



LIBRARIES

UNIVERSITY OF WISCONSIN-MADISON

Wisconsin Farmers' Institutes : a hand-book of agriculture. A report of the twenty-eighth annual closing Farmers' Institute, held Ellsworth, Wisconsin, March 17, 18, 19, 1914. Bulletin No. 28 1914

Wisconsin Farmers' Institutes

Madison, Wisconsin: Democrat Ptg. Co., State Printer, 1914

<https://digital.library.wisc.edu/1711.dl/36H74WJQE432G9B>

Based on date of publication, this material is presumed to be in the public domain.

For information on re-use, see

<http://digital.library.wisc.edu/1711.dl/Copyright>

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

RBW7
F22
3
28

LIBRARY
COLLEGE OF AGRICULTURE
UNIVERSITY OF WISCONSIN

WISCONSIN

**FARMERS
INSTITUTES**



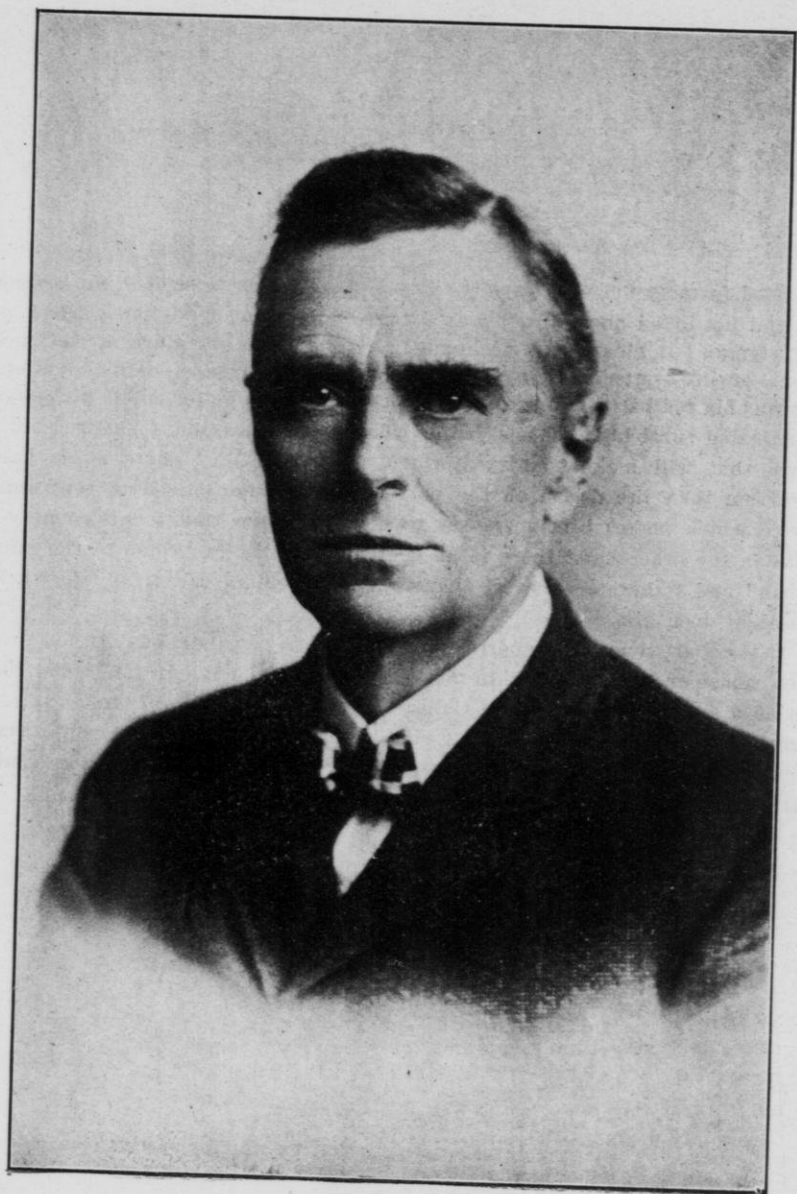
BULLETIN NO 28

**THE HEART OF THE PRUDENT
GETTETH KNOWLEDGE**

Good farming not only pays the farmer's obligation to society but to himself and his loved ones. It means a farm home free from the shadow of a mortgage. It means a farm home in which there are more of the good things of life—music, pictures, good reading, a furnace, bath-room, etc. It means big red barns and better live stock. It means better public highways, consolidated rural high schools, better country churches and a hundred other things that will make country life truly worth while. There is no finer patriotism than the desire on the part of the average citizen to contribute service which makes him necessary to his community and to his country—while on the other hand there is no contentment that can come to the man, husband and father more sweet than that of providing bountifully for those dependent upon him.

If there are debts that oppress you, let's try to pay them off. If you need a new house or barn, let's try to make enough to build it. If you would like to send a son or daughter off to College—but what's the use of enumerating? Whatever it is you desire most let's plan the battle carefully and then, taking the whole family, the horses, the pigs, cows, chickens, rain and sunshine into your confidence as never before—Let's WIN!

—WILLIAM HIRTH.



GEO. MCKERROW,

FOREWORD

This volume presents the closing work of George McKerrow as Superintendent of Farmers' Institutes. This term of twenty years has been a period of most conscientious and efficient service to the farmers of the State.

These twenty years constitute the most progressive period of Wisconsin's history. During this time Wisconsin has advanced from a poor grain-growing State to one of the most prosperous dairy and stock states of the Union. During this period matchless herds of pure bred stock have been built up; systems of testing and improving these herds have been devised and introduced, resulting in great improvement and profit; creameries and cheese factories, co-operative and private, have dotted the State to the thousands; better seeds, better methods of handling seeds, soils and crops have been introduced; the farm home has been greatly improved within and without; funds and sentiment for the support of the Agricultural College and Experiment Station have been secured, largely through the Farmers' Institutes, and because of this agricultural education has made undreamed of progress.

In all these improvements the Farmers' Institutes have had a large part, working side by side with the Experiment Station departments and hand in hand with all organized agencies for agricultural improvement.

The Farmers' Institute workers have used the funds allotted to them wisely and have accomplished much at small cost. Go into almost any farming community of the State and you will learn of Institutes held within convenient distance almost every year. Inquire among the people and you will find the most progressive, practicing profitable methods because they were recommended by the Farmers' Institute.

Mr. McKerrow has done a great service to the State. Let us properly recognize it.

LETTER OF TRANSMITTAL

HON. JAMES F. TROTTMAN,

President of the Board of Regents, University of Wisconsin:

SIR:—I have the honor of herewith presenting to you Bulletin No. 28
of Wisconsin Farmers' Institutes.

Your obedient servant,

C. P. NORGORD,

Superintendent.

Madison, Wis., November 24, 1914.

WISCONSIN

Farmers' Institutes

A HAND-BOOK OF AGRICULTURE



BULLETIN NO. 28

1914

A Report of the Twenty-Eighth Annual Closing Farmers'
Institute, Held at Ellsworth, Wisconsin,
March 17, 18, 19, 1914.

*"When tillage begins, other arts follow. The farmers, therefore, are
the founders of human civilization."* —DANIEL WEBSTER.

EDITED BY

C. P. NORGORD

SUPERINTENDENT

FIFTY THOUSAND COPIES ISSUED

Illustrated by
Eau Claire Press Co.,
Eau Claire, Wis.

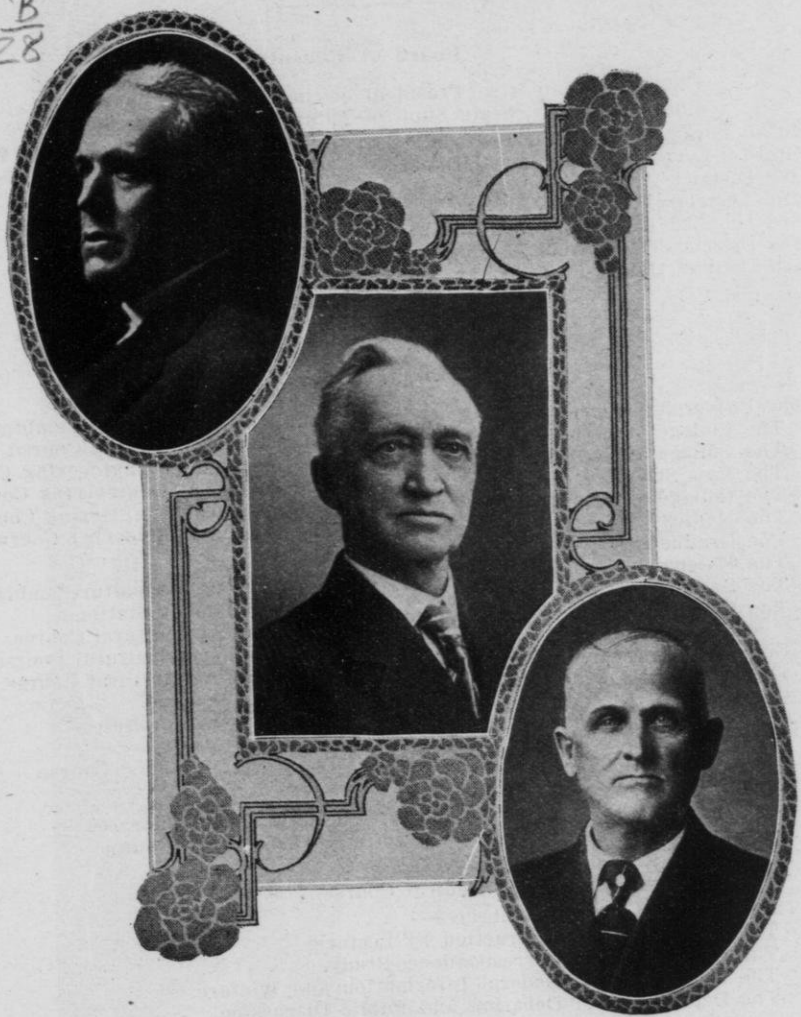
STENOGRAPHIC REPORT BY
MRS. A. L. KELLY
Chicago, Ill.

Printed by
DEMOCRAT PTG. CO.
STATE PRINTER,
Madison, Wis.

TABLE OF CONTENTS

	Page
University of Wisconsin	8
College of Agriculture	12
List of Farmers' Institutes, 1914-1915	14
Address of Welcome, Mayor W. L. Oltman	17
Response to Address of Welcome, Supt. Geo. McKerrow	19
Formation of Soils, L. E. Scott	23
Draining Soils, E. E. Wyatt	27
Use and Abuse of Soil, E. C. Jacobs	32
Tillage of the Soil, W. C. Bradley	37
Fertilizers for Our Soils, David Imrie	42
Intensive Farming, E. Nordman	47
The Pea Industry in Wisconsin, E. J. Delwiche	53
Pea Culture for Canning Factories, D. J. Fitzgerald	56
Alfalfa, Supt. Geo. McKerrow	63
Seed Grains, Noyes R. Raessler	72
Corn Culture, John Imrie	80
The Silo, David Imrie	84
Silage, W. P. Bussey	89
Permanent Sanitary Farm Improvements, F. M. White	94
More and Better Live Stock, L. P. Martiny	100
Rural Credits, Miles C. Riley	108
The Farm Power House, E. C. Jacobs	118
Labor Savers on the Farm, L. E. Scott	122
Orchard Districts of Wisconsin, D. E. Bingham	127
Small Fruits, W. H. Hanchett	134
The Road Problem in Wisconsin, A. R. Hirst	141
Farmers' Clubs, A. D. Wilson	157
Dairy Development of Wisconsin as a Railroad Man Sees It, Fort J. Allen	168
The Dairy Sire, H. D. Griswold	175
Good Cows, W. H. Clark	180
The Best Calves, David Imrie	187
Sheep and the New Farm, E. Nordman,	190
Swine for Profit, Thos. Convey	195
Meat Production in Wisconsin, Supt. Geo. McKerrow	206
Woman's Birthright, Mrs. Nellie Kedzie Jones	216
Letter from C. E. Estabrook	225
Food Inspection and the Dairy and Food Department, E. L. Aderhold	227
Co-operation of the County Superintendent with the Farmers' Institutes, Supt. Geo. W. Davies	233
Successful Co-operation in Buying and Selling, W. H. Hanchett	239
Educational Poultry Work, Geo. W. Hackett	253
Potatoes, L. E. Scott	259
The Farm Garden, W. C. Bradley	262
Home Surroundings, E. C. Jacobs	264
Clovers, W. P. Bussey	270
Hay Making, E. E. Wyatt	274
The Dairy Barn, H. D. Griswold	279
Resolutions	285
Wisconsin Farmers' Institutes, Supt. Geo. McKerrow	287
Cooking School, First Day, Miss Nellie Maxwell	292
Cooking School, Second Day, Miss Susan K. Brown	303
Cooking School, Third Day, Mrs. Nellie Kedzie Jones	311

RBW7
.F22
B
28



J. H. Hale

J. M. True

Arthur Broughton

Granted special recognition by the University of Wisconsin for their services in upbuilding agriculture.

THE UNIVERSITY OF WISCONSIN

Board of Regents.

Charles R. Van Hise, President of the University, ex-officio.

Charles P. Cary, State Supt. of Public Instruction, ex-officio.

State at Large, Gilbert E. Seaman.

6th District, Miss Elizabeth A. Waters.

State at Large, Mrs. Florence G. Buckstaff.

7th District, D. O. Mahoney.

1st District, A. J. Horlick.

8th District, G. D. Jones.

2nd District, F. W. A. Notz.

9th District, Orlando E. Clark.

3rd District, E. M. McMahan.

10th District, Ben F. Faast.

4th District, Theodore M. Hammond.

11th District, A. P. Nelson.

5th District, James F. Trottman, Pres.

M. E. McCaffrey, Secretary.

Organization.

The University embraces—

The College of Letters and Science.

The College of Engineering.

The Law School.

The College of Agriculture.

The Medical School.

The Graduate School.

The Extension Division.

The Summer Session.

The College of Letters and Science embraces—

General Courses in Liberal Arts.

Special Courses which include:

Chemistry.

Commerce.

Journalism.

Library Training Courses.

Music.

Pharmacy.

Training of Teachers.

The Medical School embraces—

The First Two Years of a Medical Course.

The Extension Division embraces—

The Department of Instruction by Lectures.

The Department of Correspondence-Study.

The Department of General Information and Welfare.

The Department of Debating and Public Discussion.

The Summer Session embraces—

Courses in the various Colleges and Schools of the University.

The College of Engineering embraces—

The Civil Engineering Course.

The Mechanical Engineering Course.

The Electrical Engineering Course.

The Chemical Engineering Course.

The Mining Engineering Course.

The College of Agriculture embraces—

The Experiment Station.

The Long Agricultural Course.

The Middle Agricultural Course.

The Short Agricultural Course.

The Dairy Course.

The Farmers' Institutes.

Home Economics.

The Forest Rangers' Course.

The Law School embraces—

A Three Years' Course.

Branches of Study.

The University presents a wide range of study embracing more than three hundred subjects. Something of the extent and variety of these may be indicated by the following synopsis: Twelve languages are taught, viz.: Greek, Latin, Sanscrit, Hebrew, German, Norse, French, Italian, Portuguese,



Wisconsin County Agricultural Representatives.

