles: hot enough to brown a piece of bread in forty seconds.

2. Sufficient fat should be used to entirely submerge the article to be fried.

3. Some food requires special attention to prevent absorption of the fat by dipping in eggs and crumbs.

4. All food for frying should be drained on soft cloth or paper to absorb grease from fat.

To Clarify Fat.

Add a few slices of raw potato to the fat and heat until it ceases to bubble. The potato absorbs some of the impurities. Strain through cheese cloth and let it stand undisturbed until solid.

Effect of Different Temperatures on Meat.

The treatment depends largely upon what is desired to do. The meat that was boiled for this lesson was plunged into boiling water, allowing it to boil for a few minutes, then lowering the temperature. The albumen on the surface of the meat is coagulated, forming a crust, and this prevents the escape of the juices and

flavoring matters. The broth will be poor when meat is cooked in this way.

Meat should not be kept in boiling water, for all the albumen would be coagulated and rendered hard. A longer time will be required for cooking meat in this way, but the flesh will be tender and juicy, instead of **tough and dry.**

Question—How do you keep meat below the boiling point?

Miss Sater—If a coal or wood range is used, place on the back part. Some gas stoves have a burner which is called the "simmerer."

Question—Should meat that is boiled for soup stock be kept below the boiling point?

Miss Sater—Yes. Put the meat in cold water and gradually raise the temperature, then the organic salts and extractives will be drawn from the meat.

Question—When do you put meat in boiling water?

Miss Sater—When I do not wish for the stock and wish the meat to be juicy.

Question—When do you add salt to a stew?

Miss Sater—Not until it is nearly done.

Question—Is there any way to cook tough meat so as to make it palatable and tender?

Miss Sater—The principal thing is to cook it below the boiling point. We have this one rule to remember in cooking: foods rich in albumen must be cooked below the boiling point.

Question—If you were living on the farm and could not broil a steak, how would you prepare it to make it digestible and palatable?

Miss Sater—If I had good meat, I would pan broil it. You do not want to get a piece of tough round steak and try to pan broil it. Have your skillet very, very hot, put your steak on it, sear it on one side, then turn it over and sear it on the other side. Do not put the salt on it until it is done. Then put the butter on it and you have a very nice piece of steak. There are better ways of handling the tough round steak than by pan broiling it.

Question—In preparing a pot roast of beef, do you recommend browning it before or after you add the water?

Miss Sater—I usually brown it first, but I do not think it would make any material difference in the end.

COLLEGE OF AGRICULTURE.

W. A. HENRY, Dean.

Superintendent McKerrow has kindly given permission that I use a little space in the Eighteenth Annual Institute Bulletin to tell our farmer constituents what the Agricultural College is accomplishing at Madison.

This is the twenty-fourth year of my service with the University. It is not an unfavorable time to sum up matters and see where we stand. Some of those who read these remarks will recall the meetings of the old State Agricultural Society held in the Capitol twenty odd years ago. In those days more than once I made appeal to farmers that they send their sons to study with us. I told them there were opportunities for their boys along agricultural lines and begged that I have a few pupils. I urged that it would benefit the state to educate some of their sons for agriculture, instead of sending all the bright boys from the farm to study law, medicine, and, in general, to educate them to leave the farms and enter the cities. In spite of these appeals, for years we had but few students, the numbers being pitifully small. Then we opened up the Short Course, followed by the Dairy Course, and last year we rounded out our system by offering the Farmers' Course for the first time. Allow me a few words in regard to these courses.

Long Course in Agriculture.

To procure a diploma in the Agricultural College, one must be as well prepared as to enter the other departments of the University, and must study with us four years. Until recently the number of students taking our Long Course was small; now it has begun to grow. In evidence of this, I submit the following table:

Registration of Long Course (4-year)
Students—1901-04.

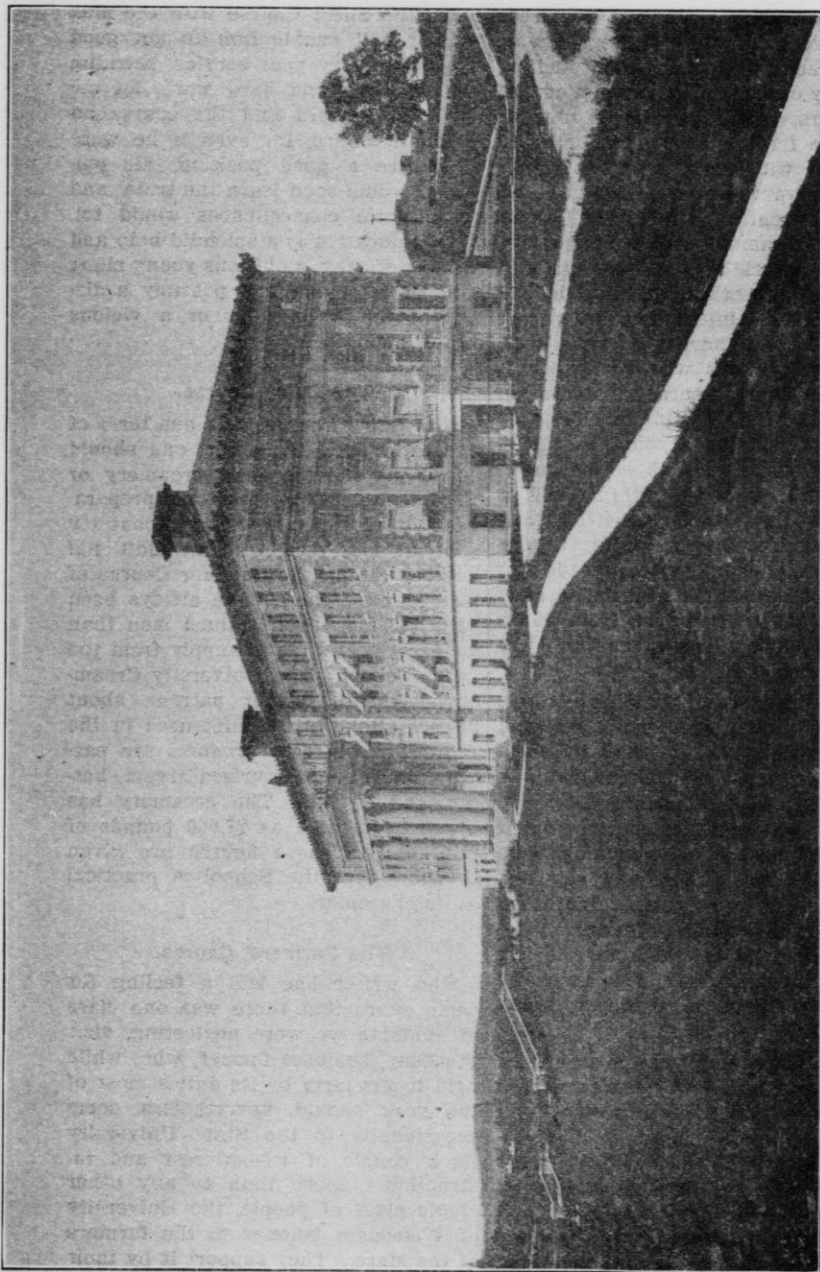
	1901-2	1902-3	1903-4	1904-5
In graduate work for higher degree.....	3	4	3	5
Under graduates.....	18	32	57	85
Total.....	21	36	60	90

The above shows that this course is growing rapidly, the increase of the present year over last year amounting to fifty per cent.

Immediately the question will arise: What openings are there for Long Course graduates? I am pleased to report that thus far no student who has graduated from our Agricultural Course, has for any considerable length of time been without an opportunity for doing work along agricultural lines at from fair to excellent compensation. Positions are open in government service, at our own and other agricultural colleges and experiment stations as teachers and investigators, and in other countries, as managers of farms and estates, while some of our pupils, I am glad to say, have returned to their own farms with a thorough, broad training, to lead useful lives there. The four-year course is the equal of any course in the University, in my judgment, in giving a good training, and fortunate is the young man who can secure it.

The Short Course in Agriculture.

The course originally started with one term's instruction, covering twelve weeks. Now it lasts two winter terms of fourteen weeks each, beginning early in December. Last year we reg-



VIEW OF NEW CENTRAL BUILDING FOR COLLEGE OF AGRICULTURE.
In this building are the offices of the Dean and Director, Superintendent of Farmers' Institutes and several professors; also the Agricultural College, Library and laboratories and lecture rooms. There is a large auditorium seating 750 people in the rear of the building not shown in this view.

istered 308 pupils in this course. No entrance examinations are required, yet we frequently have college graduates pursuing Short Course studies, and many of our pupils are men of mature years, a goodly number owning their own farms. Sometimes married men come with their wives, both taking the advantages of the course. A large per cent of our Short Course students are among men who have little of this world's goods and are getting ahead by working on farms by the month. It is interesting to report that we have hundreds of calls each year from persons who wish to employ our Short Course students as farm help. By pursuing a course of instruction with us, a young man who is already familiar with service as a month-hand, who is faithful, and a diligent worker, can increase the value of his services to his employer very materially. Our better grade of Short Course students, through such training, are able to get from \$5 to \$15 more per month because they have studied with us.

As the expenses of the Short Course need not exceed \$100 per term, and can be made somewhat less by economy, it is apparent that there is a large profit to the industrious young man who will take the course. Let it be understood that we never agree to secure positions for any of our students, nor do we promise increased compensation because of their studying with us; yet the facts are that we could find places for ten-times as many as we have, were they to study with us.