E. L. Luther, State Leader.

F. D. OTIS
Barron County
A. H. COLE
Lincoln County
JNO. SWENHART, JR.
Forest County
W. D. JUDAY
Oneida County

GRIFFITH RICHARDS
Price County
E. L. LUTHER
State Leader
JNO. KLINKA
Polk County
J. M. WALZ
Douglas County

F. G. SWOBODA
Langlade County
OSCAR GUNDERSON
Vilas County
R. A. KOLB
Taylor County
G. R. INGALLS
Eau Claire County

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

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

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

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

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

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

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

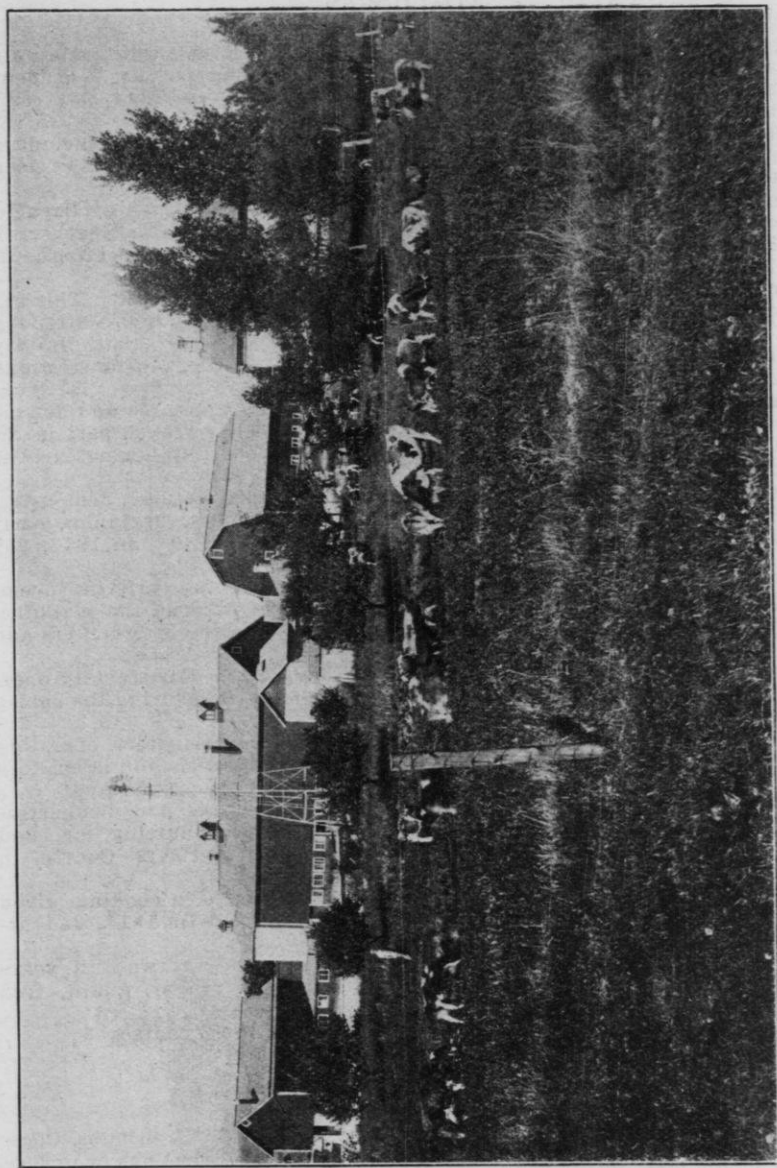
In Pharmacy:—Courses in Practical Pharmacy, Pharmaceutical Chemistry, Materia Medica, Pharmaceutical Botany and Practical Laboratory Work.

General Facilities:—The faculty embraces six hundred and ninety-four instructors of whom 182 average half time. The laboratories are new, extensive and well equipped; embracing the Chemical, Physical, Metallurgical, Mineralogical, Geological, Zoological, Botanical, Bacteriological, Civil, Electrical and Mechanical Engineering, Agricultural and Pharmaceutical Laboratories. Seminars are held for advanced study in History, Language, Literature, Mathematics, and other branches.

The libraries accessible to students embrace that of the University, 210,000 volumes; of the State Historical Society, 375,321 volumes of the State Law Department, 55,000 volumes; of the city, 32,790 volumes, besides special professional and technical libraries, making in all more than 673,000 volumes, including pamphlets, thus affording very exceptional opportunities for reading and special research.

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

W. D. HIESTAND,
Registrar.



The Farm of William M. Jones that Won the First Prize in the Wisconsin Farm Contest.

In this contest recognition is given for the display of executive and managerial ability. Consideration is given to net profits, maintenance of fertility, home life, health of herd and general appearance.

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

- Long Course.** Covering four full college years, offers scientific training in agriculture, as well as training in the underlying sciences. Students may specialize in any line after the second year. In 1914, 682 registered.
- Middle Course.** Consists of two full college years, modified to include as much practical work as possible in connection with the regular scientific training. In 1914, 135 registered.
- Home Economics.** A four-year course, leading to the degree of Bachelor of Science, for those who wish to prepare themselves as teachers in Home Economics, as home makers or for other related vocations. In 1914, 205 registered.
- Summer Session.** Last week in June to second week in August. This session includes 22 courses in agriculture. In 1914, 301 students attended.
- Short Course.** A term of 14 weeks in each of two years. Registration Saturday, November 29. The course includes lectures, demonstrations, and practice work. In 1913-14, 441 attended.
- Young Peoples' Course.** This is a one week course of lectures and demonstrations in agriculture for boys and girls who have taken part in the Young People's Grain Growing Contests. It generally begins early in February.
- Farmers' Course.** This is a ten-days' course of popular lectures, demonstrations and exercises in practical agricultural science, beginning early in February. It is open to farmers over 25 years old. In 1913, 954 attended.
- Winter Dairy Course:** A twelve weeks' session, beginning early in November, including lectures, laboratory and practice work in the manufacture of dairy products. It is designed especially for buttermakers and cheesemakers. In 1913-14, 155 attended.
- Summer Dairy Course.** This is a ten-weeks' training in dairy factory operation for beginners. Students are admitted any time during the spring or summer after March 1.
- Special Dairy Course.** This is for creamery and cheese factory operators and managers and covers ten days, including addresses and laboratory demonstrations. It is given at the time of the Farmers' Course.
- Women's Course.** This is a one-week course of lectures and demonstrations on various phases of home economics, cooking, nursing, etc., and is given during the first week of the ten days' Farmers' Course, in 1914, 435 attended.
- Women's One Week School.** This is a laboratory course in cooking, given during the second week of the Farmers' Course. In 1914, 344 attended.
- Forest Rangers' Course.** This course covers a period of two full years preparing students for such positions as forest ranger, guard, tree planting expert, or nursery foreman.

For further information concerning any of these courses
address the College of Agriculture,
Madison, Wis.

Farmers' Institutes.

C. P. Norgord, Superintendent

Nellie E. Griffiths, Clerk

THE FARMERS' INSTITUTES DEPARTMENT conducts meetings in various sections of the state where practical lectures and conferences on subjects pertaining to farm life and farm operations are presented. Cooking Schools are also conducted for the women. The Farmers' Institute Bulletin is issued annually in an edition of 50,000 copies, and distributed at Institutes and by mail; also 10,000 copies of the Farmers' Institute Cook-book. Any community can secure an Institute upon proper application to the Superintendent. For further information address Supt. C. P. Norgord, Madison, Wis.

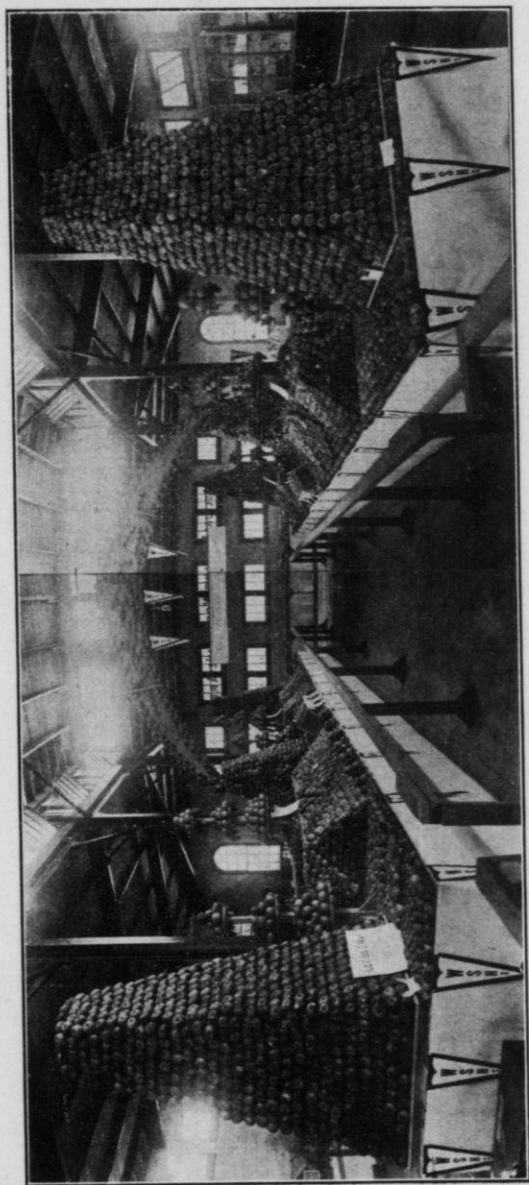


Exhibit of The Wisconsin State Horticultural Society at Wisconsin State Fair, 1914.

WISCONSIN FARMERS' INSTITUTES FOR 1914-1915.
ARRANGED BY COUNTIES.

Adams	Friendship.	Marinette	Coleman, Crivitz, Niagara, Pembine,
Barron	Dallas, Mikana.	Marquette	Peshigo, Wausaukee.
Bayfield	Bayfield, Cornucopia, Grandview, Iron River.	Milwaukee	Oxford.
Brown	Wrightstown.	Monroe	Hales Corners.
Buffalo	Cream.	Oconto	Kendall, Sparta, Warrens.
Burnett	Grantsburg, Webster.	Outagamie	Abrams.
Calumet	Brillion.	Ozaukee	Hortonville, Seymour.
Chippewa	New Auburn, Stanley.	Pepin	Mequon.
Clark	Withee.	Pierce	Stockholm.
Columbia	Rio.	Polk	Spring Valley.
Crawford	Soldiers Grove.	Portage	Amery, Centuria.
Dane	Cambridge.	Price	Rosholt.
Dodge	Burnett, Fox Lake, Reeseville.	Racine	Kennan, Ogema.
Door	Egg Harbor, Jacksonport, Sturgeon Bay.	Richland	Corliss.
Douglas	Bennett, Foxboro, Poplar.	Rock	Basswood, Lone Rock, Richland Center.
Dunn	Caryville, Elk Mound.	Rusk	Magnolia, Shoptiere.
Eau Claire	Fairchild.	St. Croix	Bruce.
Fond du Lac	Van Dyne.	Sauk	Glenwood City.
Forest	North Crandon.	Sawyer	Baraboo, Fairfield, Lime Ridge, Merrimac.
Grant	Cuba City, Stitzer.	Shawano	Exeland.
Green	Monroe, Monticello.	Sheboygan	Pulaski, Tigerton.
Green Lake	Dalton.	Taylor	Elkhart Lake, Waldo.
Iowa	Barneveld, Cobb.	Trempealeau	Chelsea, Stetsonville.
Iron	Hurley.	Vernon	Ettrick, Whitehall.
Jackson	Black River Falls, Hixton, Melrose.	Walworth	Chaseburg, LaFarge, Viroqua.
Juneau	Mauston.	Washington	Genoa Junction, Honey Creek.
Kenosha	Kenosha (Round-up).	Waukesha	Shell Lake, Spring Brook.
Kewaunee	Kewaunee, Rosiere.	Waupaca	Hartford, Newburg.
La Crosse	Rockland.	Waushara	Brookfield, Dousman, Hartland, Pewau- kee.
Langlade	Deerbrook, Eiton, Polar.	Winnebago	Scandinavia.
Lincoln	Corning, Doering, Pine River, Spirit Falls.	Wood	Coloma, Wautoma.
Manitowoc	Francis Creek, Valders.		Neenah.
Marathon	Marathon City, Norrie.		Lindsey, Nekoosa, Vesper.

INSTITUTES WITH DATES AND CONDUCTORS.

Dates.	L. E. Scott, Conductor.	David Imrie, Conductor.	H. D. Griswold, Conductor.	E. C. Jacobs, Conductor.	John Imrie, Conductor.	Special Fruit Institutes, R. J. Coe, Conductor.
1914—December.						
8-9	Poplar	Bennett†	Grandview	Shell Lake	Webster*	Bayfield.
10-11	Iron River	Foxboro†	Hurley	Spring Brook	Grantsburg*	Cornucopia.
15-16	Centuria*	Mikana	Exeland	Amery†	New Auburn	
17-18	Glenwood City*	Dallas	Kennan	Bruce†	Caryville	
			Jan.	Jan.	North Crandon	
1915—January.			5 Stetsonville..	5 Pine River	Deerbrook	
5-6	Marathon City†	Stanley*	6-7 Chelsea	6 Corning	Polar	
7-8	Vesper†	Withee*	8 Ogema	7 Doering	Elton	
12-13	Rosholt*	Tigerton	Pulaski	8 Spirit Falls	Brillion	Sturgeon Bay.†
14-15	Norrie*	Scandinavia	Abrams	Wrightstown	Neenah	Egg Harbor.
19-20	Kewaunee	Francis Creek*	Seymour†	Nekoosa	Van Dyne	
21-22	Jacksonport	Valders*	Hortonville†	Wautoma	Elkhart Lake	
26-27	Friendship†	Chaseburg	Mauston*	Soldiers Grove..	Merrimac	Baraboo.
28-29	Warrens†	Viroqua*	Lindsey	La Farge	Kendall	Sparta.
February.						
9-10	Elk Mound*	Stockholm	Fairchild†	Melrose	Ettrick	
11-12	Spring Valley*	Cream	Whitehall†	Hixton	Rockland	
16-17	Oxford	Dalton*	Burnett	Reeseville	Fairfield†	
18-19	Coloma	Fox Lake*	Hartford	Rio	Lime Ridge†	
23-24	Cambridge*	Cuba City†	Cobb	Shoptere	Basswood	Richland Center.
25-26	Monticello*	Barneveld†	Stitzer	Magnolia	Lone Rock	Pewaukee.
March.						
2-3	Waldo*	Mequon†	Honey Creek	Hales Corners	Dousman	
4-5	Newburg*	Corliss†	Genoa Junction..	Hartland	Brookfield	

Twenty-ninth Annual Closing Institute, Kenosha, Kenosha Co., March 9, 10, 11, 1915.

*Women's Institutes conducted by Miss Nellie Maxwell.

†Women's Institutes conducted by Miss Laura B. Breese.