To the young man who is ambitious to get ahead in the world, who wishes to increase his mental powers and thereby be more useful to his employer, and who is willing, after training with us, to work faithfully for his employer's best interests, giving of all the powers within him for that service, we hold out the brightest

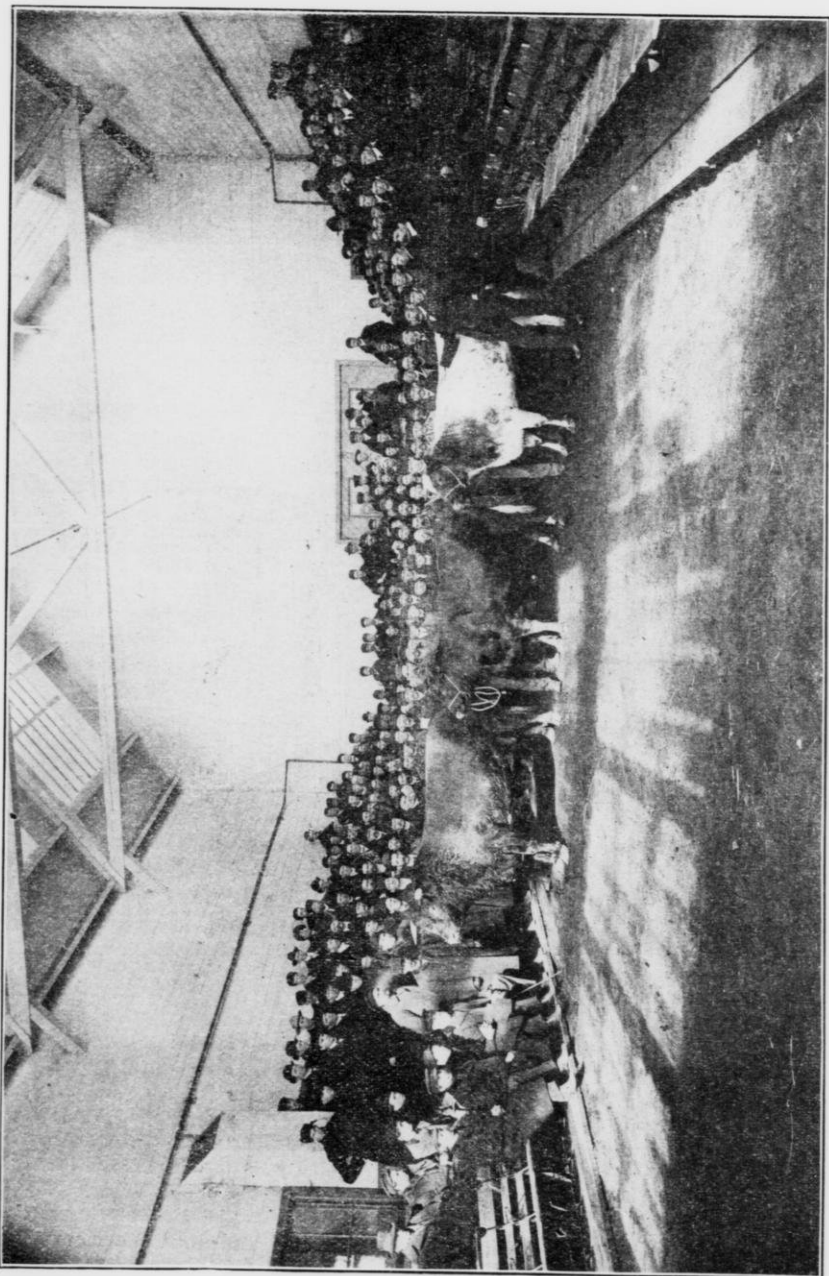
inducements. To the young man who takes the Short Course with the idea that it will enable him to get good wages for very poor service, shirking responsibility and hard work, let me say that he will find the course an absolute failure, for even if he were to secure a good position, his employer would soon learn the truth, and the natural consequences would follow. Education is a splendid help and aid to a worthy, ambitious young man; it is of little use, and possibly a disadvantage, to an idler or a vicious young man.

The Dairy Course.

The Dairy Course lasts one term of twelve weeks. To enter, one should spend six months in a creamery or cheese factory in previous preparation. In this course we had about 160 students last year, with an additional number taking the Summer Course of instruction. There have always been calls for more well trained men than we have been able to supply from the Dairy School. The University Creamery pays its farmer patrons about \$40,000 annually for milk used in the Dairy School. Our products are pasteurized milk, pasteurized cream, butter, and cheese. The creamery has taken in as high as 27,000 pounds of milk daily. These figures are given to show that the School is practical in its character.

The Farmers' Course.

The writer has had a feeling for some years that there was one class of students we were neglecting, viz.: the busy, business farmer, who, while held to his farm by its duties most of the year, should, nevertheless, come occasionally to the State University for a couple of weeks' rest and instruction. More than to any other single class of people, the University of Wisconsin belongs to the farmers of the state. They support it by their



VIEW IN STOCK JUDGING BUILDING DURING THE FARMERS' COURSE.
Behind the three Shorthorns shown are grouped the 175 farmers who were in attendance on the two weeks' Farmers' Course.

taxes and they send their children to it in large numbers, to be educated. Here at the University are accumulated buildings, apparatus, and equipment of all kinds, representing an expenditure of several million dollars. The Agricultural College alone represents an outlay of over half a million dollars. Surely there can be no better place for the farmer to spend a couple of weeks than at his own University, learning what he can in the College of Agriculture, and, incidentally, things of interest and importance from the other Colleges and Departments.

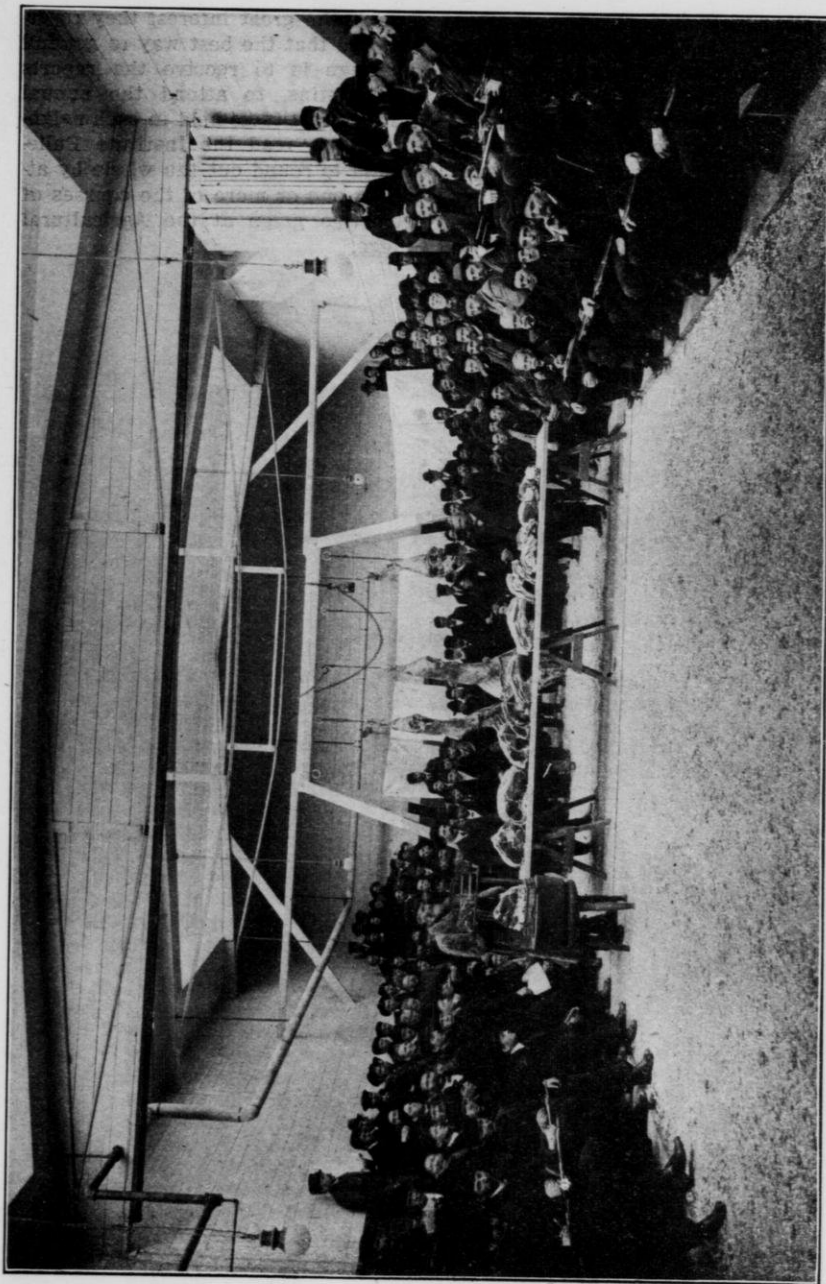
Accordingly, it was announced last year that the first Farmers' Course would begin February 4, immediately after the close of the annual meeting of the State Board of Agriculture. Each morning, two lectures each of fifty minutes in length were given, the first beginning at eight and the second at nine o'clock. From ten to twelve o'clock, daily, there was practical work by the farmer pupils either in corn judging or judging live stock. The afternoons were devoted to stock judging, to veterinary instruction, or to the study of carcasses of animals slaughtered especially for class instruction. This was, in outline, the program for the two weeks' Farmers' Course. The Short Course was arranged especially for young men, though many mature farmers, occasionally men over fifty years of age, take the course. We at once saw that it would not do to allow young men to take the two weeks' course, for the reason that many young men would doubtless crowd into this course, usurping the place of mature men who could only come for a short period. Accordingly, we limited the attendance in the Farmers' Course to persons over twenty-five years of age. It is interesting and important to announce that 170 farmers, from 42 counties, registered in the first Farm-

ers' Course class. A number of pupils were over sixty years of age and none under twenty-five years. A more enthusiastic, eager and interested class of men never convened anywhere. It seemed as though the days were too short and the lessons too few, to suit them.

Although no evening programs were announced in advance, the fact is these farmers held meetings every night, with a single exception, during the two weeks' course. Much enthusiasm, good fellowship and cordial good will prevailed throughout the brief course of instruction.

Everything possible by the University was done for the entertainment of the farmers. The president of the University gave a finely illustrated lecture on "How the Soil Is Formed." Professor Snow, with his splendidly equipped department of physics, gave a most entertaining illustrated lecture in his chosen line. Dr. Alexander gave an illustrated stereopticon lecture on the various breeds of horses, which was enthusiastically received. The Doctor also killed and dissected a horse in the presence of the class, showing scores of parts of the highest interest to stockmen. Fat and lean beef cattle, sheep and hogs were slaughtered and the meats cut up and explained by experts. Superintendent McKerrow assisted in explaining the merits of different breeds of sheep from living specimens brought into the class-room. When the last lecture was held, out of the total registration of 170, 150 persons were in their seats. There can be no better evidence of the success of the first Farmers' Course class than this statement, for the farmers in attendance were all busy men. One member, called home by telegram on important business, returned as quickly as possible, expressing regret that he had missed a single lecture.

And so closed the first Farmers'



VIEW OF SECOND STOCK JUDGING PAVILION DURING THE FARMERS' COURSE.
Beef Cattle, Sheep and Swine were slaughtered and the carcasses cut up according to market requirements. The view is vs the farmers assembled for a lecture on this subject.