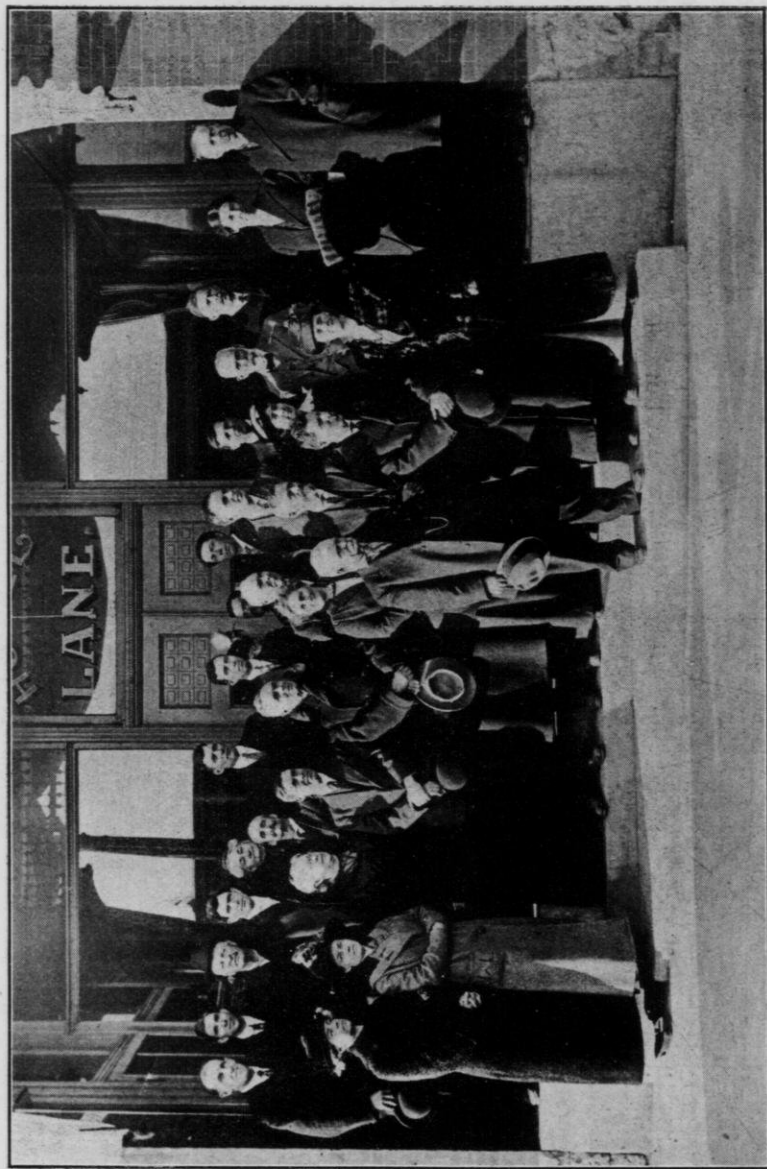
Institutes held in Marinette Co., D. S. Bullock, Conductor.

Oct. 19—Coleman, Niagara; Oct. 20—Crivitz, Pembine; Oct. 21—Peshigo, Wausaukee.

Black River Falls, Dec. 3-4. Monroe, Dec. 10, 11, 12.

All inquiries relative to Farmers' Institutes will be answered promptly.

C. P. NORGORD, Supt.,
Madison, Wis.



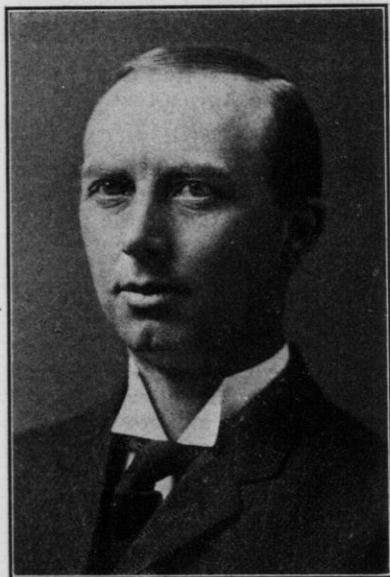
Members of Institute Force at Round-Up Institute, Ellsworth, March 17, 1914.

PROCEEDINGS
OF THE
TWENTY-EIGHTH ANNUAL
CLOSING FARMERS' INSTITUTE

HELD AT
ELLSWORTH, WIS., MARCH 17, 18, 19,
1914

TUESDAY MORNING SESSION

The convention opened March 17, 1914, at 9:30 A. M., Superintendent McKerrow in the chair.



Mayor Oltman.

ADDRESS OF WELCOME.

Mayor W. L. Oltman, Ellsworth, Wis.

I have heard of an Irishman who, on being asked by a kind-hearted person if he would have a drink of whiskey, made no reply at first, but struck an attitude and stood gazing into the heavens for some time, and when his friend said to him, "What are you looking at, Mike?", replied, "Be-dad, Sir, I thought an angel spoke to me."

Somewhat so did I feel, Mr. Chairman, when I received your invitation to be here today to speak at this Round-up Institute. I admit I was uncommonly pleased by it though. I considered it was a big compliment, but I soon found out it was too big. Just as soon as I began to reflect about the load that I had shouldered, I began to ask myself what I was going to say, or what in the world I could have to say before

a gathering of this kind; I was scared to think of what I had done.

I was like the man, who, while breaking a yoke of steers which he was holding by a rope, had occasion to use both hands in letting down a pair of bars and fetched the rope a turn around his legs. That instant something frightened the steers and that unfortunate farmer was tripped up and snaked off, feet first, on a wild, erratic excursion a mile or so over rough grounds as long as the rope lasted, and it left him in a very

at night; in the summer months perhaps from four or five o'clock in the morning until nine or ten at night—and yet I have spent some of my happiest days on the humble farm.

I used to love to be out in the gray of the dawn and listen to the birds warble in the trees. It made me feel as if the whole world was happy. But I presume that if some of my old neighbors are present here today, they will say, yes, that will do for him to tell, but he didn't



Part of the Boys in the Ellsworth High School Contest and Girls of the Teachers' Training Course who are taking Agriculture.

lamentable condition. His neighbors ran to where he lay and gathered him together, laid him down and waited around for him to come to. This he finally did and one of them asked him how he came to do such a thing as to hitch a rope to his leg under such circumstances. He replied, "Well, we hadn't gone five rods before I found out my mistake."

But I am glad I am here today; I am glad I am here because I was raised on the farm, my boyhood days and a good share of my manhood days being spent on the farm. I know what it is to farm; I know it involves a lot of hard work and long days, from early morn until late

get up early enough to hear the birds sing in the morning, but I will tell you, that was about the time I used to come home from dances and entertainments.

I am glad to see so many farmers and farmers' wives present here today; it shows that you are up and abreast of the times; it shows that you are interested in better farming; it shows that you are not going to farm along in the same old rut that we used to farm in twenty or thirty years ago; it is proof that you are going to raise better horses, better cows, better sheep and better hogs, better beef and better mutton, with less labor and less feed. There is not a farmer or a farmer's wife

within a radius of fifty miles of this city that can afford to be absent from here today. It is an agricultural school of the highest type, the very best that the State of Wisconsin can furnish, equipped with the very best teachers in that line of business, each an expert in the line on which he is to speak, sent right here into your community.

Ellsworth is a model little city, situated in the heart of Pierce county, surrounded by some of the richest farming lands in the State of Wisconsin. These farm lands are occupied and tilled by some of the best men in that line of business, farmers who know how to farm, but who are willing to learn to farm still better. Our little city is full of business and prosperous to the core.

And we fully realize that it is the loyalty, the good will, the co-operation of our farmers that is making us what we are. And I, as a representative and mouthpiece for the

citizens of the village of Ellsworth, want to thank you farmers from the bottom of my heart, for your loyalty to us. Without your loyalty and without your business, we could not flourish or exist. There has been more stock shipped in the past year from Ellsworth than from any other city of like size in any of the north-west states. There has been more merchandise received at the Ellsworth depot during the past twelve months than at any other place of like size in the State of Wisconsin, and we have also sold more merchandise during the past year than any other place of like size in the State of Wisconsin.

And now, as spokesman for the citizens of this village, we receive you with extended arms, as it were. Our only wish is that you might come oftener and stay longer. Anything that is ours during your stay here will also be yours. May you have a pleasant time while you are here, is our sincere wish.

RESPONSE TO ADDRESS OF WELCOME.

Supt. Geo. McKerrow, Madison, Wis.

It gives me pleasure to listen to the words of your local representative this morning, and I have a feeling of sympathy when he tells us about his being a farmer for so many years and about the early hour at which he heard the birds sing in the morning, because I have been there too.

We have met here in the capacity of the Twenty-eighth Closing Farmers' Institute in the State of Wisconsin, with the object in view of discussing the leading questions that relate to our business as farmers,—

discussing these questions in the main from the practical standpoint.

In the year 1885, a member of our State Legislature tells us, it came into his mind the fall before, while listening to an address given by a Wisconsin farmer to Wisconsin farmers at the County Fair in Manitowoc county, that such information as this farmer, the Honorable Hiram Smith, of Sheboygan, was giving to the farmers at that meeting, should not be confined to such occasions as that, when men's minds were disturbed by the horse races and competitive shows of animals

and agricultural products, but that in some way such information as Hiram Smith had to give and such as the other leading farmers had developed from their actual work upon their farms should be handed out to the rest of the farmers in the State of Wisconsin. With this thought in his mind, when he came to the State capitol, he formulated a bill which established the Farmers' Institutes, so that farmers like Hiram Smith could be brought into contact with the farmers of the State, and so that they might mutually discuss questions that related to their business from a practical standpoint, not with the object of revolutionizing the farm business of Wisconsin in a year or two or five or ten, but that the ideas thus passing from one farmer to another might be gradually worked in wherever they would work in, thus improving the general agriculture. This bill became a law, and an appropriation of five thousand dollars was made for the purpose.

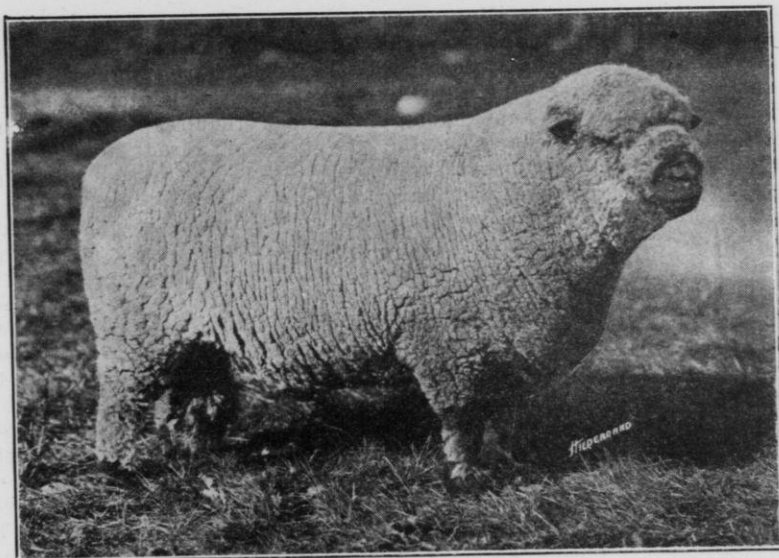
This was the first state, province or national appropriation made for the purpose of organizing an educational feature among farmers in any country or nation. It was tried out as an experiment and it worked so well that two years later the legislature increased the appropriation to twelve thousand dollars, and after a number of years this apparently gave satisfaction, because a University investigating committee, who were then investigating the expenditures made by the University, because it was the feeling of the Legislature that they were getting pretty large, recommended an increase of the Farmers' Institute fund to twenty thousand dollars, and I believe it was the only fund related to the University that they recommended an increase in, and the Legislature to which such recommenda-

tion was made raised the appropriation, meeting this recommendation of their committee without a dissenting vote.

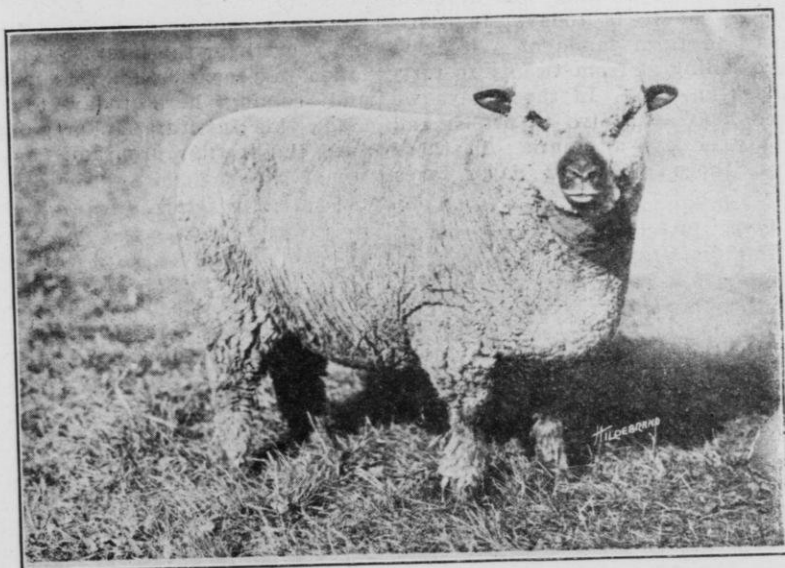
And so the work has gone on in the State of Wisconsin. Other states have copied after Wisconsin or have followed in its lead, until there is not a state in the American union but what holds some form of Farmers' Institutes; there is no province in Canada but what holds Farmers' Institutes under some form, and I understand some of the foreign nations have adopted this same kind of policy.

Now, we are here today, and Ellsworth was fortunate or unfortunate enough to get this Twenty-eighth Round-up in the State of Wisconsin as against three other competitors who were asking for this same meeting. Some of you may, in a sense, be disappointed in the program that is to be worked out here; first, in the fact that these talks are so very short and so very many of them, but I must honestly admit that this Round-up Institute, as all previous ones, is not made entirely for the community in which it is to be held, but it is made for the purpose of gathering a wide range of practical education or practical discussion to be put into bulletin form and go out the year following as the Annual Farmers' Institute Bulletin, and so we have our eyes upon that Bulletin, as well as upon this meeting at Ellsworth.

We have a long program, and in order to work it off, we must get promptly to work. This program was made up so as to be presented by practical men, for to my mind the Farmers' Institute should be kept a practical school. We have other forms of education that are dealing with the theoretical. Our agricultural high schools, our county schools of agriculture and our Agri-



Champion Shropshire Ram, Wisconsin State Fair, 1914. Owned by Geo. McKerrow & Sons Co., Pewaukee, Wis.



Champion Shropshire Ewe, Wisconsin State Fair, 1914. Owned by Geo. McKerrow & Sons Co., Pewaukee, Wis.

cultural College are dealing very largely with theories, and we will leave the theorizing mostly to those schools. The Farmers' Institute, to my mind, should be kept upon a practical plane, the leaders in the discussions should be farmers who have actually been there, who have been on duty early in the morning, to whom the birds have sung, whether it was to those young farmers just returning from a party, or out getting ready to milk the cows. We will try in the main to confine ourselves to the practical in discussing these problems, so we may find out the things that other men have discovered and put into their business, and bring a consensus of opinion together to make steady advancement all along the line.

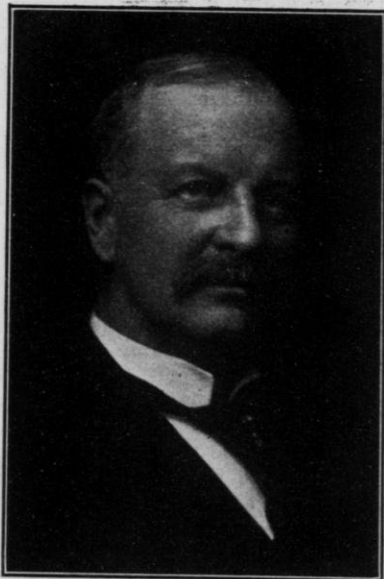
The day has come, however, when farmers have to be theorists, they have to think and think pretty hard. In the days when you and I were boys and got up at four o'clock in the morning, farming was different from what it is today. In those days the farm lands of Wisconsin were selling at from twenty to forty dollars an acre. In those days we hired men at twelve to fifteen and twenty dollars a month. In those days, those good old days, taxes

were not very high, but all these things have changed; the values of our farms have gone up, and to make even small interest on our investment requires more thought; the price of hired labor has gone up, so it is more expensive to grow and harvest our crops. Taxes have gone up, there is another added expense, and we must figure on all these things. Besides that, this is a day of shorter hours. Instead of working fourteen or sixteen hours, as some of our hired men expected to work in those old days, and we all thought we had to do it, we are getting down to twelve and sometimes ten hours a day. All these things have to be considered, and for that reason we farmers have to be thinking, and we are simply here to give an impetus to our thought, that we may think out something that will fit into our business and help us to do our work better.

Thanking you, Mr. Representative, for the kind and good words you have spoken to us, and thanking you all for the interest you have taken in preparing for this meeting and coming here today to help along this Institute, I am going to open the regular program.

FORMATION OF SOILS.

L. E. Scott, Stanley, Wis.



Mr. Scott.

A number of years ago, the "Rural New Yorker" printed a picture of four hard maple trees, about four inches in diameter, growing upon a flag-stone roof of an old tower in Ohio. How did they get there? Upon what did they feed?

Probably lichens found lodgement in the little depressions of the stone's surface, followed a little later by moss adhering closely to the stone. These would collect and hold a little moisture, the exudations of the roots would soften portions of the hard stone and commence a crude preparation of a meal for the plant itself. Next the wind blew some maple keys from a neighboring tree and four of them caught in the crevices between the stone. Moisture

held by a little sediment there served for their germination and they began at once to encroach upon the lichens and moss and to rob them of the food which these inferior plants had prepared for their own use.

It would seem from this that in plant life, as well as in animal life, the weaker must yield to the stronger and that there is ever a disposition to grab and appropriate another's hard earnings.

It might be worthy of mention, in passing, that when these trees were cut down to save the roof, the wood was so hard it turned the edge of the ax, showing the influence of the kind of food upon the character of the plant.

Imagine these rocks lying flat down in some sheltered place, and what do we observe? The leaves of the trees will lie where they fall and soon cover the face of the rocks. Rains come and they ferment and decay. During this process carbonic acid is formed. The leaves themselves are acid. Prof. Coville says oak leaves contain a third as much acid as lemon juice. More rains fall and these acids and the exudations of the roots are poured upon the stones, as bile and gastric juices are poured upon the food in the animal's stomach, and with a like effect.

Earth worms hurry to this moist retreat and feed upon the decaying vegetation. Incidentally they pick up small particles of the rock that have scaled off, and using them to masticate their food, they in turn are ground to pulp and plant food held for thousands of years in the

rock is hereby released and made available for the plant.

Millions of germs of the various molds and myriads of bacteria enter noiselessly and unobserved into this modest and secluded laboratory and volunteer their services, performing their task in a most scientific way without even the direction of a commission or a college training. By and by the trees give up their life and fall down and decay, other plants spring up and feed upon and gloat over their last remains, saying, "Even so did you to the lichens and mosses."

This is the story of the soil dating from the formation of the rock or after it is formed. A story that is unfolded to you like a volume ready to be read may be found all along the Mississippi on the Wisconsin side, from Prescott to the State line. From the car window you will see scraggly trees struggling for an existence upon the almost bare rocks at the top of the bluff. Roots are penetrating the crevices and as they grow a piece of rock is split off and rolls down the bluff. Water enters the pores of the shattered stone and freezes, and a further disintegration takes place. The action of the wind and the heat of the summer and the rains assist the other forces of nature, and about half way down the bluff we notice a little scanty vegetation. Near the base a more dense growth is witnessed. As the vegetation decays and becomes intermixed with this disintegrating rock, all that took place under the maples is here being performed and soil is being made.

We think of creation only as having been accomplished ages ago, when it is said the earth was made in six days, but creation is still in progress and soil is now being made in our fields, and we are assisting the forces of nature in a further dis-

integration of rock when we till, and especially when we incorporate a large amount of vegetable matter into it.

How much of this inert matter farmers can break down from year to year and render available for the crop is a question. An ideal condition would be to convert a sufficient amount of crude matter from the soil each year to replace the amount wasted in feeding the crop to live stock; say twenty-five per cent. I hardly think this possible, certainly not probable, but we can do more along this line than the most of us are aware of.

Storer tells of lava beds at the foot of Mt. Aetna being broken up and planted to prickly-pear and cactus and in a few years being in a condition to permit the successful planting of vineyards, where if left to lichens and moss and the slower processes of nature, centuries would have elapsed before the same results could have been attained. Our granular sands are but partially disintegrated rock. What a dense growth of some rank growing plant would do toward further disintegration, could we succeed in getting it established, we do not know.

A few weeks ago I saw some very thrifty alfalfa plants on a light, jack pine sand which had been limed, lightly fertilized with stable manure and inoculated; at what cost I do not know. The same soil produced 210 bushels of Irish Cobbler potatoes per acre.

Not only should we supply our soils with a sufficient amount of vegetable matter, but the further disintegration of our heavier soils will be hastened to a great degree by warming them by drainage. Rock disintegrates much faster and to far greater depth in the south than in the north. I would be tempted to move there on this account were it

not for the fact that men also (especially northerners) disintegrate faster there than in Wisconsin.

The beneficial results of freezing I believe to be greatly over-estimated. Soil that laid unfertilized in the greenhouse at Madison for eight years grew much more luxuriant plants than soil taken from the

Grass the Most Prominent Soil Builder

And we have the plants here with which to work. Of all soil builders, I believe that grass, if we may include the clovers and alfalfa with it, occupies the most prominent place, and we have come to judge



Lime applied to sandy acid soils in addition to manure increases crop. Pile at left from plot treated with manure and lime, yield per acre, 5063 lbs. Pile at right treated with manure alone, yield per acre, 4806 lbs. In such treatment where lime is used it should not come in contact with the manure. Sparta Sub-Experiment Farm by Department of Soils.

same field that had frozen each winter.

I haven't tried to tell you how rocks have been ground by the ice or moved by glacier and stream, or how different kinds of soil come from different kinds of rocks, but I have tried to impress upon you the importance of keeping our soils well supplied with plant food and plant growth to assist in a further formation of soil from the rocky matter we have at hand.

our Wisconsin soils largely by the amount of grass they produce. The more grass we grow and feed upon our soils, the more soil is formed to produce more grass.

Senator Ingalls' "Eulogy upon Grass" is appreciated here as well as in Kansas, for Wisconsin is indeed a great grass State.

"Lying in the sunshine among the butter-cups and dandelions of May, scarce higher in intelligence than the minute tenants of that mimic wilderness, our earliest recollections

are of grass; and when the fitful fever is over and the foolish wrangle of the forum and the market is closed, grass heals over the scar that our descent into the earth has made and the carpet of the infant becomes the blanket of the dead."

DISCUSSION

Mr. David Imrie—Mr. Scott said he thought that the freezing of the soil had been over-estimated and referred to an experiment in the greenhouse. Was that a fair way of judging it? I know of a piece of land which a man told me he went over five times a year with a disc harrow and still it was in rather hard condition to sow grain, and he considered the frost a great help. Of course this in the greenhouse would not get the rain to pack it down. When it is out doors and exposed to all kinds of weather, particularly heavy rains, would not the mechanical condition of the soil receive benefit from the frost?

Mr. Scott—I judged simply from the results. The difference was very marked in favor of the soil that had laid in the greenhouse without fertilizing, while the soil taken from the same field showed a far less degree of fertility. I have noticed also that winters where we have early snows and where the freezing therefore is slight, we usually find our soils friable in the spring and very productive the following season. Of course in the formation of soil from the rock, freezing probably cuts considerable figure in helping to disintegrate the rock, and still we are confronted with the fact that the disintegration is much more rapid in the south where freezing is unknown. Prof. Whitson, in experimenting with soils, gave the explanation of the soil being more produc-

tive in that greenhouse experiment, which was unfrozen for eight years. His explanation was that it developed nitrates, which the colder soil did not develop.

Mr. John Imrie—Wouldn't there be a difference too in the leaching of the soil on the outside?

Mr. Scott—Possibly.

Mr. Wyatt—Also in that warmer soil, there are some rapid chemical changes going on.

Mr. Campbell—What would be the difference between fall and spring plowing—if freezing hasn't anything to do with it?

Mr. Scott—Well, there are other things to be considered there between fall and spring plowing. Spring plowing, of course, will be looser, not so compact. There is not the contact of the roots with the fine particles of soil that you would get in the more compact soil that had been fall plowed. I hardly think the results there would show any difference in favor of the freezing.

Supt. McKerrow—The capillary action would be better in the fall plowing.

Mr. Scott—Yes, I would be in favor of fall plowing in most cases.

Mr. David Imrie—There is a bigger growth of straw in spring plowing.

Supt. McKerrow—The root growth is probably not as great on fall plowing, but it comes in closer contact with the soil.

Mr. Scott—The growth of straw would indicate the presence of considerable nitrogen, and the nitrates, I have an idea, would form more rapidly where the soil is more loosened up, as it is with spring plowing.

Mr. John Imrie—Also the fall plowing would get more benefit from the mineral elements needed in the grain.

Supt. McKerrow—Now, you are getting into pretty fine points for us common folks.

Mr. Corneliuson—The Department of Agriculture recommends the fall plowing for small grain and spring plowing specially for corn. Unless you harrow your ground very thoroughly after plowing, it is detrimental to the corn crop the next year, and so they prefer the spring plowing. The Bureau of Agriculture claims that the action of frost on rough lands is detrimental to the crop growing the year following. I wonder why that is.

Supt. McKerrow—It rather backs up the statement that Mr. Scott made about the soil kept in the greenhouse eight years being more productive than that which had been subjected to frost.

Mr. John Imrie—And then, of

course, there would be a difference in the soil, whether it was clay or sand.

Addenda, Sept. 1, 1914

Mr. Scott—The present season's experiences at Fairmount Farm are verifying some of the statements made in the above paper, viz.—with the scanty snow covering of last winter, the soil was frozen exceptionally hard and deep and our soil never worked so waxy and stiff as it did during the spring and early summer months. Again, our crops are more satisfactory upon fall plowing than upon spring plowing.

The corrugated crusher or sub-packer purchased at Fairmount last spring has demonstrated its value as a tillage tool. I would not now be without it.

DRAINING SOILS.

E. E. Wyatt, Tomah, Wis.

Draining land is regulating the soil moisture and upon this all crops depend on either rich or poor soils. We must have the moisture in the soil, of the right amount and at the right time to insure maintenance of crop yields. That means getting away the excess as soon as possible and still supplying sufficient when rains are lacking. An over-supply of water in the soil forces out the air, kills bacterial life, stops decomposition, cools the soil, stops the manufacture of plant food and delays or kills plant growth.

We might consider draining under the following topics:

I. Increased crop yields

Other things being favorable, plant food is formed in the soil by

decomposition of plants, bacterial and chemical action in the manures and original rock making the several elements of plant growth derived from the soil soluble in water. In order to accomplish this, water is needed, air and proper heat must be present; the soil must be loose and pliable, not soggy and light; soils must be firmed with humus.

When a piece of land becomes logged, the air is forced out, stopping the breathing and oxidations, killing the bacterial life, and plant food cannot be liberated. The returning of this condition is slow, for such soil is dead to an extent and the return of life requires the effort of the elements, of freezing, thawing, working in of new roots, opening up so the air can penetrate

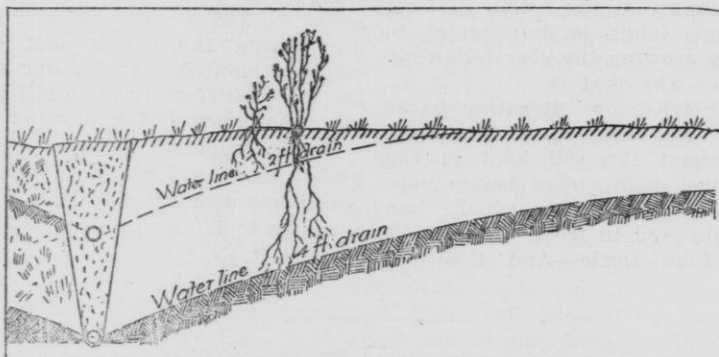
and start new life, and this requires much more time than it does to bring that condition upon the soil.

Then this excess water takes up the soluble plant food and carries it away, a loss to all crops.

Plants require large amounts of water, but the water they use is a tiny film surrounding the small particles of the soil and held there by capillary attraction, and has steeped out the soluble portion in a suffi-

quires eighty times as much heat to evaporate as it does to raise the pound one degree in temperature, and that is why a light, dry soil warms so much earlier in the spring, for the same amount of heat falls on each, but in one it is used to warm and evaporate water and in the other to warm the soil only. A wet soil is always a cold soil.

Well drained soil can be tilled earlier, warmed up, crops sown or



Plant Roots Need Low Water Line.

A high water line or water table hinders the development of deep root systems. A few deep underdrains may be as efficient as several shallow ones.

From Wis. Bulletin 229, E. R. Jones.

ciently rich mixture to be of service to the plant, and not the water that lays in the soil as water.

A good soil must be a live one, full of organisms, with the right temperature, and air, and the water content of capillary attraction, but not the water of the water level.

II. Drainage lengthens the growing season by getting this water off earlier and decreasing the evaporation at the surface. This will warm the soil earlier in the season so plant growth can start. The more water in the soil, the more heat will be required to warm that soil and every pound of water evaporated re-

planted earlier, and then at every wet spell less time is lost. A few days at the first of the season are worth much more than at the latter end.

III. Good drainage will reduce the amount of erosion, one of the greatest losses of soil fertility upon many of our farms. This is by reason of the soil absorbing more water readily and by carrying the water to properly made water courses that will not easily wash, and by filling the soil with humus, one of the factors in drainage, and retards the erosion.

IV. Drainage reduces losses by

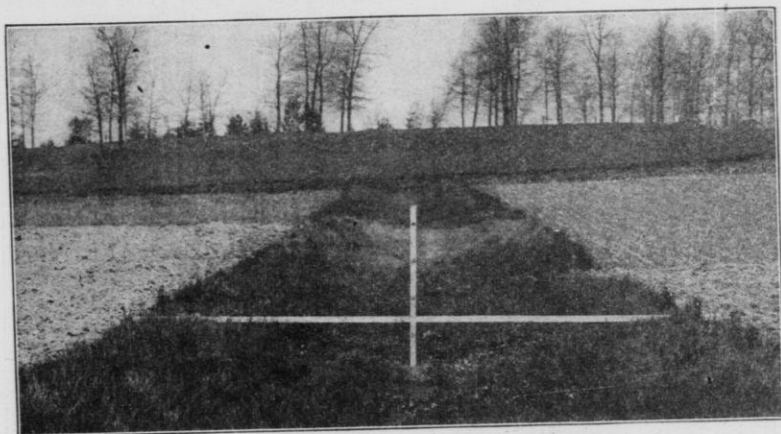
heaving as the result of freezing, as it is the water mostly that creates the havoc then.

V. The depth of the root zone is increased by drainage, because roots will not go where water stands, where it is cold or where no plant food is available, and the benefit of this large zone is in the fact that we want the use of our deeper soils. Not content with the top foot, we want to pump up any lying lower.

water level to the plant roots, the same as a lamp wick will carry water higher and faster than would a column of heavy clay, other things being equal.

Why Drainage is Needed

I have set forth needs and effects of drainage as they will affect all classes of soil. Now, what are some of the causes of excess water and



A Well-sodded Surface-run.

For convenience and appearance the sides are well sloped and sodded. Seepage water may be removed by a tile laid beneath or at the side of a run like this.

From Wis. Bulletin 229, E. R. Jones.

Then we want roots to penetrate deep to loosen the subsoil and assist in draining and help pump water up their tracks when they decay in another season affected by drouth, or, in other words, the deeper and more roots we get in our soils, the more farm we have, the easier it would be to handle in wet or dry seasons and the better crops it will grow.