Course, which was voted a success. This winter a similar course of instruction will be offered. From correspondence, and otherwise, a larger attendance is promised than last year. More and more Wisconsin farmers are coming to learn that the Agricultural College and Experiment Station are peculiarly their own; that the University is doing all within its power to advance the great interest they represent, and that the best way to get full advantage is to receive the reports and bulletins, to attend the annual Farmers' Institutes held in each neighborhood, to read the Institute Bulletin, and to round out the whole by attending one or more of the courses of instruction given at the Agricultural College.

AWARDS MADE TO WISCONSIN EXHIBITORS AT LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, MO., 1904.

Wisconsin Board of Managers.

W. D. Hoard, Ft. Atkinson, President.
A. J. Lindemann, Milwaukee, Vice President.
W. H. Flett, Merrill, Treasurer.
S. A. Cook, Neenah.
Wm. A. Scott, Madison.
Mrs. Lucy Morris, Berlin.
Mrs. Theodora Youmans, Waukesha.
Mrs. Emma Walsh, Baraboo, Hostess.
Grant Thomas, Madison, Secretary.

LIVE STOCK.

Geo. McKerrow, Pewaukee, Commissioner.

HORSES.

Clydesdales.

McLay Bros., Janesville.

Premier Championship for Exhibitor. (Best showing of Clydesdale horses, determined by the largest aggregate amount awarded to one exhibitor.)

Premier Championship for Breeder. (Best showing of Clydesdale horses, as determined by the largest amount awarded to one breeder.)

Grand Champion—Mare.

Reserve Grand Champion—Mare.

Reserve Grand Champion—Stallion.

Champion—Stallion, 2 years or under.

Champion—Mare, 3 years or over.

Reserve Champion—Stallion, 2 years or over.

Reserve Champion—Stallion, 2 years or under.

Reserve Champion—Mare, 2 years or over.

First. Groups—

Stallion and 4 Mares, 2 years or over, bred by exhibitor.

Stallion and 4 Mares, 3 years or over.

Four Animals, get of one sire.

Two Animals, produce of dam.

First. Single Animals—

Stallion, 4 years or over.

Stallion, 2 years.

Stallion, 1 year.

Mare, 3 years.

Mare, 4 years or over.

Mare, under 1 year.

Second—

Stallion, 3 years.

Stallion, 2 years.

Stallion, under 1 year.

Third—

Mare, 4 years or over.

Mare, under 1 year.

Fourth—

Mare, 3 years.

Percherons.

Business Horses in Harness.

Pabst Brewing Co., Milwaukee.

Best and largest exhibit by a single house of horses and vehicles in actual daily use by the exhibitor, including single horses, teams, light and heavy, with light vehicles, wagons or trucks.

First—

Six-Horse Team, wheelers weighing 3,500 lbs. or over, to wagon.

Four-Horse Team, wheelers weighing over 3,500 lbs., to wagon.

Four-Horse Team, wheelers weighing from 3,000 to 3,500 lbs., to wagon.

Pair of Horses, weighing over 3,500 lbs., to wagon or truck.

Pair of Horses, weighing from 3,000 to 3,500 lbs., to wagon or truck.

Pair of Horses, weighing less than 3,000 lbs., to wagon or truck.

Single Mare or Gelding, weighing over 1,700 lbs., to cart.

Single Mare or Gelding, weighing from 1,500 to 1,700 lbs., to cart.

Hackney.

Arthur Stericker, Janesville.

Third. Stallion 4 years old.

English Coach.

Arthur Stericker, Janesville.

Second. Stallion 4 years or over.

Third. Stallion 4 years or over.

CATTLE.

Guernseys.

Geo. C. Hill & Son, Rosendale.

Reserve Grand Champion—Bull.

Junior Champion—Bull.

Reserve Junior Champion—Bull.

First—

Bull, 1 year and under 2.

Bull, under 1 year.

Second. Herds—

Young herd.

Young herd, females bred by exhibitor.

Second. Individuals—

Bull, 3 years or over.

Heifer, 1 year and under 2.

Third—Heifer Calf.

Fourth—Bull, under 1 year.

Fifth. Herds—Exhibitor's Herd.

Sixth—

Bull, 2 years and under 3.

Get of Sire.

Produce of female.

Heifer, 2 years and under 3.

Seventh—Cow 3 years or over.

M. D. Cunningham, Kansasville.

Two Fifths, one Sixth and one Seventh on Guernseys.

Shorthorns.

F. W. Harding, Waukesha.

First—Bull, 18 and under 24 months.

Second—Bull, 3 years old.

Fourth—Heifer, 18 and under 24 months.

Fifth—

Bull, 12 and under 18 months.

Cow, 3 years old.

Sixth—Heifer, 2 years old.

Seventh—

Bull, under 6 months.

Heifer, under 6 months.

Jerseys.

H. C. Taylor, Orfordville.

Grand Champion—Bull, over all Jersey bulls.

Champion—Bull, over all Jersey bulls 2 years or over.

First Prize—Aged bull.

SHEEP.

Southdowns.

Geo. McKerrow & Sons, Pewaukee.

Premier Championship for Exhibitor. (Best showing of Southdown sheep owned by one exhibitor.)

Grand Champion—Ram.

Grand Champion—Ewe.

Champion—Ram, 1 year or over.

Champion—Ewe, 1 year or over.

Reserve Champion—Ram, 1 year or over.

Reserve Champion—Ewe, 1 year or over.

Reserve Champion—Ewe, under 1 year.

First. Flocks—

Ram and 3 Ewes, over 18 months, bred by exhibitor.

Ram and 3 Ewes, over 18 months.

Ram and 3 Ewes, under 18 months.

Four Animals, get of one sire.

First. Individuals—

Ram, 2 years or over.

Ram, 18 and under 24 months.

Ram, 12 and under 18 months.

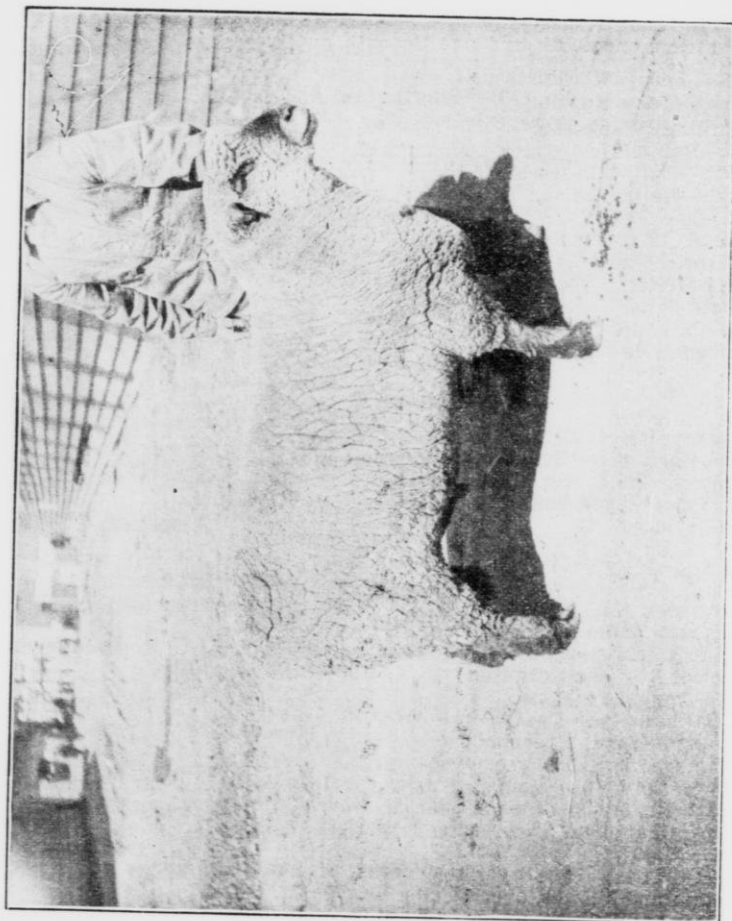
Ewe, 2 years or over.

Ewe, 18 and under 24 months.

Ewe, 12 and under 18 months.

Ewe, under 6 months.

Second. Flocks—Ram and 3 Ewes, under 18 months.



First Prize, Two-Year Old Oxford Down at World's Fair, St. Louis, Mo., 1904.
Owned by Geo. McKerrow & Sons, Pewaukee, Wis.

Second. Individuals—

- Ram, 2 years or over.
- Ewe, 2 years or over.
- Ewe, 18 and under 24 months.
- Ewe, 6 and under 12 months.

Third. Flocks—Four Animals, get of one sire.

Third. Individuals—

- Ram, 12 and under 18 months.
- Ram, 6 and under 12 months.
- Ram, under 6 months.

Fourth. Flocks—

- Ram and 3 Ewes, over 18 months.
- Two Animals, produce of one ewe.

Fourth. Individuals—

- Ram, 2 years or over.
- Ram, under 6 months.
- Ewe, 12 and under 18 months.

Fifth—

- Ram, 18 and under 24 months.
- Ram, 6 and under 12 months.
- Ewe, 12 and under 18 months.
- Ewe, 6 and under 12 months.
- Ewe, under 6 months.

Sixth and Seventh—Fourteen in all.

Wethers. Pure Bred.

First. Pens—Three Lambs, under 6 months.

Second. Individuals—Wether, under 6 months.

Third. Pens—Three Wethers, 1 year.

Grand Champion—Fat Wether, over all grades and ages, \$100.

Grand Champion—Yearling.

Grand Champion—Wether Lamb, 6 and under 12 months.

Grades by Recorded Sires.

Champion Pens—Three Wethers, any age.

Champion. Individuals—Wether, any age.

First. Pens—Three Wethers, 1 year.

First. Individuals—

- Wether, 1 year.
- Wether, 6 and under 12 months.

Second—Wether, 1 year.

Third—Wether, 1 year.

Oxford Downs.

Geo. McKerrow & Sons, Pewaukee.

Premier Championship for Exhibitor. (Best showing of Oxford sheep owned by one exhibitor.)

Grand Champion—Ewe.

Champion—Ewe.

Reserve Champion—Ram.

First. Flocks—

- Ram and 3 Ewes, over 18 months, bred by exhibitor.
- Ram and 3 Ewes, over 18 months.
- Ram and 3 Ewes, under 18 months.
- Four Animals, get of one sire.
- Two Animals, produce of one ewe.