VI. Drainage will increase available water supply, by maintaining a soil condition where water will not readily evaporate and still water will rise faster and higher from the lower

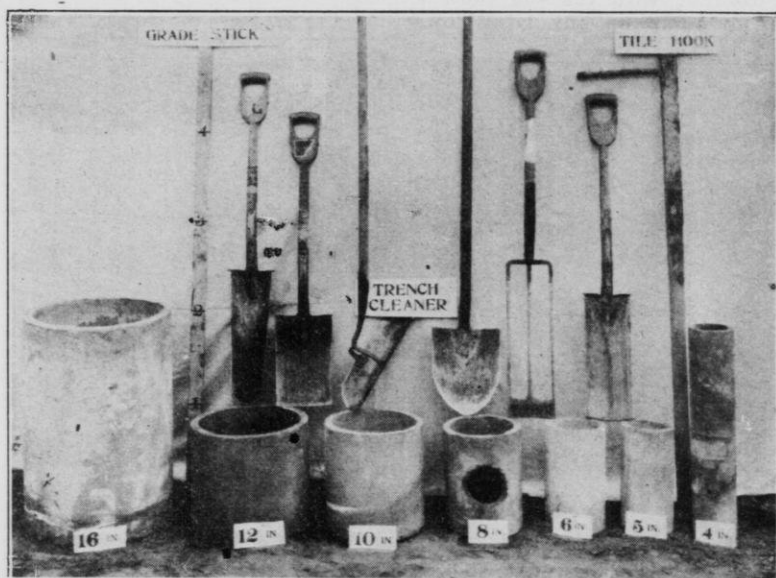
needs of some of our soils? It may be caused by too much water there or too slow carrying away.

The first may be by too much overflow or flood water, or by the seeping of water absorbed at higher points and then cropping out at other places, then lost by flat areas where the fall is too small to induce the water to flow off fast enough.

How shall we handle these? Flood water should be collected and carried off as much as possible by the use of the wide surface run. These can be made by the use of the road

grader, usually thus reducing their cost and making a water course easily maintained and not a waster of land, as it can all be utilized, even the bottom for hay, and the banks for the usual crop, and not interfere with the field. Most every farm has uses for just such a ditch to keep dry the little low place in the field, and then into these leading the furrows

run and a system of tile to sub-drain the soil and carry off the water, but faster and better than the open ditch, and also have a permanent system with a minimum of up-keep cost. Many such areas now have a small rivulet running through them. This can many times be carried into tile, then let the ground dry a little and form a surface run by the side of



Tile Laying Tools and Samples of Tile.

No three-inch tile are shown because the four-inch tile are enough better to more than pay for the slight difference in cost.

From Wis. Bulletin 229, E. R. Jones.

to carry away the water they collect.

These runs would assist in marsh soils of narrow strips between uplands, then here, in connection, if the edges still seem wet and spongy, a row of tile along the upper edge of the spongy area, and if a sufficient outlet can be secured will clean up many a field now cut up by these bad strips.

The broad, flat areas will usually need a combination of the surface

them for the flood water. This not only includes the marshes, but low, flat uplands. Lands good only for pasture can be drained at a cost that will be repaid by one or two crops afterwards, as they are generally a built up soil and very rich in the plant food elements which can be easily made available.

Any system of drainage must have a good outlet, and to get this many times needs the co-operation of two

or three adjoining farms to produce it. When this can be done, naturally it is by far the best way, but in view of the fact that this cannot be done many times, the town board may be called in and when they deem it wise may establish any system that is best adapted or a combination of two or three, so long as the land affected is all within their jurisdiction, and apportion the costs to the lands benefitted.

In conclusion let me say, get the soil moisture under control as much as possible, increase the crop yields upon improved lands, then clean up the waste strips and spots, then reclaim some of our valuable lands not yet improved.

DISCUSSION

Supt. McKerrow—This certainly is an important subject in many parts of Wisconsin, though I do not know whether it is applicable locally here so much as in some other parts of the State.

A Member—What is the cost of tiling by the acre?

Mr. Wyatt—That will depend greatly on the extent of your outlet and the amount of tile you have got to put in. Where you have to put it in in heavy soils and put them close together, because there is lots of water to carry off and you have only a small fall, it will cost much more than it will under other circumstances. It may run anywhere from ten to fifty dollars per acre. Local conditions will fix the expense.

A Member—How close should they be where there is considerable water standing on the surface?

Mr. Wyatt—That surplus water has got to be taken care of by some form of surface ditch first, in order to get good results from our system of drainage. Because, ordinarily,

the water will stand a little too long on the top, and if it does that it will kill the plant growth.

A Member—I have some swamp lands next to a creek and I quit draining it into the creek. I have to put tiles in there to carry the water off. It is sandy loam and gravel down below.

Mr. Watt—If you can use a system like the first one over there on the wall, the lines of tile all carrying into the creek, you might put those tiles two hundred feet apart in that character of soil and get good results. If that didn't bring it all right, you could get it in between, put in another one, and that would certainly dry it up in good shape. I would not advise using anything less than four-inch tile. Of course it depends on the amount of water you have to carry off and the fall you have. The tile should be put in about three and a half feet deep. If you have a porous soil, so the water will drain quite readily, even four feet is sometimes still better.

Mr. Scott—If you have a slope from which the water seeps down from above, is it better to drain from the foot of that or from the upper part?

Mr. Wyatt—From above, the upper part. Where you have a condition where the water is seeping down in a sort of a loose strata, as it goes down it strikes the heavier clays and then it travels along on top. If you try to put the tile below it, the water will not get to it, because it is already up against that hard bank; but if you put your tile up above the wet spot, then there will be no question but what the tile will carry it off.

The Member—But where is the water going to? I have a slope that is wet below the summit and is dry below this wet place. Where are

you going to take the water to prevent running above?

Mr. Wyatt—I would get just above the wet spot and then run the tile along, parallel with the hill, until the point where you want to carry it off and empty it into your outlet. You have to carry it through that wet spot, and then it will disappear, because you have collected the water in the tile above it and it does not crop out in that place again. The water settles in the hill above and comes out through a loose strata,

and there it strikes a sort of clay or hardpan, and where it strikes that point it cannot go any farther and works laterally until it comes to the surface of the ground and there it makes the wet spot. If you put your tile above it, you are going to catch it, and when you catch it you can run your tile off to some outlet. Of course you have to have an outlet. If you haven't any outlet, it won't do any good to put in any system of tiling.

Mr. L. E. Scott called to the chair.

USE AND ABUSE OF SOIL.

E. C. Jacobs, Elk Mound, Wis.

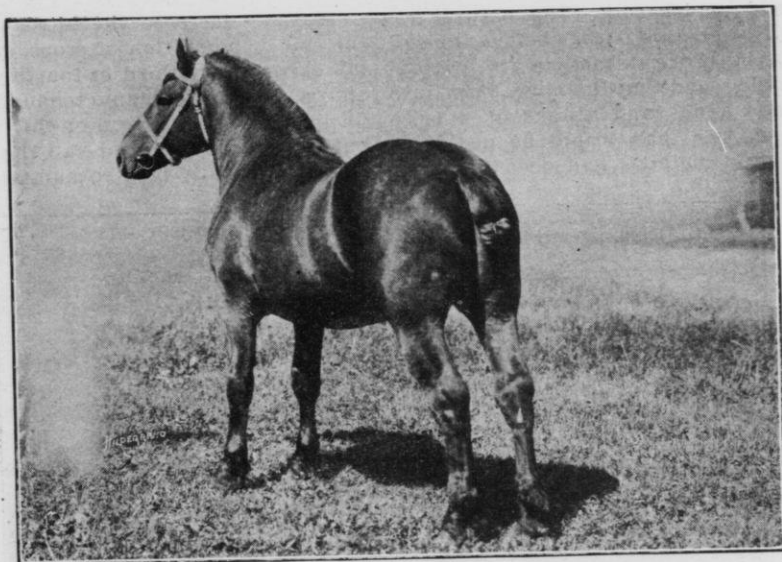
The average production of the soil is nature's estimate of the ability of the man who tills it. As a river cannot rise higher than its source, so the farm will not increase in fertility unless the mind of the farmer be enriched by study and a proper conception of the value of soil fertility. The mind of the progressive, intelligent farmer may well be likened to the good ground which when the seed fell upon it brought forth fruit, some one hundred fold, some sixty fold and some thirty fold. "As a man thinketh, so is he," is as true when applied to material things as when applied to things spiritual, and the mental attitude of the farmer on the subject of soil fertility will be reflected in the productive capacity of the farm, as well as the prosperity of the future tillers of the soil.

Soil Depleted Through Ignorance

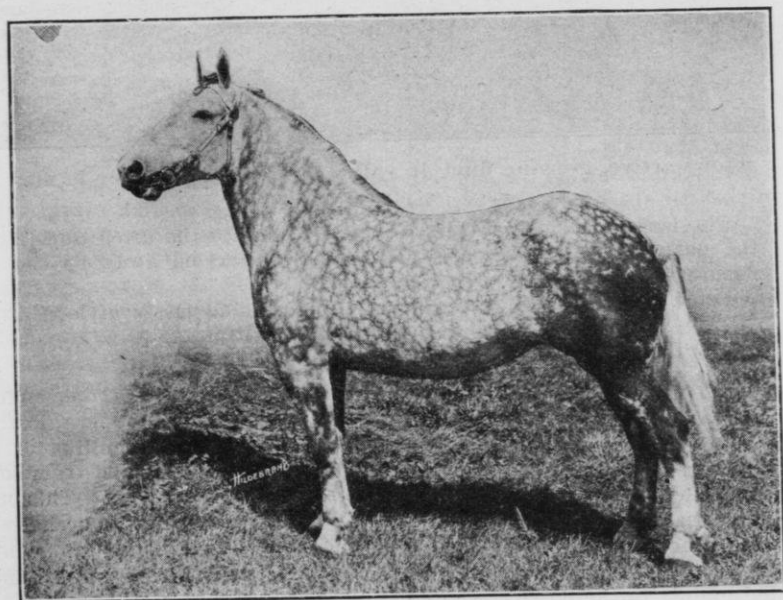
We seldom abuse what we understand and appreciate. It was through ignorance that many of us depleted our soil. We raised grain

or some special crop and sold it from the farm with little thought of the future. We exhausted the humus of the soil and much of the elements of fertility. When nature no longer smiled on our efforts to rob her, we began to improve our methods. The return of stolen goods is neither pleasant nor easy. To change from the methods of the soil robber to those of one who makes a profitable use of the soil and at the same time brings it back to a fertile condition, is not an easy matter or one soon accomplished. There is not only the barren condition of the soil to contend with, but what is harder to correct often is the barren condition of the man who has farmed in this way.

Then, too, the method of farming which robs the soil also exhausts the pocketbook and bank account, consequently when a man sees his mistake, he is not in a position many times to purchase stock, build barns and silos and make the improvements that will enable him to inaugurate a system of live stock farming and a rotation of crops that will



Champion Percheron Stallion, Wisconsin State Fair, 1914. Owned by Ethelwold Farms, Mondovi, Wis.



Champion Percheron Mare, Wisconsin State Fair, 1914. Owned by J. J. Mitchell, Lake Geneva, Wis.

build up his soil. The natural result of all this is that before the soil can be brought back to its original fertile condition it must pass into other hands and always at a price much less than would be necessary if right methods had been followed.

We may increase the nitrogen in the soil by a rotation of crops, growing clover every third or fourth year, and returning the manure made from feeding the crops grown on the farm, but if a proper balance of all the elements of fertility is to be maintained,



Shows active, growing ditch in valley bottom. The valley is now used only for pasture.

The large blocks of sod have tumbled off into the ditch during the past rain-storms to be broken up and carried away by the rush of water during succeeding storms.

Ditch may be seen extending an arm up side-valley at left.

From Prof. A. R. Whitson.

Restoring the Fertility

In my own case, I was enabled to see the error of my ways before it was everlastingly too late and I have been practicing a three-year rotation, one year in clover, one year in corn and one year in oats in which clover is sown. The crops grown are fed mainly to the dairy cows and enough hogs are kept to utilize the skim milk.

the mineral elements, phosphoric acid and potash which are lost by feeding and by the handling of the manure, must be supplied from some source outside the farm. This may be done either by the purchase of commercial fertilizers, of which phosphoric acid is the most important element, or by the purchase of feeds which contain these elements.

We find it necessary each year to

purchase some feeds to supply the lack of protein in the farm-grown grains. The purchase price of these feeds and also a profit are returned by the increased production of the herd. Besides this, many dollars worth of fertilizer has been added to the farm in this way.

The liquid manure is saved by having concrete floors in the stable and by using plenty of absorbents in the gutters and spread upon the new seeding of clover, applying it so as to cover the entire area. This enables us to give the whole farm a coating of manure once in three years.

When we began to farm in this way we kept about one cow for every ten acres of land. Now we keep about one cow or her equivalent for every three acres. In time we hope to keep one cow for every cultivated acre, as some of our better farmers are doing whose minds contained virgin fertility which prevented them from abusing the soil in the beginning.

DISCUSSION

Mr. Brown—I would like to have Mr. Jacobs tell us something about saving and applying liquid manure.

Mr. Jacobs—We use plenty of absorbents, straw, shredded corn fodder, or something else to absorb the liquid manure, and then it is all hauled out together and spread upon the surface of the clover field. We take it out every day. It is hauled directly from the stable to the field and spread with the spreader. There are exceptions to this, as to all good rules. Just at the present time we are not hauling it out, because the fields would be cut up by driving over them.

Mr. Brown—Do you ever cease hauling it on account of deep snow?

Mr. Jacobs—We have not yet. Where we live it seldom gets over three feet. We seldom find it so we cannot work, even where it drifts. We have spread in this way for a number of years and we have never yet had a year where we did not get out with the manure all through the winter.

Mr. Bradley—Tell them how you manage that spreader in cold weather.

Mr. Jacobs—We put on a few more horses. You will have trouble if you do not have conditions right; that is, the freezing of the liquid manure on the spreader will cause breakages, so that there is more or less difficulty in spreading in the winter. However, we have a place inside our barn where we keep the manure spreader, so the manure all goes out direct from the barn and there is not near so much trouble as when the spreader is left out doors.

Mr. Corneliuson—Quite a good many are using shavings, clippings from the machine. What do you think about whether that stuff is good for the soil?

Mr. Jacobs—We have never used it, but we do not think there is any benefit from the use of shavings except as an absorbent for the liquid manure. Possibly after they have been around long enough to rot they will add some humus to the soil.

Mr. Wyatt—You like to get your manure as near to the growing crop as you can?

Mr. Jacobs—Yes, we like to have it on the growing crop, so it will take up the fertility without wasting.

Mr. Hansen—How about washing where you haul it out in the winter on lots of snow?

Mr. Jacobs—We think that the snow would be no disadvantage. It

will wash less where we spread it on the snow than it will upon a bare icy field. Our fields are not rough or broken up. Of course we are going to lose something anyway, but if you leave it in the yard during the summer you are going to lose at least half the value of it, and almost any way you get it onto the land the losses will be less when hauled directly to the fields. I would prefer to spread it upon the fields anyway.

Supt. McKerrow—Would you prefer to put ten tons on one acre or two acres?

Mr. Jacobs—I would put it on two acres. We spread it so as to cover the area of grass land, one-third of the farm. We spread six or seven tons to the acre, and we would spread ten tons if we had it. We get around once in three years in that way. Actual experiments show that we lose more in heavy manuring than in lighter, because the crop is not able to take it up soon enough.

Mr. Nugent—We know considerable about manure hauling around here, but we want to know just the best way to bring the poor land up into good shape.

Mr. Jacobs—We would expect first to grow clover upon this land. We would handle it in some way to get clover to grow. Possibly Mammoth clover would be the first to grow if the land was very poor. We must have nitrogen in the soil and we must have humus and the clover is the best means I know for getting it. I would sow clover alone in very poor soil. I would get a crop of clover if I possibly could. If I could not, I would try to build it up until clover would grow, feed what I could grow, buying some food stuffs, like bran or oil meal, and foods of that kind, and then I would exercise great care to see that every bit of the manure was returned to the soil.

In the first place, we plow under some kind of crop to make humus in the soil where it is so very deficient.

Mr. Convey—Where it is very difficult to get a catch of clover, I think it is better to apply manure as a top dressing to the soil.

A Member—Did you ever try buckwheat?

Mr. Jacobs—No, I never did.

Mr. Convey—In regard to the rotation, of course you would not expect to grow alfalfa in the first place; but if you succeeded in growing it, what system would you recommend?

Mr. Jacobs—When we come to growing alfalfa successfully, we expect to have a different rotation, using the alfalfa in a little longer one, about a five-year rotation.

Supt. McKerrow—When I was down in central Kentucky, looking at some of those old, worn-out tobacco fields, I found they were using sweet clover for the first crop to bring up the fertility, then plowing it under. After that they calculated they could grow other things. There is one farmer I know of at Spring Green, on the river sands, who had tried to raise sweet clover and made a pretty good success on that soil where they had not been able to grow Medium clover.

Mr. Jacobs—The trouble is with some men on this soil which has been badly treated, they expect to adopt the same method by which some others are making money, and at the same time to build up their soil, and that is a pretty hard thing to do. It is necessary many times for a farmer to work with anything that will bring about an improvement of his soil.

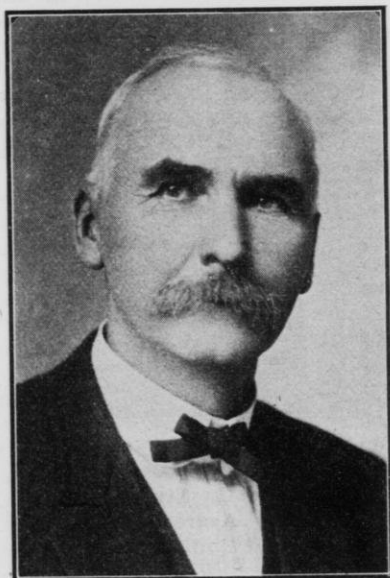
Mr. Clark—In our experience, we have found soil that was so poor we could not raise clover without first applying manure. Now, would you

advise working in the manure as a top dressing, or would you plow it down? What would you consider the best way to handle that manure?

Mr. Jacobs—Oh, I would apply it to the surface every time. I would do that on the principle, apply the manure to the surface for any crop.

TILLAGE OF THE SOIL.

W. C. Bradley, Hudson, Wis.



Mr. Bradley

Tillage of the soil is for the same purpose as tickling a friend's vanity by praising him for something he has done or said; you simply wish him to shed a little more sunshine or wisdom or charity or kindness, knowing it will do him as much good to give as it does you to receive. So with tilling the soil, you ask it to give up more of its elements that make plant food for your pleasure or profit, knowing, as in the case of your friend, this may be

done without loss to the soil if care is taken in its management.

Soils Differ in Texture

As soils differ in texture and make-up, from light sand through several degrees of loams to stiff clay, the method of tillage differs. On sandy or light loam soils, plowing should be done when the ground is as full of moisture as possible, following as soon as possible with the harrow or corrugated roller or soil packer to conserve the moisture.

On heavy clay, the plowing and tilling must be done when there is less moisture, or we would get the ground in a baked condition which would become lumpy in cultivating and plant food would not be available.

How Humus Affects the Soil

Of course the more humus we have in the sandy soil, the more moisture it will hold. One hundred pounds of sand will only take up about twenty-five pounds of water, clay about fifty pounds, while either of these rich in humus will hold from forty to one hundred and eighty pounds of water. Now the humus in a well packed sandy soil helps to retain the moisture, while the humus in a heavy clay soil will prevent its baking by separating the fine particles of clay, so in all classes of soil we need the humus in order

that the tillage which makes plant food available will not render the soil out of condition mechanically.

Tillage—How Deep

We may plow sandy or light soils to a depth of eight or ten inches without injury, but on clay soils four to six inches will be found better, provided we use the clover or alfalfa plants to break up the subsoil. In

furrow over. Whether the Spalding system of deep plowing is better than subsoiling with clover or alfalfa has not yet been determined satisfactorily.

Tillage is Manure

The old saying that tillage is manure has fooled a good many people. Tillage makes fertility available and the more and better we till, the



Judging the Plowing Contest, Viroqua.

Plowing contest held in connection with the Institute Field meeting at the County Asylum Farm, Viroqua. A great interest in good plowing at tillage was aroused by this and similar contests.

heavy clay soils, even if we have plenty of humus in the shape of barnyard manure, the plow will run about the same depth year after year, forming a hardpan at the bottom of the furrow, but by the use of clover roots we can go an inch or so deeper or shallower, as we wish, as the roots have broken up the hardpan.

The depth we intend to plow will determine the kind of plow to use. If plowing shallow, we may use a narrow plow, ten or twelve inches if we wish, but if going ten inches deep we must have a plow fourteen inches wide to have room to turn the

sooner we exhaust the plant food in our soils. Tillage is necessary to prevent the growth of weeds in cultivated crops such as corn or potatoes and should be very shallow after the plant is three or four inches above ground to prevent root pruning.

What Tillage Does

Tilling soil at the right time in the right way will conserve moisture, kill weeds, make plant food available and will almost insure a good crop in Wisconsin if the seed is good, except against hail.

Tools for Tillage

Good plows, disks, harrows, sub-packers and small tooth cultivators, with good teams to move them rapidly through the soil, should be used. On clay soils, the harrow should follow very soon after the disk or the ground will become lumpy. On sod ground, especially if grain is to be sown, great care should be taken to firm the soil with roller or soil packers to prevent air pockets.

Proper tillage and humus have a great deal to do with the amount of water that soil is able to take from the atmosphere. At night, during a dry time, coarse sand will take but very little water from the air, but one thousand pounds of clay will take up about twenty-five pounds of moisture from the air in twelve hours and humus very much more.

Franklin said, "plow deep," but Franklin was more of a philosopher than a farmer and we have changed many of our ideas in the past twenty-five years. Tillage tells queer tales and you may tell your boys tales of tillage that will do them more good than reading tiger tales.

DISCUSSION

Mr. David Imrie—Mr. Bradley said to firm the soil with a roller if you were going to plant corn on it. What do you think of the idea of the spring tooth harrow following plowing on sod for corn the next year?

Mr. Bradley—It is a very good thing to do, better than rolling. The more you can cut that sod up and the firmer you can get it in the fall, the less of those air pockets you will have, which must be gotten out in the spring. I think this new soil packer is going to be a fine thing. It has come into use generally where

they are growing sugar beets, where they want to fine the soil and pack it, and it is very successful, especially on a light soil; not so good on a clay soil. It is a corrugated roller that goes down into the ground and packs the subsoil.

Mr. Campbell—Can you spring tooth sod without cutting it all up?

Mr. Bradley—I would disc the sod in preference, then harrow it thoroughly.

Mr. David Imrie—You can make a good job of it if you plow your sod early, then disc it just before it freezes up in the fall.

Mr. Bradley—If the sod has been turned pretty well and you go lengthwise with your disc first, you are not going to turn much of it upside down.

A Member—Would not the disc do more harm than the spring tooth?

Mr. Bradley—No, I think not. By going lengthwise with the disc, you do not turn so much of the grass sod up again. What I like to do first on the sod is to drag it the same as you plow, and then the drag pushes the furrows down. Then get after it with the disc later.

A Member—Have you ever used the Acme harrow?

Mr. Convey—I have used the Acme harrow and it does good work until it gets dull, then it won't do as good work. It is more practical for the gardener than for the farmer. It does not take hold of the soil like the disc does.

Mr. Jacobs—There is a time in the spring when I think the spring tooth is very beneficial. If we can get onto our fall plowed field as early as we can with a drag, even though it does not get in very deeply, it will break up the crust that forms through the winter and it prevents evaporation, and that water in the soil gives it a chance to warm up. We work this in this way as early as

we can in handling the corn field, going on later in the spring with the disc or the spring tooth harrow, and I believe we save a good deal of moisture and warm up our soil very much.

Mr. Campbell—I think the conditions we have here are different to those on some of your farms. Some of the pasture grass here, when it comes to the June grass five or six years old, that sod will drag eighty rods right on the ground.

Mr. Bradley—Last fall we plowed up a sheep pasture that had not been plowed for seven or eight years, it was June grass, and we went right after it with a drag first, and then the disc. Of course there was a little on the top, but it is in pretty good shape for a seed bed this spring. You have to pack it down.

A Member—The Deere Implement Company advise the use of the disc harrow on stubble before you plow in the fall.

Mr. Bradley—I have never tried it, but I know it would be a good thing.

Supt. McKerrow—Especially if you did not have one of these corrugated rollers. You put that on any kind of ground and it leaves it in good surface condition. It is one of the most popular tools in Great Britain.

Mr. Bradley—Then another thing comes in here, there are a good many acres of pretty heavy land in Wisconsin—we call it heavy because it is clay. As a matter of fact, clay weighs less than sand does, but we call it heavy because the particles of clay run together, while the particles of sand fall apart. But in this State there are a good many of what we call heavy clay lands, that stay cold a long time, because the water does not get out of them. If we will go on them early and scratch them, start evaporation, it will go on more quickly, and then the soil becomes

warmer a great deal quicker than if we allow it to stand until planting time without this tillage.

Mr. Wyland—How deep do you work in the spring?

Mr. Bradley—We aim to go down with the disc harrow two inches or so; then follow with the drag. One mistake many farmers make is in allowing it to stand after discing. The disc must be followed immediately with some other implement to crush the lumps that the disc throws up.

Mr. Jacobs—I think it is a good idea to drag first before you disc.

Mr. Raessler—What are the objections to deep plowing?

Mr. Bradley—There isn't any objection on light or black soil, but there is an objection on clay soil because we are getting up soil from the bottom of the furrow that has not been aerated or worked up, and in very many instances it will take two or three years before that soil will become acclimated and get in condition for the plant to use the fertility that is there. If you had brought up a little of that, half an inch or so, it might be all right, but to plow clay soils eight or ten inches deep is not the safe thing to do. Of course you can do it a good deal deeper after you have clover or alfalfa roots into it. They do the subsoiling. Besides that, it is a pretty hard matter to plow eight or ten inches deep on clay soil.

Mr. John Imrie—I think it is also true that in our rotation farming we turn down the fertility that we have brought to the surface of the soil by deep plowing where we top dress.

Mr. Bradley—That is undoubtedly so. I wouldn't have any objection to deep plowing, providing you did not turn up a lot of raw soil that it would take several years to subdue.

Mr. Wyatt—We find by turning up about half an inch in the fall plow-

ing and putting manure on that soil, we could go nine to ten inches deep, and in doing that we are getting bigger crops than where we let the clover do it alone. We do not get our one hundred-bushel yields on the shallow plowed land. This may not be practical on a large farm.

Mr. Bradley—It is pretty hard on a clay soil to get beyond a certain, or to a certain depth. You cannot very well go a half inch. If you could, it would be all right.

Mr. Convey—There are many different classes of soil in the State. On the southwest side of the State we do not have the drift soil. On this side of the State, I should think your soil needed a different treatment. It is a fact that on some soils ten inches of depth will take up two inches of rainfall. On my farm that much will begin to wash. Where the deep plowing is resorted to, you have less washing. I prefer to sow my land to clover and plow in such a way as to guard against surface washing.

Prof. White—If you had a plow that would mix all the humus that you put on top of the soil, that would mix it thoroughly from top to bottom. Wouldn't that be a better type of plow than one that would turn all the humus under in one spot so that it breaks up the capillary action between the top and the bottom?

Mr. Bradley—Yes, but it would be a queer kind of a plow, wouldn't it?

Prof. White—There is a new type of plow just coming onto the market in this country, though it has been used in foreign countries for a number of years. It works differently

than any system of plowing which we now have. It works on the principle of a revolving drum, which will stir up the soil thoroughly from top to bottom and is entirely different from the plow we have today.

Supt. McKerrow—I believe we ought to work our soil as a rule deeper than we do, but not by turning up the new subsoil on top. I have come to this conclusion from handling a piece of land we happen to have on one of our farms. As an experiment, on the subsoil I had one of these narrow English plows. It does not throw its furrow, it simply cuts and pushes the soil to the side, as it were. We ran one of our surface plows first and used this other in the bottom of the furrow as a subsoiler. It did not throw it on top, but pushed it to the side, so that some of the subsoil got onto the surface. This made the soil about ten inches deep, and in a dry season that is the best place to produce crops that we have on the farm today, and that subsoiling was done more than twenty years ago. I believe that is one of the reasons why we should stick to clovers and other deep-rooting plants. We want something that will work the ground and not turn it up.

Mr. John Imrie—It would be all right for some of us old fellows to turn up an extra half inch each year, but I suppose these young fellows cannot do it.

Chairman Scott—Over a large area of northern and central Wisconsin, there is a soil known as Colby clay and I think deep plowing would be very disastrous on that soil.

FERTILIZERS FOR OUR SOILS.

David Imrie, Roberts, Wis.

Some of you may think I am going to give you a talk on commercial fertilizers, but I will say very little about them. I have had more experience with other kinds.

to this the large amount of humus left in the soil by the clover crop and you can begin to realize its value as a fertilizer. Remember clover does most of its work the second year



Marsh soils respond quickly to the application of needed fertilizers. On this field in Waukesha County the addition of 150 pounds per acre of potash produced corn nine feet high, while the untreated portion shown in the foreground was too short to be worth harvesting.

Wis. Bulletin 205, Whitson, Wier and Ullsperger.

Clover One of Our Best Fertilizers

Clover perhaps is one of our greatest fertilizers in two essential elements, nitrogen and humus, so growing it in a short rotation is very beneficial to the soil.

In an experiment carried on at the Experiment Farm, Ottawa, Canada, mammoth clover sown in the spring of 1894 had put into the soil by May 25th of the following year 172.3 pounds of nitrogen per acre, twelve pounds of seed being sown; 172.3 pounds of nitrogen at fifteen cents per pound amounts to \$25.84. Add

after it is sown, so do not leave it too long before plowing it up to make use of the fertility left by it.

It does another thing. Being a deep rooted plant, it brings up other elements from a lower strata and leaves them in the upper soil where the greatest growth is, but I must not say too much about clover or Mr. Bussey will think I have taken his subject.

Stable Manures

Next are our stable manures, using plenty of absorbents in the

stables, so as to take up all the liquid portions (as fully one-half of the fertility in manures is in the liquids) and getting them on to the land as soon as possible after they are made. And there is no better place to apply them than on a new seeding of clover, as it is one of the last plants to be frozen down in the fall and one of the first to start in the spring and utilize the fertility as it is released from the manure, making a larger growth, therefore getting more nitrogen from the air to store in the soil for other crops.

Apply the manure thick or thin, according to the amount you have, so you can cover one-third of the farm every year. This means then that you follow a three-year rotation, clover followed by corn then seeded to clover, with small grain after the corn. By applying the manure on the new seeding of clover, we get it as far away from the oat crop as possible, as it is applied after the oats are harvested, therefore the oats will stand up better.

Remember manures vary greatly in fertility, according to the feed the animals consume, therefore manure from a herd of cows that are well fed on a balanced ration is of a great deal more value than from a herd poorly fed. If the farmers of Wisconsin will grow plenty of clover in a short rotation, keep stock enough to consume all the feed raised on the farm and in addition buy a little feed to give variety and balance the rations, I do not think they will have to purchase commercial fertilizers.

An Experience

In the spring of the year 1910 I applied a ton of commercial fertilizer on my farm (this was largely acid phosphate with some potash). I applied it at the rate of 250 to 300 pounds per acre in strips on oats,

barley, clover and alfalfa; some of it I put in the drill with the grain, some I sowed broadcast and worked it in with a disk and spring tooth harrow. I marked these strips. The year 1910 was very dry, we had no rain from the time the grain was sown until it was harvested, and I saw no results. I thought perhaps I would see some the next year, but I never have, so I am going to stand by the good old clovers and alfalfa and feed them on the farm and apply the manures as above stated and I will have no cause to worry about the productiveness of the farm.

DISCUSSION

A Member—If you had manure enough to manure one-third of the farm would you top dress for corn?