- First. Individuals—
 Ram, 2 years or over.
 Ewe, 2 years or over.
 Ewe, 18 and under 24 months.
- Second. Flocks—Two Animals, produce of one ewe.
- Second. Individuals—
 Ram, 2 years or over.
 Ram, 12 and under 18 months.
 Ewe, 2 years or over.
 Ewe, 12 and under 18 months.
 Ewe, 6 and under 12 months.
- Third. Flocks—Four Animals, get of one sire.
- Third. Individuals—Ram, 18 and under 24 months.
 Ram, 6 and under 12 months.
 Ram, under 6 months.
 Ewe, 2 years or over.
 Ewe, 18 and under 24 months.
 Ewe, 12 and under 18 months.
 Ewe, under 6 months.
- Fourth. Flocks—
 Ram and 3 Ewes, over 18 months.
 Ram and 3 Ewes, under 18 months.
 Four Animals, get of one sire.
- Fourth. Individuals—
 Ram, 6 and under 12 months.
 Ewe, 2 years or over.
 Ewe, 6 or under 12 months.
 Ewe, under 6 months.
- Fifth. Flocks—
 Ram and 3 Ewes, over 18 months.
 Ram and 3 Ewes, under 18 months.
 Four Animals, get of one sire.
- Fifth. Individuals—
 Ram, 6 and under 12 months.
 Ewe, 2 years or over.
 Ewe, 6 and under 12 months.
 Ewe, under 6 months.
- Sixth and Seventh—Eight in all.

Oxford Wethers.

- First. Pens—Three Wethers, 6 and under 12 months.
- First. Individuals—Wether, 6 and under 12 months.
- Second. Pens—Three Wethers, 1 year.
- Second. Individuals—
 Wether, 1 year.
 Wether, 6 and under 12 months.

Grades by Recorded Sire.

- Grand Champion—Wether, grades of all breeds, under 6 months.
- Champion. Pens—Three Wethers, 1 year.
- Champion—Wether, 1 year.
- First. Pens—
 Three Wethers, 1 year old.
 Three Wethers, 6 and under 12 months.
 Three Wethers, under 6 months.
- First. Individuals—
 Wether, 1 year and under 2.
 Wether, under 6 months.
- Second—
 Wether, 1 year and under 2.
 Wether, 6 and under 12 months.
 Wether, under 6 months.

American Oxford Down Record Association's Special Prizes for Oxford Down Sheep, Bred and Owned by Exhibitor.

Geo. McKerrow & Sons, Pewaukee.

Champion—Ram.

Champion—Ewe.

First. Flocks—

Six Sheep, any age or sex.

Ram, any age, and 3 Ewes (2 years, 1 year, and under 1 year).

Four Animals, get of one sire.

First. Individuals—

Ram, 2 years or over.

Ram Lamb, under 1 year.

Ewe, 2 years or over.

Ewe, 1 year and under 2.

Ewe Lamb, under 1 year.

Second. Flocks—

Six Sheep, any age or sex.

Ram, any age, and 3 Ewes (2 years, 1 year, and under 1 year).

Four Animals, either sex, get of one sire.

Second. Individuals—Ram, 1 year old and under 2.

Ewe, 1 year old and under 2.

Third—

Ram, 2 years or over.

Ram Lamb, under 1 year.

Ewe, 2 years or over.

Ewe Lamb, under 1 year.

Fourth—Ram 1 year and under 2.

(All Wisconsin bred and shown against Illinois, Ohio, Missouri and Canadian flocks.)

Shropshires.

F. W. Harding, Waukesha.

First—Ram, 6 and under 12 months.

Second—

Ram, 2 years or over.

Ram, 18 and under 24 months.

Ram, 12 and under 18 months.

Ram, under 6 months.

Ewe, 12 and under 18 months.

Fourth—

Ewe, 12 and under 18 months.

Ewe, 6 and under 12 months.

Ram and 3 Ewes, under 18 months.

Fifth—

Ewe, 18 and under 24 months.

Ram, and 3 Ewes, 18 months or over.

Sixth—Ewe, under 6 months.

Rambouillets.

F. W. Harding, Waukesha.

Senior Champion—Ram.

First—Ram, 2 years or over.

Third—Ram and 3 Ewes, 18 months or over.

Fourth—

Ram, 18 and under 24 months.

Four Animals of either sex, any age, get of one sire.

Two Animals of either sex, any age, produce of one ewe.

Fifth—

- Ram, 2 years or over.
- Ram, 12 and under 18 months.
- Ram, 6 and under 12 months.
- Ewe, 2 years old or over.
- Ewe, 18 and under 24 months.

Cotswold's.

F. W. Harding, Waukesha.

- Champion. Pens—Three Wethers, under 6 months.
- Champion. Individuals—Wether, under 6 months.

First. Pens—

- Three Wethers, under 6 months.
- Three Wethers, 1 year and under 2.

First. Individuals—

- Wether, 1 year and under 2.
- Wether, under 6 months.

Second—

- Wether, 1 year and under 2.
- Wether, under 6 months.

N. M. Jewell & Son, Mineral Point.

- Second—Buck Lamb, over 6 months, American bred.

Seventh—

- Buck Lamb, over 6 months.
- Get of Ram.

SWINE.

Tamworths.

Kelly Bros., Mineral Point.

- Champion. Pen—Three Barrows, any age.

- Reserve Champion—Boar, under 1 year.

- First. Pens—Three Barrows, under 6 months.

- First. Individuals—Boar, under 6 months.

Third. Pens—

- Four Animals, either sex, get of sire.
- Four Animals, either sex, produce of sow.

Third. Individuals—

- Boar, 1 year and under 18 months.
- Boar, over 6 months and under 1 year.
- Sow, 1 year and under 18 months.
- Sow, under 6 months.
- Barrow, under 6 months.

Fourth. Pens—

- Boar and 3 Sows, over 1 year.
- Boar and 3 Sows, under 1 year.

Fourth. Individuals—

- Boar, 2 years old or-over.
- Sow, over 18 months and under 2 years.

- Fifth. Pens—Boar and 3 Sows, under 1 year.

- Fifth. Individuals—Sow, 6 months and under 1 year.

- Sixth—Sow 6 months and under 1 year.

- Seventh—Sow, under 6 months.

Berkshires.

Geo. E. Kelly, Mineral Point.

- Second. Pens—Barrows, 1 year and under 18 months.
- Second. Individuals—Barrow, 1 year and under 18 months.
- Third. Barrow, 1 year and under 18 months.

Poland China.

L. P. Martiny, North Freedom.

- Reserve Grand Champion—Grade Barrow.
- Champion Pens—Grade Barrows.
- Champion—Grade Barrow.
- First. Pens—Grade Barrows, under 12 months.
- First. Individuals—Grade Barrow, under 12 months.
- Second. Grade Barrow, under 12 months.
- Third. Pens—Pure Bred Barrows, under 12 months.
- Fifth. Individuals—Senior Yearling Boar.

POULTRY.

	Cock.	Hen.	Cock- erel.	Pullet.	Pen.
E. G. Roberts, Ft. Atkinson.					
American Dominique	3d	1st	1st	2d	.....
Javas, Black	4th	6th	6th	6th	.....
Rhode Island Red					4th
Wyandotte, Black		5th	4th	4th	.....
Wyandotte, Silver Penciled	4th	7th	2d	5th	.....
Brahma, Dark	3d	6th			.....
Cochin, Black	2d	3d	1st		.....
Dorking, White.....	2d	1st			.....
Red Caps	3d	2d	2d	2d	.....
Crevecour.....		3d			.....
Houdans.....	6th	7th		3d	.....
Hamburgs, White.....	1st			1st	1st
Anconas.....	2d	1st	3d	3d	.....
Leghorns, Black.....	2d	1st	5th	3d	.....
Leghorns, Rose Comb Brown	2d	1st		5th	.....
Leghorns, Rose Comb White			5th		5th
Sebright, Silver.....	5th	7th	5th	5th	4th
Games, Black	1st	2d			.....
Games, Brown Red.....		1st			.....
Bantams, Birchen.....	3d	4th	3d	1st	2d
Games, White Indian.....	2d	4th			.....
Frizzles.....	4th	4th	2d	3d	1st

POULTRY—Continued.

	Cock.	Hen.	Cock- erel.	Pullet.	Pen.
Sumatras, Black.....	1st	2d	4th	1st	1st
Game, Pit.....	5th	5th	.....	.....	1st
Rumpless.....	1st	1st	2d	3d	1st
Rocks, Silver Penciled.....	.....	3d	3d	3d	.....
Rocks, Partridge.....	.....	.....	3d	.....	.....
Javas, White.....	.....	.....	.....	2d	.....
Blues, Jersey.....	1st	1st	1st & 2d	1st & 2d	.....
Polish, Bearded Golden.....	2d & 3d	2d & 3d	.....	.....	.....
Polish, Bearded Silver.....	2d	2d	1st	1st	3d
Polish, W. C. Black.....	.....	.....	5th	.....	.....
Polish, Buff Laced.....	5th	4th	5th	4th	.....
Polish, Golden.....	3d	2d	.....	.....	.....
Polish, Silver.....	1st	1st	2d	2d	1st
Polish, White.....	2d	2d	2d	2d	2d
Bantams, White Japanese.....	.....	.....	2d	3d	.....
Bantams, Black Tail Japanese.....	6th	6th	4th	2d	.....
Bantams, Booted White Japanese.....	.....	.....	3d	2d	.....
Bantams, Dark Brahma.....	2d	1st	1st	2d	1st
Bantams, Black Cochin.....	2d	1st	3d	6th	.....
Bantams, Buff Cochin.....	4th	.....	.....	.....	.....
Bantams, Partridge Cochin.....	4th	2d	1st	4th	1st
Bantams, White Cochin.....	.....	7th	.....	5th	.....
Bantams, Black African.....	5th	6th	3d	5th	.....
Bantams, White African.....	5th	2d	.....	7th	3d
Bantams, Gray Japanese.....	3d	3d	1st	1st	.....
Bantams, Indian Game.....	1st	1st	2d	1st	1st
Turkeys, Black.....	2d	1st	1st	1st	.....
Turkeys, Narragansett.....	3d	3d	1st	1st	.....
Turkeys, Slate.....	1st	1st	.....	.....	.....
Turkeys, Buff.....	3d	3d	2d	2d	.....
Ducks, Cayuga.....	5th	4th	3d	3d	.....
Ducks, Gray Call.....	4th	3d	.....	.....	.....
Muscovy, Colored, Red.....	5th	2d	3d	2d	.....
Muscovy, White.....	3d	3d	3d	1st	.....
Ducks, Rouen.....	5th	4th	2d	.....	.....
Ducks, White Crested.....	1st	2d	1st	2d	.....
Geese, African.....	3d	4th	2d	2d	.....
Geese, Brown China.....	4th	3d	2d	2d	.....
Geese, White China.....	2d	2d	1st	1st	.....
Geese, Embden.....	3d	.....	3d	.....	.....
Geese, Toulouse.....	.....	.....	5th	3d	.....
Geese, Wild.....	1st	3d	2d	2d	.....
Guinea, White.....	2d	1st	2d	2d	.....
Guinea, Pearl.....	1st	1st	1st	1st	.....
Frank W. Radford, Oshkosh.	.....	.....	.....	.....	.....
Bantams, Gray Japanese.....	1st	1st	.....	.....	.....
Bantams, White Japanese.....	5th	5th	.....	.....	.....
Bantams, Black Japanese.....	.....	2d	1st	.....	.....
Bantams, Black Tail Japanese.....	2d & 3d	3d & 4th	.....	.....	.....
Silkie, Japanese.....	.....	3d	5th	2d	.....