Mr. David Imrie—We top dress the clover and put the corn on when it is plowed up. You see the clover is only on the field one year; it is sowed one year with oats, and the next year we plow it in the fall. We top dress on the clover and corn follows on the clover sod.

Mr. Hansen—Hauling the manure out of the barn, doesn't it leave a lot of straw that has gathered that you do not want to put on your clover?

Mr. David Imrie—We should apply that during the winter on what is going to be pastured. After the hay is cut, we make pasture of that also, so we can keep on hauling onto that ground, but there will be little of it that will be raked up. The grain is threshed with a machine that has a self-feeder and a blower, and what corn fodder we use, is either that which has gone through the shredder or the silo, and it is very fine.

A Member—Do you mean to tell us that you did not get any results

applying commercial fertilizers to your land?

Mr. David Imrie—I never could see any.

The Member—What was the trouble; was it lack in the fertilizers, lack of moisture, or what?

Mr. David Imrie—I couldn't tell you. I have been wondering ever since whether the trouble was in me or in the fertilizer. However, we know the fertilizer was all right, it had been analyzed, it was acid phosphate, it had been treated with sulphuric acid to make it available, and I thought it was in shape so I could get quick results, but I never found any.

Mr. Convey—You feed mill stuffs, don't you?

Mr. David Imrie—Yes.

Mr. Convey—Do you give those any credit for helping your land?

Mr. David Imrie—Oh, yes. The farm is growing richer all the time and the fertility comes from somewhere. The farm originally had a little clover on it and it is possible there was plenty of fertility down below which the clover is bringing up all the time, and then we do feed oil meal, bran, middlings, etc.

Mr. John Imrie—In your method of feeding mill stuffs, perhaps you had plenty of the chemist's fertilizers in the soil already.

Mr. David Imrie—Once some one burned straw on spots on our farm. On the spots where these straw stacks had been burned, the grain stood up, it wouldn't fall down, even if the rest of the field was all lodged. In those spots it had a good color, it was healthy, and the grain was heavy. The conclusion I came to was that they perhaps had gathered in all the straw from the forty acres and burned it there, and this straw contained these elements of phosphoric acid and potash which you cannot destroy by burning, and I

thought if that was a good thing, perhaps by applying phosphates on the rest of the farm it would make all the oats stand up and be fine and healthy in the same way.

Mr. Griswold—We have tried these commercial fertilizers, several of them, and we have been watching the spots where we sowed them ever since, but we have not been able as yet to see any difference between those spots and the rest of the farm. They are altogether too slow for me.

Supt. McKerrow—Didn't I understand this was done under the direction of the Experiment Station at Madison?

Mr. Griswold—Yes, sir, and the land was measured off and the first crop that was in there was corn, and the different strips were weighed, that is, those that had been treated and those that had not, so there was no guess work about it. There was one strip where we put some manure from the hog pens, and we did get more corn from that strip, but not from any of the commercial fertilizers, and we had several different kinds and amounts and combinations. We had some pure nitrogen, just as near pure as we could get it, and we had phosphoric acid and potash and two or three other kinds and combinations of the different kinds, and we had corn that first year, and that was all carefully weighed up from the different strips. Since then we have had clover in there and alfalfa, but as yet we see nothing to show that those fertilizers did any good whatever. That was three years ago.

Supt. McKerrow—Would not that rather indicate that your soil was practically rich enough in the elements necessary for the crops you grew?

Mr. Griswold—Yes, I think so. On one-half acre we sowed ground limestone at the rate of three tons

to the acre, and we saw no difference from that, and yet our soil shows acid with the litmus test. We have seen no difference where that limestone was put, even on the clover since. It was all good ground in the whole piece. Some of these strips were left without any fertilizer in order to check up and see the difference between those strips and those that had the commercial fertilizer. We proved one thing, that the stuff we use for bedding in the hog pens, the hog pen manure, made a mighty good fertilizer, and we all know that that is generally allowed to go to waste on the ordinary farm. You can get a lot of manure from a pig pen, and it certainly pays, as we found out when we saw that the only strip that showed an increase was the strip fertilized with the hog pen manure, we concluded it would certainly pay to take care of that kind of manure.

Chairman Scott—Were there any strips where you used manure from the cow stables?

Mr. Griswold—There had been a lot of dressing put on the whole field from our stables, but that was spread about as thin as we could spread it from the manure spreader.

Mr. Brown—I wish we might have a little clearer definition of what you gentlemen mean when you talk about "mill feeds;" whether it is what is left after grinding flour in the mill, or whether you mean ground corn and ground oats, and such things?

Mr. David Imrie—No, that would be ground grains. Mill feeds are such as middlings, bran, oil meals, etc., gluten feed, by-products from the distillery, those things we call mill feeds. The ground grains you speak of would be just the same as feeding it on the farm direct. What we mean by mill feeds is something not grown on our farms but on somebody's else farm.

Mr. Convey—How much of these mill feeds do you use?

Mr. David Imrie—Every year we use from one to two carloads anyway.

Mr. Convey—In other words, you have been getting fertility from Dakota and Minnesota to build up your farm, so that you do not need to buy commercial fertilizers.

Mr. David Imrie—Yes, but those Dakota fellows are beginning to come back to see what we are doing.

Mr. Raessler—There are several experiments being carried on on our farm with some of the commercial fertilizers by the fertilizer firms, especially with potash. They select the field they wish to experiment on, they prepare the field, though they prefer land that hasn't had any other fertilizer. It is very likely that the results could be seen on soil of that kind where certain elements are already lacking. When we can give our soil plenty of fertility from the barn and the hog pen, the commercial fertilizer would not be of very much benefit.

Supt. McKerrow—In those experiments that have been made, have they shown that there was a profit in commercial fertilizers at an average price upon these farm crops?

Mr. Raessler—I cannot answer that, because they were only started last fall. I agreed to give them the actual results, nothing more, and they furnished the fertilizers free and sent a man to plow it and otherwise to look after it.

Supt. McKerrow—That is an important question for us farmers, whether we are going to get a profit on the investment. I was just reading an article in Wallaces' "Farmer" about some of the work which Prof. Stevenson is doing with commercial fertilizers, and I think in many of the cases where he used commercial fertilizers there was not enough

profit to pay for the fertilizer and the work of putting it on. If we cannot get a profit out of it, we do not want it. In the case of Mr. Griswold and Mr. Imrie, where the land was kept up by the feeding of mill feeds, I suspect their profit came out of the live stock and the feeds fed to them.

A Member—Most of us who have rich soils have a good deal of trouble in keeping up our small grains. I wish we could find out if there was any analysis made of the manure that Mr. Griswold used to show the element which had that particular effect in keeping up the straw.

Mr. Griswold—There has been no grain on that ground since that was done. We raise very little small grain.

A Member—What would be the difference whether we grow this grain and grind it up and feed it ourselves, or whether we buy what some other man has raised?

Mr. David Imrie—If you buy the other man's grain, you are adding just that much to your farm. In every crop we sell, we sell some fertility off from our farms with it, and we have to replace that fertility or the farm will run down, and we will get where we cannot pay our taxes.

Mr. Wyatt—What has been the permanent result in the east and south where they have used commercial fertilizers?

Mr. David Imrie—The chief trouble with those commercial fertilizers is that they lack in humus. The chief elements in them that go to produce the crop are used up each year and you have to apply them every year. If you get results at all, you get quick results, and sometimes the cost of fertilizers is up to twenty-five or thirty-five dollars an acre. But we do not want to get in that condition in Wisconsin. If we

handle our manures right and buy some mill feeds and feed what we raise to our stock on the farm, we will not need the commercial fertilizers.

Mr. Hansen—Of course as long as the Dakota and Minnesota farmers are willing to sell us their fertility, that is the best way to get it, but they may get wise after awhile and we may reach the time when in order to maintain the fertility of the soil we will have to buy fertility, because we will have to admit that we are selling off some fertility, particularly those in which the mineral elements are found. As it is, one of the things that the farmer ought to keep in mind is that it is not necessary to buy nitrogen; that this good friend of ours, clover, will collect all the nitrogen we need, but some times we find our soils are in shape so that they will not raise clover, they become clover sick, and when we get our soil in that shape, we have a pretty hard problem on our hands, and we may have to buy some of these elements, phosphoric acid and potash and lime, in order to have this friend of ours willing to work for us again. I had a piece of land some years ago that was in that shape, it was clover sick. Our good friends out in Dakota and Minnesota were willing to sell fertility in the shape of wheat bran very reasonably and by keeping dairy cows and depending largely upon the supply of wheat bran for a grain ration, we got that land in shape so it would grow a fine crop of clover. There is one thing we ought to keep in mind. You know the fertilizer companies would like to sell us a lot of nitrogen at high prices. When we do buy fertilizers, we want to keep in mind that our friend clover will supply all the nitrogen we need and that the best place to put our money is in phosphates or potash, and we will

have to decide which one, or both, of these we need for our own farm conditions. I know that under some conditions we can get profitable results from the use of these fertilizers. In making experiments, I have doubled the crop with two hundred pounds of nitrate of soda and four hundred pounds of acid phosphate to the acre. Now, it is very evident that that part of my land needed phosphate. In experiments on small farms, with one exception,

I never got any results with commercial fertilizers, with that one exception where I used two hundred pounds of nitrate of soda and four hundred pounds of acid phosphate, and on that particular piece I doubled the yield. At the same time, that same application on heavier soil gave no results whatever, so the question of fertilizers is one we have to study in connection with the land on our farms.

INTENSIVE FARMING.

E. Nordman, Polar, Wis.

I believe if the farming population of this country would confine its activities to about one-half of the area now in use, and if that half was worked intensively and scientifically, that more farm wealth would be produced than there is now. Further, I believe that a very material saving could be affected in the management of our highways and schools if farmers lived closer together, as they would if their farms only averaged about one-half their present size.

I think it is also evident that public utilities, such as furnish water, light and power to the citizens of municipalities, could economically render a like service to farmers if their farms were of the proper size and conveniently located along the public highways.

Other advantages of smaller farms and more intensive farming would be the opportunities for social development and co-operation, community enterprises, cheaper government, lower taxes, etc.; in fact, I believe a great many social problems that statesmen and political economists are now grappling with would

settle themselves if conditions were changed so as to induce farmers to possess smaller holdings and practice more intensive methods in their farming operations.

What Intensive Farming Is

By intensive farming I mean the kind that raises the largest and most profitable crops; that makes the best disposition of these crops, and that so handles the soil as to make it capable of bearing constantly increasing crops.

There are many lines of farming that are adapted to different peoples, localities and conditions. It is, indeed, one of the essentials of success in farming to select the line that a particular locality is best adapted to; however, all the lines of farming may be intensified; that is, they may be so carried on as to get the best results that are possible under the circumstances.

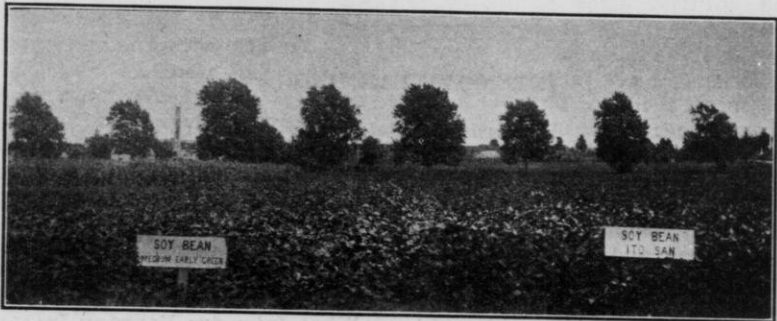
I must confine myself to the State of Wisconsin and to the line of farming in this State that, for obvious reasons, has gained the greatest prominence; namely, dairying.

Intensive dairy farming consists of getting the greatest values in milk for a given area of land. It is accomplished by producing feeds that are the most valuable for milk production, by keeping cows that will make the best use of the food which they consume, and by handling the soil in such a way as to make it capable of producing more and better feed to support an ever increasing number of cows.

The feeds that are the most valuable for milk production are the

not be fed to an animal at a profit. The skillful dairyman aims to produce not tons or bushels, so much as food units for making milk, and to this end he raises alfalfa or clover and corn as frequently as he can get these crops into his rotation.

To get the greater number of food units out of these crops, he cuts the alfalfa or clover at the right stages of its growth and cures it in cocks, and he grows the right kind of corn in the right way and puts most of it into a silo.



Soy Beans for Silage.

Soy beans used with corn for silage, three loads of corn to one of soy beans, makes a high protein silage.

Waukesha Industrial School Farm Demonstration Fields.

ones that will yield the largest quantities of food materials composed of the same constituent elements as milk. In Wisconsin, the crops that produce these feeds are, in the order of their importance, as follows: First, alfalfa or clover, second, corn, third, small grain.

To make these crops yield the greatest food value, the grower must direct his attention, not so much to quantity as to the quality of the feeds produced. The real value of any feed consists of the nutrition which animals may extract therefrom. It does not do much good to produce a large bulk of feed which, on account of the cost of production or because it lacks digestibility, can-

With this system of crop raising as a basis of his feed supply, the intensive dairy farmer gets the best cows that he can to convert these feeds into milk. However, in producing these cows, his purpose is not alone to get pure bred animals, because he knows that a pure bred cow is not necessarily a good producer. Therefore he procures foundation stock that has a good record behind it, as well as a pedigree. His herd bulls are all backed by ancestry of distinct dairy tendencies.

He keeps a record of the production of each cow in his herd, so that the best ones may be retained and the least profitable ones discarded, and he cares for his whole herd in

such a way that each cow is always at her best. In this manner the intensive dairy farmer makes his cows an exceedingly efficient lot of machines that extract the largest possible amount of milk out of the raw material which he provides for that purpose.

latter purpose does not cost the farmer a cent. This line of farming, therefore, carries within itself the means for increasing the output from the farm, since more fertility means more crops; more crops, more cows; more cows, more money and more fertility, and so on.



A close view of corn field on farm of E. Nordman, Polar, showing the amount of foliage and ears in this corn. It takes lots of barnyard manure and good cultivation to grow corn like this, but it pays to do it.

Intensive Dairy Farming Improves Soil Fertility

One of the most valuable features of intensive dairy farming is that it furnishes the cheapest and best known way to improve the fertility of the soil. Barnyard manure is waste material on a dairy farm, though it is invaluable as a fertilizer. The periodical growth of leguminous crops is also an important source of soil fertility and for the

The Help Problem

The principal objections to this style of intensive farming is that it involves the hiring of too much labor. It is pointed out that labor is high-priced and often not worth what it costs, and for that reason it will not pay to put so much work into it. This objection is, of course, based upon a habit farmers have gotten into of thinking they must have a certain amount of land

whether they can farm it efficiently or not. My contention is that from the standpoint of production, it does not pay a farmer to have any more land than he can work thoroughly, which means intensively. If a dairy farmer has the help available to keep but twenty cows, it will pay him better to keep those twenty cows on forty acres than on eighty acres. I am of the opinion that forty to eighty acres of good farming land is enough for one family any way, and that greater profit can usually be realized from farms of this size than from the larger ones.

Farming is not nearly so much a question of acres as it is a question of brains—more a matter of enterprise and good judgment than of hard physical work and large holdings. Any one with the proper mental equipment can take a farm of eighty acres of good land and extend his operations almost indefinitely. Think of the corn, alfalfa or clover, and other crops that eighty acres of good land will produce under favorable conditions. Consider the number of cows and heifers that this feed will provide nourishment for. You will all agree with me, I think, that the income from a proposition of this kind can be made ample to meet the reasonable needs of any sized family, and there will be work enough to keep the children out of mischief too.

I have already stated that, in my judgment, this question of more intensive farming and larger returns is the most pressing one before the American people and I believe it will be worked out along the line of smaller farms and better agricultural education.