POULTRY—Continued.

	Cock.	Hen.	Cock- erel.	Pullet.	Pen.
Margaret Hope, Hammond. Hamburgs, Silver Spangled			5th	3d	
Ducks, Pekin	1st				
S. J. Sorensen, Appleton. Wyandottes, Silver Penciled			4th		
Fred Alger, Waukau. Leghorns, R. C. Brown			1st & 2d	3d	
A. Diederiksen, Whitewater. Minorcas, R. C. Black	4th & 5th	5th & 6th	1st, 2d & 3d	1st & 2d, 4th & 5th	3d
Minorcas, S. C. Black	7th				

AGRICULTURE.

Adam Currie, Milwaukee, Commissioner.

Grand Prizes.

Wisconsin State Commission—Collection of grains, grasses and legumes.
Milwaukee—Currie Bros. company, collective exhibit of high grade garden and farm seeds.

Gold Medals.

S. Barton, Waupaca, barley; Adam Batz, Sun Prairie, beans; H. Blair, Peshigo, buckwheat; Harvey Clemons, Eagle, wheat; John Hans, Jefferson, collective exhibit grains; Fred Hanson, Bear Creek, beans and rye; John Hardin, Plymouth, wheat and rye; Richard Hill, Maple Creek, wheat; W. D. Hoard, Ft. Atkinson, barley and alfalfa; Franz Hoffman, Clinton, millet, wheat, buckwheat, corn; Anton W. Honish, Bear Creek, wheat; J. C. Hooverson, Soldiers Grove, wheat, buckwheat, beans; J. Hopkins, Blair, rye, wheat; M. F. Johnson, Pittsfield, oats and wheat; John Kerns, Wauwatosa, beans, popcorn; Charles Kroenberg, Bear Creek, beans; James R. Lamb, Janesville, timothy; M. H. Larsen, Algoma, peas; George Lehman, Bear Creek, beans; M. W. Long, Bear Creek, beans, clover, wheat, buckwheat, oats; Marathon county, grasses; H. Miller, Athens, rye, wheat, oats; Herman Muenster, New Holstein, barley; Fred Muehl, Seymour, wheat; L. L. Olds Seed company, Clinton, potatoes, seeds, etc.; Pagenkopf Bros., Milwaukee, rye; M. A. Patchen, Clinton, barley; A. Peterman, Watertown, rye; George A. Philippi, Bear Creek, beans; Will Pember, Janesville, clover; Peter Pahlow, Belle Plaine, wheat; Fred Heinke, Welcome, wheat, barley, oats; John Richdorf, Boyd, wheat; H. E. Rosenow, Oconomowoc, beans, millet, oats; August Russ, Bear Creek, barley, wheat, oats; T. Schleifer, Cedarburg, barley; A. Selle, Mequon, beans, wheat, caraway, rye; W. N. Stale, Burlington, beans, peas; Dan Sullivan, Lebanon, wheat, barley; Philip Terlinden, North Milwaukee, clover; Teweles & Brandies, Sturgeon Bay, peas; H. P. West, Ripon, collective exhibit grains; A. J. Yunghaus, Thiensville, clover, timothy, wheat, oats; Alger Fowler & Co., Superior, flax; John F. Johns, Dodgeville, flour.
Total, 48.

Silver Medals.

- D. E. Bingham, Sturgeon Bay, peas; Fred Bird, Clinton, buckwheat; F. Copley, Larrabee, barley; Crittenden & Morse, Green Lake, corn; Al Culbertson, Bear Creek, oats; E. Culver, Big Suamico, beans; F. Freidhube, Okauchee, barley; George Gebhardt, Richfield, wheat; Chauncey Granger, Outagamie county, oats; Grant Bros., Hudson, beans; Judge George Grimm, Jefferson, ginseng roots; Robert Hamilton, Merrilan, oats; John Hassell, North Milwaukee, clover and rye; Rudolph Heger, Jefferson, barley; Walter Helms, Janesville, millet; Herman Bros., Antigo, wheat; F. C. Hilker, Bear Creek, barley; H. Hirsh, Milwaukee, lentile; Hat Hoff, Stetsonville, wheat; Edward Hoffman, Maple Creek, buckwheat; Henry Hoffman, Brockfield, speltz; Frank Jacobs, Boyd, wheat; C. E. Johnson, Union, wheat; Henry Keeplin, Medford, barley; E. Keogh, Forestville, beans; August Klemm, Bear Creek, wheat; C. L. Klemm, Clintonville, wheat; Herman Klemm, Bear Creek, barley; Herran Oneska, Bear Creek, peas; John Peterson, Clinton, buckwheat; Price county, grasses, grains and forage plants; L. C. Ramm, Medford, barley; D. Regire, Centerville, millet; Julian Reis, Brockfield, oats; C. F. Retzlaff, Belle Plaine, wheat; Philip Ruehl, South Germantown, Charles Gansil, Alma Center, timothy; C. A. Scharmon, Clintonville, barley; James Sorenson, Clinton, buckwheat; Henry Sweeny, Janesville, clover; Taylor county, grasses and grains; Levi Vedner, Bear Creek, rye; Thomas Whittaker, Oconomowoc, oats; Frank Wilhelm, Cadott, wheat; Herman Wittnebel, Watertown, barley; George Wright, Merrilan, clover; F. W. Ziéhke, Medford, rye; Herman Zinnes, West Allis, corn; John Hans, Jefferson, flax. Total, 50.

Bronze Medals.

- Clinton, I. B. Adams, barley; North Freedom, E. Allen, beans; Ripon, Antone Arsenskey, oats; Evansville, H. L. Austin, corn; Wauwatosa, Fred Behling, oats; Janesville, August W. Blank, peas; Bear Creek, Henry Borchardt, speltz; Albany, George Bump, barley; Clinton, H. Cheeseman, barley; Janesville, Arthur M. Church, peas; Reeseville, L. H. Cox, oats; Clinton, C. J. Doubleday, speltz; Medford, F. Dusing, timothy; Big Suamico, L. W. Erdman, corn; Bear Creek, Albert Tellock, wheat; Medford, John Gamper, buckwheat; Alma Center, Charles Gansil, wheat; Menomonee Falls, John Gracs, wheat; Cadott, J. V. G. Guhl, wheat; Bear Creek, Peter Hansen, rye; Chetek, O. H. Hanson, collection of grasses and forage plants; Maple Creek, Gerhard Hehman, oats; Big Suamico, Fred Herring, wheat; Belle Plaine, E. S. Hildeman, peas; Clinton, Frank Hood, barley; Brandon, David Jones, oats; Albany, August Kleinsmidt, rye; Jefferson, Peter T. Lang, corn; Maple Creek, Walter Owen, buckwheat; Fayette, J. Penmaster, beans; Boyd, C. Peterson, wheat; Janesville, Judson E. Randall, popcorn; Merrilan, Joseph Hechenbach, wheat; Watertown, Carl Radloff, barley; Dodgeville, F. Rohowetz, wheat; Bear Creek, Albert Schoelkoff, oats; Bear Creek, Julius Schroeder, barley; Cottage Grove, F. H. Scribner, oats; Big Suamico, S. B. Smith, peas and white field corn; Little Black, C. F. Splinter, barley; Waukesha, Peter Swartz, wheat; Sturgeon Bay, Teweles & Brandies, peas; South Germantown, Thomas Trinwith, barley; Oconomowoc, C. H. Van Alstine, corn; Waunakee, Walter Watzke, sugar cane; Pewaukee, Nathaniel Weber, buckwheat; Weyauwega, W. H. Weed, rye; Ripon, E. R. West, oats; Fayetteville, Mark West, wheat; Belle Plaine, August Winkler, wheat; Elm Grove, George Woelfel, wheat; Germantown, August Zeinke, wheat; Ripon, H. P. West, flax. Total, 55.

DAIRY.

H. K. Loomis, Sheboygan Falls, Commissioner.

State of Wisconsin—Gold Medal—Buter and cream.

Other awards not announced.

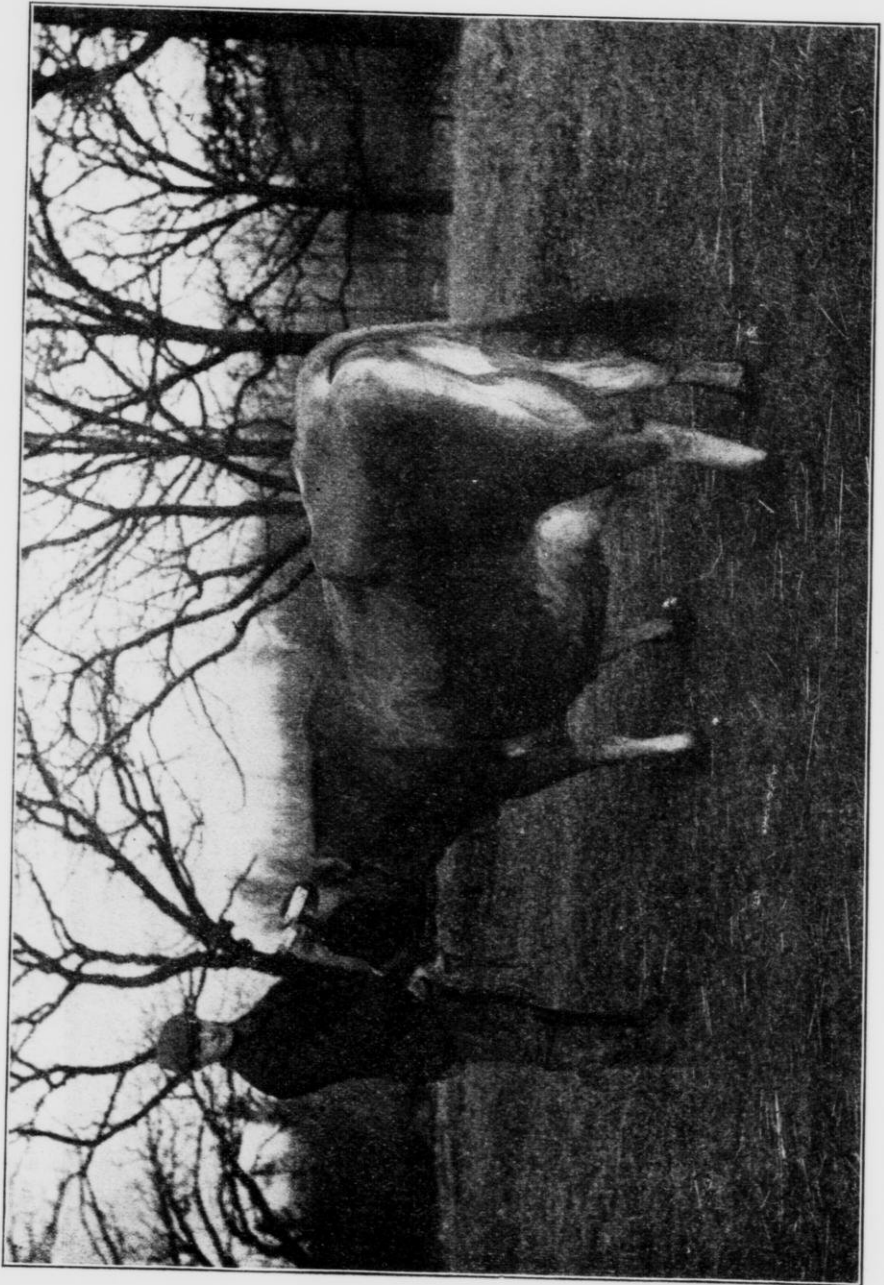
HORTICULTURE.

State Horticultural Society, Commissioner.

Awards not announced.



Exhibit at Farmers' Institute at Welcome or Bear Creek, Outagamie Co., Jan. 5 and 6, 1904. A Part of this Exhibit Was Sent to the World's Fair at St. Louis and Won Several Gold and Silver Medals.



"LORETTA D."

WISCONSIN FARMERS' INSTITUTES

“LORETTA D”.

JERSEY COW BRED BY F. H. SCRIBNER, ROSENDALE, WIS.

Champion cow in all dairy tests entered by her at World's Fair, St. Louis, 1904.

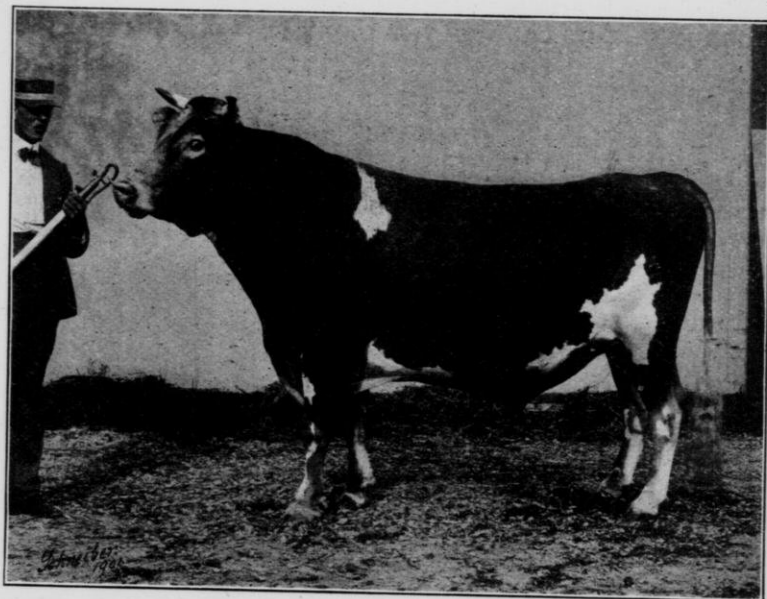
RECORD IN THE 120 DAYS OF THE DAIRY COW DEMONSTRATION.

Total milk	lbs.	5,802.7
Average test	% butter fat	4.82
Butter fat	lbs.	280.16
Butter (calc. to contain 83% fat).....	lbs.	330.03
Solids not fat	%	9.01
Solids not fat	lbs.	522.89
Cost of feed		\$31.989
Value of butter at 25c.		\$82.507
Value of butter fat at 30c.		\$84.048
Value of solids not fat at 3c.		\$15.687
Excess of butter value over feed value.....		\$50.518
Excess of butter fat and solids not fat over feed value.....		\$67.746
Gain in live weight	lbs.	77

Feed consumed during the 120 days.

	1st. 60 days.	2d 60 days.	Total.
	lbs.	lbs.	lbs.
Alfalfa hay	1,470	1,460.4	2,930.4
Silage	837	621	1,458
Rolled oats	42	21	63
Corn meal	148	298.5	446.5
Wheat bran	171.5	189	360.5
Distiller grains	12	46	58
Oil meal	119.5	97	216.5
Ground oats	128.5	21.5	150
Hominy feed	90	4.5	94.5
Corn hearts	109	86.5	195.5
Gluten feed	260	203	463

Total number of pounds, 6,435.9.



"Prince Rosendale," first prize, aged Guernsey Bull, at World's Fair, St. Louis, 1904. Bred by Geo. C. Hill & Son, Rosendale, Wis.

THE BOY AND THE FARM.

Prof. EDGAR G. DOUDNA, Sextonville, Wis.

Read at Farmers' Institute at Twin Bluffs, Wis., Jan. 21, 1903.

The problem of the boy is as old as the farm, and as full of interest and trouble today as ever. Discussion can hardly add anything to the already large stock of argument for and against the boy and his duty. I suspect that the boy cares less about it than all the multitude that looks upon him as its enemy. A bundle of possibilities, a storehouse of noisy energy, a terror to orderly homes, a defier of system, a hater of form, he has been maligned and branded falsely as hopeless. A bundle of conceit, a storehouse of selfishness, a defier of law and order, a friend to dirt and filth, he has been coddled and spoiled. When we understand the boy, we shall know how to separate the good from the bad, and shall encourage the good and destroy the bad. Then the boy problem will be fully solved and the process of his evolution be complete.

Fundamentally the boy of the farm is the same as the boy of the city or village. He inherits the same traits of character, is inspired by the same motives and must solve the same problems of life as other boys. His relations to society, his duties to self and state, his allegiance to his country are always and ever universal. The factor of environment is the only basic element which distinguishes the boys of the two classes.

Influence of Environment on Character.

When the first glimpses of the new world come to a boy, when the first facts of the great universe are thrust upon him, consider how important

are his surroundings; whether his eyes shall first encounter great walls of wood and brick and stone, of faded patches of sky, of grimy pavements, of soot and smoke, of a maelstrom of men struggling with great monster poverty, or swallowed by the equally dangerous octopus of vanity; or whether they shall behold the blue firmament of heaven unmarked save by the golden pavements of God, the stately trees and modest flowers drinking the pure dews of the morning, men battling for a livelihood with weapons old as eternity; these may swing the scale towards success or failure. The environment which is the heritage of the farmer's son is not to be bartered for a world of man-made conditions and surroundings. Who can measure the influences that owe their inception to an early contact with nature? The songs of our poets, the imaginations of our inventors, the thoughts of our philosophers sweep back to the days of contact with the Creator, undefiled. The greatest fact in a man's life is his heart, his emotion, his power to love. It transcends intellect and will; it is the basis of music, art, literature, poetry. It is the spirit of the Creator calling him higher. In these early days of youth, in the spring time of life, how much these influences mean to a boy! He may never realize the debt he owes, may never appreciate the advantages thus gained, may judge success by the standard of the almighty dollar, but the influences working within him are still the power that make of him a man. The power of the farm is still the power that saves

us from the absolute domination of a material despotism and a worship of the golden calf.

With these advantages, the boy begins his struggle for knowledge of the world. He must live over again the life of the race, must repeat the lessons of his parents and adapt them to his future. The school becomes a factor in his life. It stands upon the hill top of knowledge and offers him free all of its wealth. He refuses it because of its seeming uselessness. When too late, he recognizes his loss; when he becomes a father he determines that his sons shall have what he has lost. He wonders at its refusal and manlike resorts to force. He has failed to learn the lesson that every father must learn and which every mother has instinctively graven upon the tablets of her heart: "Do honor and justice to the nature of the child." The divine spark of maternity has kindled the fires that have burned out the ignorance and despair of the ages. Sympathy succeeds where strength fails. It is small wonder that we say the two most potent influences in the world for right are home and mother. Through this influence "the hand that rocks the cradle rules the world."

When we recognize that boys with the same surroundings, the same influences, may be entirely different by nature, we have made one step in the solution of our problem. It is said that an English tourist was visiting the birthplace of Daniel Webster in New England. Gazing upon the lofty mountains, the waving pines, the beautiful sky, drinking the pure air of the mountains, he exclaimed to his guide: "I can now understand the secret of Webster's success. How could a boy with such surroundings to influence his early life be aught else than a great orator?" His friend, who had also been raised in the same

region, replied, "Yes, it should be true, but in all these years thousands of boys have grown up under the shadow of these same mountains, but, sir, there has been but one Webster."

Congenial Employment Necessary to Success.

The nature of the child is after all the determining factor of his life. This must be studied and honored, not fitfully, but carefully and prayerfully. It is possible that John, though born on a farm, educated in its mysteries, appreciating its advantages, may not wish to live on the farm. If his abilities are such as will make him succeed elsewhere and he chafes under the work of the farm, you are doing him and the world an injustice by compelling him to follow the plow. He is only happy who has congenial employment. Study the boy. A father who wished to find an occupation suitable to him, placed the boy in a room with an apple, a dollar and the Bible. If when he returned he found him reading the Bible he should be a minister, if eating the apple a farmer, if playing with the dollar a business man. When he returned he found his son seated on the Bible eating the apple with the dollar in his pocket. He wisely determined to make of him a lawyer. Such a study as this is hardly of use. "One swallow does not make a summer," nor one act good or bad a life. Only intelligent observation and deep sympathy can aid a boy in determining his future. How often the influence and intuition of a mother accomplish what the intellect of a father fails to do. Our boys need inspiration, but of a radically different kind to that served up to them in a great many books of biography. Truth must be a part of them. Incidents of early life, while they may disclose a boy's true nature, are by

no means sure to do so, so in reading of a great man, the boy often misses the significant fact and seizes upon unimportant ones; he gets the form and loses the spirit. He thinks he must emulate his hero or fail. Often he takes no account of conditions and sighs because of lost opportunities. He is not mature enough to seize the significant facts and in this some biographers are not superior to him. He has not learned with Emerson "That imitation is suicide." His experience is too small, his horizon is too restricted. The boy is not a pocket edition of the man to be read with a reading glass at a safe distance. He is a radically different being and must be dealt with from a different standard of control. We have no need for prigs, sissy boys, wax figures of fashion, nor conceited young gentlemen for pets. We do need the animal of possibilities, the boy. We need the noisy, dirty, heedless boy, not that he may remain always such, but that he may undergo the miracle of transformation that will make of him a man; a man in all that the word implies. No matter if in his youthful days he appears callow, green and hopeless, beneath the roughest bark often lies the soundest heart.

The Boy Needs Sympathetic Appreciation.

I often wonder if we appreciate the mental life of a boy. Doesn't he know better than we his awkwardness? Where to locate his hands and feet with reference to the horizon is to him a tremendous problem. He never finds a satisfactory attitude. Failing to suit himself, knowing that he can never suit his fastidious critics, is it any wonder he swings to the opposite extreme and tries to be as ridiculous as possible? Give the boy credit for good intentions, for I am sure you

don't know him well enough to be a fair judge. The attitude he assumes to you may be a false one, he may try to live by your standard and yet think from his own.

If he ever needed your sympathy, fathers and mothers, it is when he is emerging from the chrysalis state, when he is on the border line of man and child, when he looks the future in the face from the standpoint of both boy and man. Alas for him if you allow him to assume a defiant and belligerent attitude, or the don't care state. This should be his age of air castles, of optimism, of great plans, of dreams. No doubt of his ability to achieve whatever he undertakes should come to him, the world is his. Youthful enthusiasm brooks no defeat and the men who have made the world feel their strength, have never outgrown this feeling of prowess. This period of the boy's life is the one in which he is most misunderstood by his parents. Accustomed as they have been to directing his early steps, and to his unquestioning obedience to their sometimes selfish orders, they can hardly realize that he should ever change. The border line of manhood seems to have come too soon; the threshold of manhood seems to have been pushed back since the good days of old. John must still be Johnnie, is still thought to wear his swaddling clothes. An old couple aged ninety-five and six respectively were returning from the funeral of their oldest son who had died at the tender age of seventy-one. Pitifully the mother turns to the husband and in woeful tones says, "Father, I always knew we should never be able to raise that child." This country of ours is filled with loving parents who cannot grasp this simple truth of simple growth and succeeding maturity. They either ignore it entirely and still undertake to enforce their

commands with the old absolute authority, or helplessly surrender the reins of government to the untrained judgment of the boy. Shall we ever be able to allow the boy to become a self-governing being, or must we let him drift with the tide? Shall we only dictate when we feel it necessary to our own interests and allow absolute freedom when they are not infringed upon? Nay, verily. Every parent who has the best interests of his children at heart, places their welfare above his own, but often, oh, how often, they allow the young tyrant to rule. The boy must never be allowed to think he is the chief priest in the tabernacle of the home. He must not become a selfish defier of all authority. In early years the crying need of our boys is a little more wholesome use of that good old word obey. It still needs to be spelled with a capital letter; the doctrine of obedience to rightfully constituted authority still needs to be instilled into the minds of Young America. But as years come and go, as the boy ceases to be a child, when the mighty change to manhood comes, then the capital needs to gradually increase in size, until it vanishes into and becomes self-control. For this I plead, that the boy of the American farm may become the best type of pure, honorable, self-reliant manhood. Respect for parents, for their elders, for the school, church and state may be the results of our home training. Home-making, heart forming, are studies deserving of all parents. The farm home will be the inspiration of the best work yet done by the American nation. The boy ought to be worth more than any other product of the farm—except the girl;—he often gets less attention than the blooded stock.

"Hitch Your Wagon to a Star."

In a subject so broad as this, I can touch upon but a few of the many topics which suggest themselves. I am tonight only pleading for the recognition of the boy as nature formed him. I can only hope that in time both parents and teachers will outgrow their prejudice to the boy; that through a cooperation we may be able to lift him to the highest possible plane. The old question of whether he shall stay on the farm, is of less importance than the more fundamental one of whether he shall be what God intended him to be. I presume we hold ideals too high for our boys to reach. That is well. Ideals need to be moving higher. The boy needs to hitch his wagon to a star, but he needs to choose wisely the star. It should guide him as the Pole star does the mariner. He also needs to avoid aiming at a shooting star. Other stars than those of the first magnitude are to be preferred by most boys. Nearly every boy who reads and imagines, hopes to do things which will make him famous. Isn't it time to stop holding up models for him to imitate? Can't he succeed without being president of a steel trust or of the United States? So much are these false hopes held out to a boy that he thinks himself a failure if he fails to reach them. A visitor to a boys' school asked all who would like to be president of the United States to raise their hands. Every hand but one was raised enthusiastically. "Why isn't your hand raised," was asked of the backward youngster. Sobbingly he replied, "W-what's the use, I'm a democrat." More serious handicaps than this are holding back the others. When a boy can recognize his limitations and then does the best he can

under these restrictions, he has succeeded. Honest effort needs to be encouraged and rewarded as much as results. Misfits in school and life come from this inability to recognize native talent. We try to make scholars and philosophers, inventors and captains of industry, ministers and orators, statesmen and poets out of boys who can never succeed simply because they lack the essential quality that makes for success in these fields of labor. I am afraid that our higher institutions of learning are luring toward certain failure many a boy and many a girl whom God meant should minister to the wants of man through the farm; whose best examination papers should be corn and cows, sheep and poultry. Blue denim is as regal as purple, is as honorable as broadcloth.

"It isn't merely what men shall say
When the cold, damp clouds above us
lie;
It is this: We are here in the world
today,
And we ought to be showing why."

Parents Need Better Conception of Meaning of Education.

This brings me to my final point, that to give the boy of the farm the best chance, parents must have a better conception of what an education means. The old conception that made it an intensively unpractical thing is passing away and a broader and more intelligent view is taking its place. The only function of thinking and training is to prepare for action. We think that we may act, study that we may achieve, educate that the boy may add to the world's experience his mite. Knowledge without power to apply it is wasted, is dead. There is no such monstrosity as an educated fool, but there are

plenty of men with heads crammed full of facts and empty of any grain of native wit, or power of application. Like the water in the mill dam, it lies shining and beautiful in its reflected glory, but until transformed is useless. Soon it becomes stagnant, putrid, unwholesome. Facts, though of infinite value, are not the end and aim of education. Your boy is educated only when he can think, feel, love, appreciate the beautiful, dare to do the right, has will and courage to do his duty, and is true to himself always. Even though denied of the advantages of school, he may rise to the highest pinnacle of thought and power. I wish our schools might do more for the spirit and less for the form. At present, the home must do most of it and I undertake to say that the farm home can do it better than any other.

Wm. E. Russell, in addressing a class of Harvard graduates as they were ready to start out into the world, said: "Fellows, remember that there is a difference between making a living and making a life." Written in letters of gold, those words ought to be placed wherever boys may come. The home, school, church must learn the difference and apply it to their work. The boy and the farm must solve the problems of living and life.

Hope of the Nation Rests in Its Boys.

If J. J. Hill's remark that the farm contains about all the patriotism left in this country is true, then the boy has a duty unlimited; if this government, founded in resistance to tyranny and preserved by the doctrine of equality, is to endure, he must make it. The eternal battle of right against might is still raging; the hosts of right still call for reinforcements. Whence will they come? As in the past, from the homes of the great

middle class, best represented by the farm. In the future rests our hope, the past inspires, the present lends it color. Newer hopes, larger ambitions, higher aspirations, broader principles must be dominant. The star of the Republic which rose over a little of a century ago must mount still higher; its rays of light must not fall upon an empire crumbling under a weight of a commercial despotism, but upon a more substantial structure reared for eternity. The hopes of our philosophers must become the realities of our historians. May the sun always shine through the clouds, dispelling pessimism and doubt, until America has done her part in the regeneration of mankind; until the American ideal has been attained never to be lost, but passed on into the great and boundless ocean of eternity. Then, if we are permitted to see the result of our handiwork, we shall hear the notes from beyond saying: "Behold, I have set before thee an open door, and no man shall close it unto thee."

May the boy of the farm see his duty and press on to its achievement.



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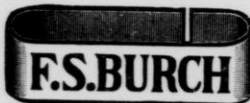
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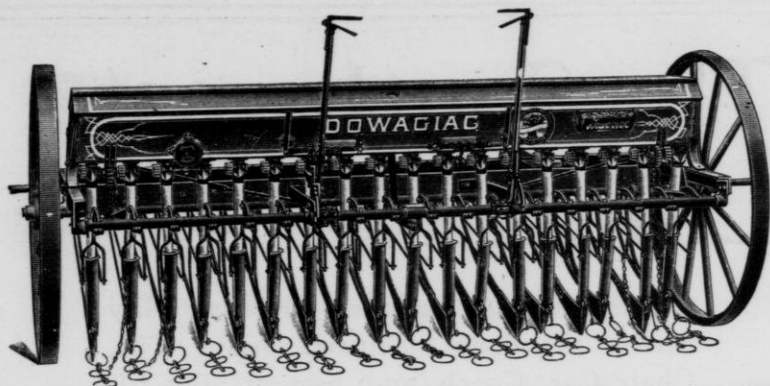
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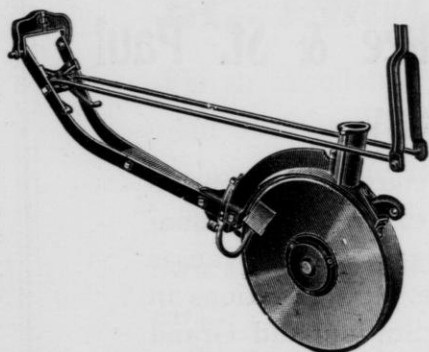
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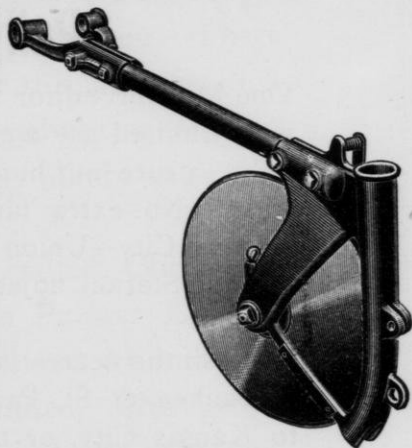
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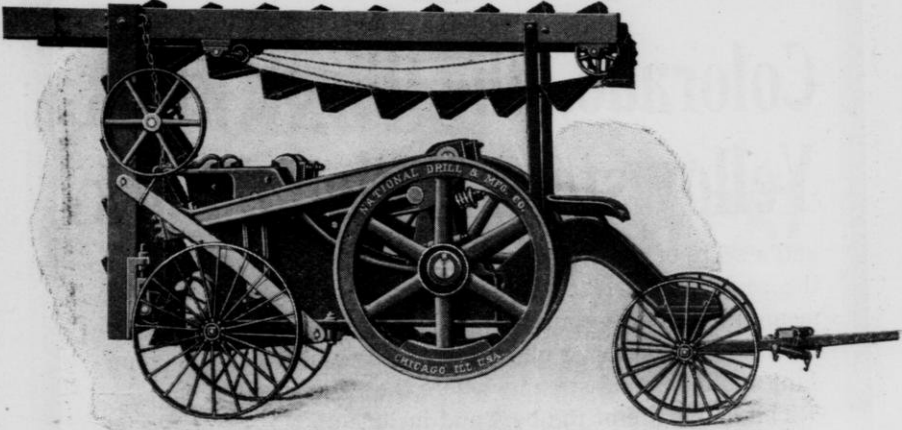
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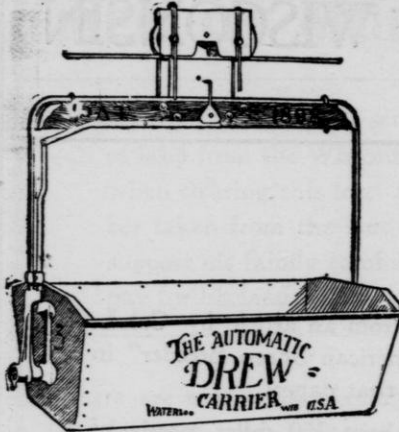
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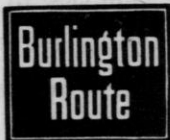
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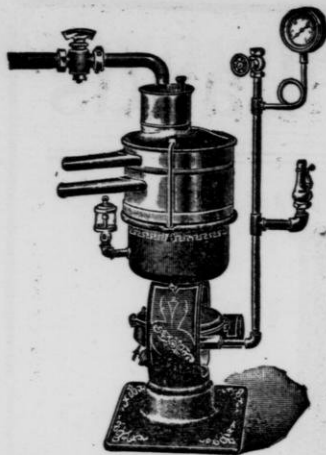
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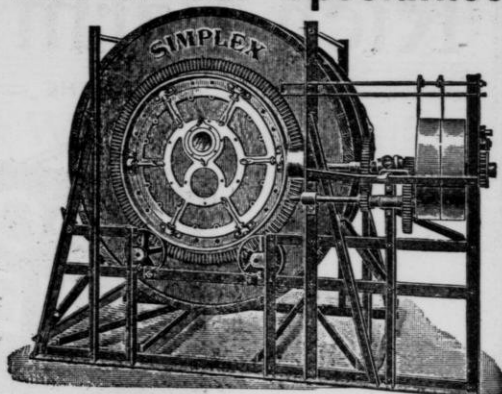
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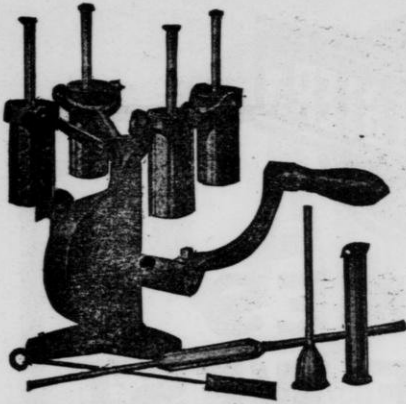
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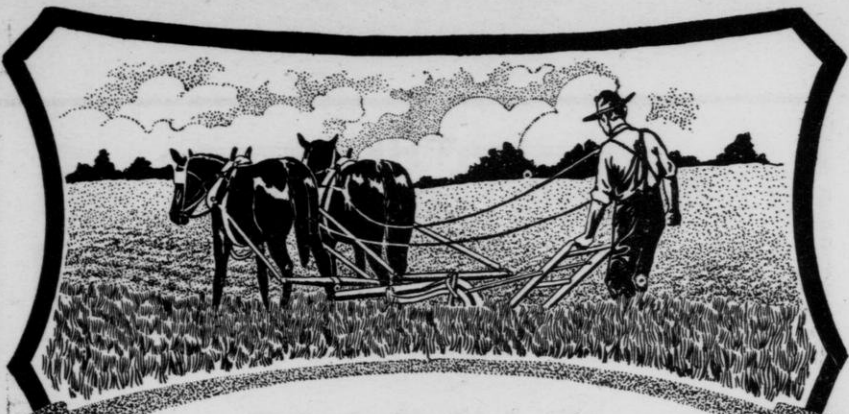
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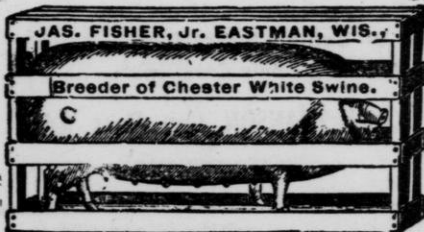
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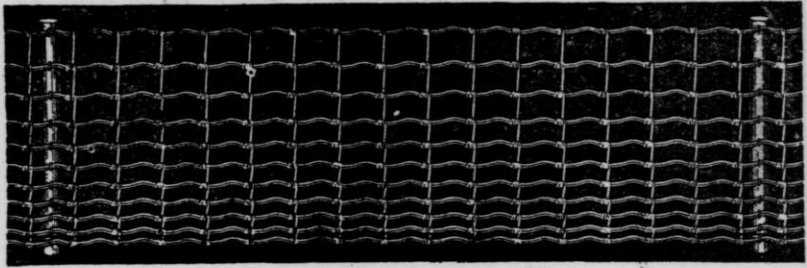
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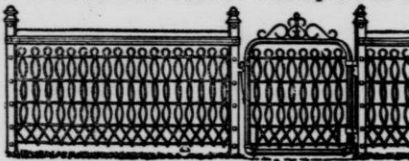
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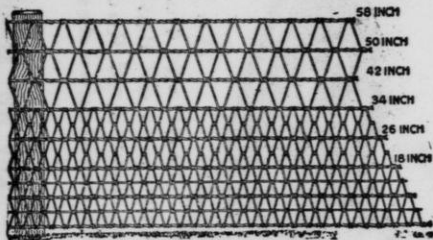
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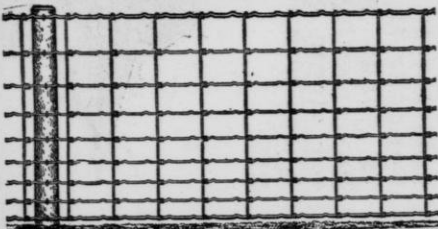
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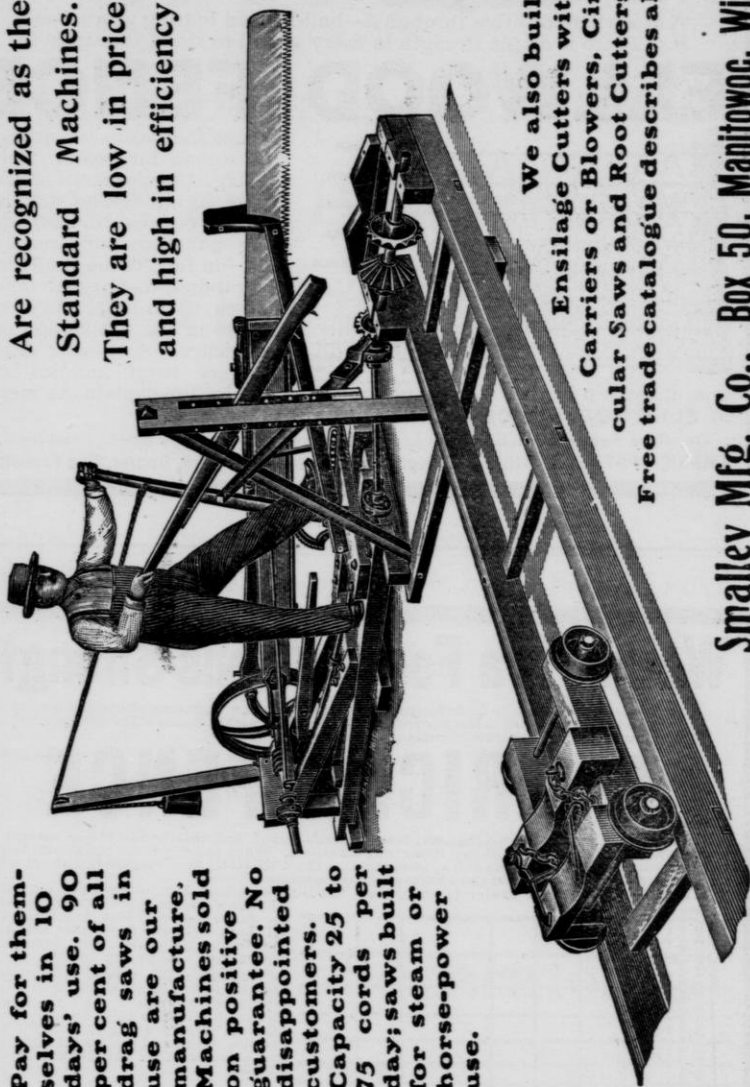
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