DISCUSSION

Mr. John Imrie—How many head of cattle and horses do you keep on

your farm and how many acres of cultivated land have you?

Mr. Nordman—We have rather different conditions, I take it, from those existing down here. In the northern part of our State, the pasture question usually does not trouble us much for this reason. The slashings are generally open enough so they furnish considerable pasture, therefore with us we use our clearings to raise winter feed, and we let the stock make their summer pastures for themselves. That is what nearly every farmer does in northern Wisconsin. Now, under these conditions, on sixty acres of cultivated land we produce winter feed for seventy-nine head of cattle, forty-two sheep and four horses.

Mr. Jacobs—You stated that you thought a man had better confine the size of his farm to what he could work himself.

Mr. Nordman—No, sir, you are mistaken, I didn't say that.

A Member—He said his whole family.

Mr. Nordman—I didn't even say that.

Mr. Jacobs—Did you say anything?

Mr. Nordman—I think I did. No, what I said was that a person should never try to work any more land than he could make good use of, farming in such a way as to grow the very best crops he is capable of producing. That is the kind of farming that pays and the other kind does not.

Mr. Jacobs—You said something about what he could do himself, he and his family could do. Now, do I understand you mean he should not hire any help?

Mr. Nordman—No, sir, I do not mean that. I would be right up against it if I couldn't hire any help.

Mr. Jacobs—Then your operations would be confined to the amount of

hired help you could hire and intelligently work?

Mr. Nordman—Yes.

Mr. Jacobs—Now, on that proposition, if you had quite a good deal of intelligence, you might direct more help on a large farm.

Mr. Nordman—That all depends on how intelligent the hired men are. You and I know that it is pretty hard work to get much work out of an ignorant hired man, or a man who is not capable of using intelligence on the farm. You cannot take a hired man and shove him with steam as you do in a sawmill. His own initiative counts for a good deal, and those are things that are all-fired hard to find.

Mr. Aderhold—I would like to have any of you that are farming it on big farms show me where you are getting as much out of an acre as Mr. Nordman is, or anywhere nearly as much.

Mr. Imrie—Would it be as much out of an acre, or as much out of life that we are working for?

Mr. Nordman—Mr. Imrie has struck it just right. The unit of production is not the acre, it is the individual. My contention is that a man farming a small area of land and getting maximum yields will be making more money than the other fellow who farms more land but is unable to do effectual work because there is too much of it.

Mr. Convey—I believe the government has been making investigations along the line of the better size for farms, and they have come to the conclusion that the 100-acre or 200-acre farm was the ideal size, for the reason that the small farm could not afford to have the machinery, or hired help. They have published some figures concerning that question.

Mr. Nordman—I noticed those figures, Mr. Convey, and that was once

I did not agree with the government report. It may be presumptuous for me to say so, but we have examples right around us all the time where men on small farms are making larger profits than are the owners of large farms.

Mr. Aderhold—Referring back to what Mr. Convey says about utilizing machinery—isn't it better to make one set of machinery do as much work in the harvesting of eighty acres as a poorer manager would make it do on one hundred and sixty? However, we all know the answer to that question. Now, I would like an answer to my other question. There are men who have 320-acre farms, and they of course believe in the big farm, but they have none of them answered the question I put, whether there was any of them getting anywhere nearly as much out of an acre as Mr. Nordman. They have got to answer that or admit they haven't brains enough to run a small farm.

Mr. John Imrie—I hardly think Mr. Aderhold can get an answer to that question here.

Mr. Nordman—I would just like to cite you to one of our Institute workers as an example of what can be done on the small farm. Mr. Griswold is right here and when you are making comparisons I rather think I have no fear of anybody trying to dispute what I say when I state that Mr. Griswold's farm is turning out larger profit, or at least as large a profit, as any big farm in the State.

A Member—How many head of cattle have you, Mr. Nordman?

Mr. Nordman—We have seventy-nine head of cattle; forty-two sheep and four horses; twenty-six of those cattle are cows, there are about twenty yearlings coming two next fall, and the rest of them are from last September and October. We

have sixty acres under cultivation and we have our pasture besides that. We pasture our sheep and the young stock during all of the summer months. It is pretty late in the spring before they get very much feed out on the pastures, and they continue to rely upon the pastures until about the middle of October. They get all of their feed during these months outside of our sixty acres, but the cows get only about two months pasture outside of the sixty acres; that is, through part of May and June, hardly two months. The balance of the time they are getting silage or second crop clover.

Mr. Jacobs—I think as long as Mr. Aderhold has made this proposition that a man cannot show as big a profit per acre on a hundred and sixty acres as he can on a small farm, he ought to show up. It is going to be easy enough to make our farms smaller, because it is easier to divide them than it is to make them larger.

Mr. Convey—Mr. Nordman has told us he has a pasture running clear up to the North Pole, so that should be taken into consideration. I am running a farm of two hundred and twenty acres and I rent a hundred acres more because I need more pasture. In one way, the small farm is a mighty good proposition, and that is when the taxes get too high.

Mr. Nordman—Here is one point I think we do not consider as we should, and that is that a man that is so disposed can intensify his operations on his farm to almost an unlimited extent. If you will keep, we will say twenty cows, on forty acres of land, that does not mean that you cannot keep right on and increase the number, and in doing so you get more fertility into the soil and raise bigger crops and more nutritious crops because you do grow bigger

crops, and so you can keep right on growing more feed and keeping more cows. If any of us are ambitious to be big farmers, I believe there is a much better way of going about it than to get more land. It is not alone better for the individual, it is better also for the community. Roads and schools could be made much better and be had for less taxes in a community of small farms than in a community of large farms. Besides, there are numberless ways in which the farmers of a thickly settled neighborhood can operate to their mutual profit and advantage that are not practical in a locality where each farmer owns one hundred and sixty or more acres of land.

Supt. McKerrow—I want to side with Nordman, because he doesn't have any boys growing up to divide the farm with. I have traveled in France and seen how it works. The custom there is to divide up the farms, and a small farm, when it is divided up half a dozen times, gets to be a very narrow strip. If Nordman was like Convey and had twelve children to divide with, he would probably want a big farm. I think circumstances alter cases.

Mr. Nordman—There would be no need of worrying about land for our children if it were not for this disposition on the part of a few people to hog all the land in sight. There is now and there always will be plenty of land for every one if it is fairly used, so that if we are looking for it for the good of our children and our children's children, it seems to me the way to do it is to provide for the just and equitable distribution of land and for its proper use.

Mr. Aderhold—When Mr. Convey has divided up his farm into twelve and makes it support twelve families, you see how much bigger crops

they will have to grow and that brings us right back to intensive farming. We have got to make every acre produce more to feed all the population that is coming.

Mr. Nordman—I very well understand that if sixty acres were all the land I had the use of, I would not keep as much stock as I am keeping

now, but just the same I would keep the largest amount of stock that sixty acres would support and I would get much greater returns from it than if I was trying to work one hundred and sixty acres and be compelled to farm the land superficially.

THE PEA INDUSTRY IN WISCONSIN.

E. J. Delwiche, Ashland, Wis.

Wisconsin ranks first in the production of canning and dry peas. In 1909, according to the census of 1910, Michigan was slightly ahead of Wisconsin in point of acreage. The accompanying tables show the production of peas in the eight leading states arranged in order of production for 1909:

one-third of the production in 1899. In contrast to this, the production in the states of the middle west increased considerably, as may be noted from Table I. The mountain states, particularly Colorado, showed a marked increase in production of dry peas, the last mentioned state producing more than five times as

Table I

States.	ACREAGE.		PRODUCTION		VALUE	
	1909	1899	1909	1899	1909	1899
Wisconsin (1).....	78,017	68,819	1,165,055	1,098,819	1,645,928	824,603
Michigan (2).....	94,932	71,376	1,162,403	1,134,431	1,337,430	689,133
Colorado (3).....	24,230	3,621	258,281	47,461	397,540	29,906
Washington (4).....	3,196	3,573	91,032	91,899	116,065	78,124
New York (6).....	4,007	14,743	71,486	251,899	117,558	230,609
California (6).....	2,959	2,014	57,468	57,299	101,016	70,633
S. Dakota (7).....	1,783	37	10,598	452	11,223	591
Maine (8).....	537	2,300	4,963	35,991	10,134	44,618

It is rather striking to note how the production of dry peas has decreased in the eastern states during the first decade of the present century. Maine, for instance, produced nearly 36,000 bushels in 1899 and produced less than 5,000 bushels in 1909. In New York the production fell from 251,889 bushels in 1899 to 71,486 bushels in 1909, or less than

much in 1909 as it did in 1899.

The province of Ontario in Canada is a heavy producer of peas, the bulk of the crop, which amounts to about 13,000,000 bushels yearly, being used principally for stock feed.

As will be noted from tabulation given above, peas are mostly grown in localities which possess a cool climate. There are two reasons for

this kind of distribution; one of them being that the pea plant likes cool weather, the other is the fact that it may take the place of corn where this crop does not do well because the summers are not warm enough. In Wisconsin the distribution is about on the same principles, for as may be noted from the table given below, the counties which produce the largest amounts also have a cool summer climate. Door county, for instance, produces nearly one-third of the dry pea crop, while Manitowoc and Kewaunee are also heavy producers. These three counties have a long growing season with cool summers. Soil, too, has a great influence on the distribution of the crop. All the important pea producing counties in Wisconsin possess a heavy soil, for the most part.

Table II
Ten Leading Pea Producing Counties in Wisconsin in 1909

County.	Acre and production of dry peas.	
	Acreage.	Bushels.
Brown.....	4,192	53,541
Calumet.....	2,232	51,850
Door.....	21,845	307,739
Kewaunee.....	12,536	158,011
Langlade.....	1,489	27,331
Manitowoc.....	9,073	142,263
Marathon.....	1,699	26,795
Marinette.....	2,900	44,212
Oconto.....	5,640	82,231
Shawano.....	3,452	48,711

The production of canning peas, while not so dependent on climatic factors, is also considerably influenced by it. Table III gives the



Pure lines of canning peas bred on Ashland Branch Station.

production of canning peas for the leading states in the Union. While a good many peas are grown for the canners in the comparatively warm states of Illinois and Indiana, the bulk of the output is produced where the summers are cool.

Table III

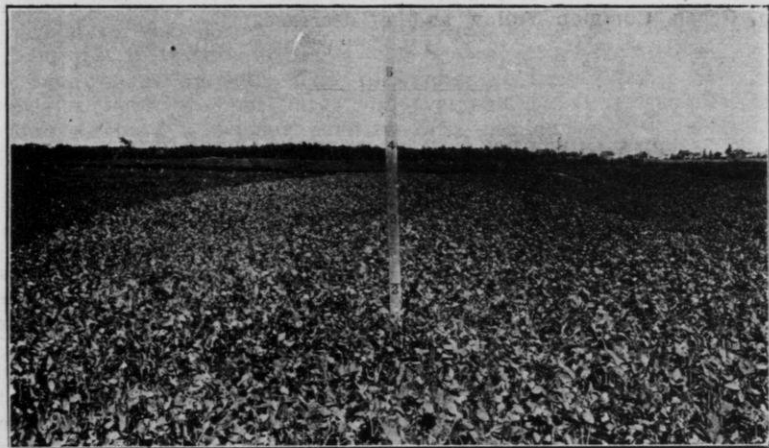
Peas Canned During 1907, by States

State.	Cases.	State.	Cases.
California.....	90,450	Minnesota...	27,750
Colorado, Idaho, Utah and Oregon.....	193,018	New Jersey..	153,564
Delaware.....	141,046	New York...	1,659,944
Illinois.....	216,508	Ohio.....	101,521
Indiana.....	826,500	Pennsylvania	80,373
Iowa.....	50,000	Virginia.....	15,486
Kansas.....	11,539	Wisconsin...	1,773,599
Maryland.....	568,393	Other States.	3,132
Michigan....	595,088		
		Total U. S.	6,505,961

Wisconsin ranks foremost in the production of canning peas, as Table

III indicates. According to the census of 1910, the capital invested in pea-canning factories in Wisconsin amounted to over six million dollars, and the value of the product of all the factories for the year 1909 was nearly five million dollars. If to this is added the value of the dry pea crop as shown in Table I, the total value of the Wisconsin pea crop for 1909 comes close to the seven million mark. These figures show that the pea crop of this State is one of considerable magnitude, being about seventy per cent of that of the potato crop for the same year, and more than twice that of the rye crop.

The growing of peas for the canning factory or for seed is an industry that needs fostering in Wisconsin. When placed in a right system of rotation, peas are a profitable crop to grow, and while they



Canning Peas on Ashland Branch Station.

draw on the mineral matter of the soil, peas also add nitrogen, which compensates in part for the fertility so removed. Peas are well adapted to the clays and loams of northern Wisconsin, where they should be raised more extensively, both as a cash crop and as feed for stock. When the growing of peas is as extensively developed in the counties bordering on Lake Superior as it is in Door and Kewaunee counties, the output will be more than doubled.

The Experiment Station is giving considerable attention to pea production and extensive experiments in the breeding up of superior strains are being conducted at the Ashland Branch Experiment Station, and to a lesser extent at the Marshfield Branch Station. The Station has developed several pure lines of field and canning peas and these are being increased as fast as possible with the limited funds and land at the disposal of the station for this line of work. Already sufficient seed has been produced to plant several acres each of pedigree Scotch, Green, Common Yellow and

Marrowfat peas during the coming season. Superior strains of the canning varieties are also being developed. Work with these was begun a year later than with the field varieties. Several crosses have been made and selections from these give promise of increased vigor, disease resistance and productivity.

Pea blight and other fungous diseases have given more or less trouble in all pea growing sections in the past. These can be largely controlled by following improved cultural methods with respect to such matters as seed selection, proper rotation and time of seeding.

Peas are a profitable crop for the Wisconsin farmer. There is every reason to believe that Wisconsin will continue to hold its place in the front rank of pea growing states. With the utilization of the large acreage of new lands adapted to the crop, the adoption of right systems of rotation in growing the crop and with the introduction of improved seed varieties, the production in Wisconsin should increase instead of decrease.

PEA CULTURE FOR CANNING FACTORIES.

D. J. Fitzgerald, Oconto, Wis.

All mankind must live by production. There are three factors in production, natural products, labor and capital.

The natural products are given to us by the bountiful hand of nature with the assistance of an all-wise providence, as man, with all his ingenuity, science and mechanical ability, is unable to produce a single grain of wheat, a potato, or even as small a thing as a mustard seed.

Labor is employed in the cultiva-

tion of these natural products, in their manufacture from the raw state to the finished product, in their transportation and commercialization.

Capital being the third factor is used to compensate labor for its work in the cultivation of the natural products and their manufacture. It is divided into properties and real estate as well as moneys, which have a circulating value as bank checks, currency paper or gold or silver.

The natural products might be divided into three kingdoms; the animal, vegetable and mineral kingdoms. Labor might be divided into two classes; skilled and unskilled, but all men are laborers.

The Soil the Foundation of all Natural Products.

The soil of mother earth is the foundation of all our natural products. Soil is nothing more than disintegrated rock or what is known as rock particles. The size of these rock particles, together with the amount of vegetable matter, gives the soil what is known as its texture.

We have a gravel, where there is very little or not any vegetable matter; therefore, it lacks a humus, which is decayed vegetable matter in the form of a waxy substance, which adheres to every rock particle. The color may be brown or black as loam or red clay. This humus is what contains and holds the moisture and the plant food, known as the three necessary elements, nitrogen, phosphoric acid and potassium. The gravel being so coarse, allows but very little humus to gather around the rock particles and retains no moisture whatsoever.

The next in texture to this would be sand or sandy soil. The rock particles here are not large, but where we have a drifting sand we find no vegetable matter, or humus, in this kind of soil. A great deal of this soil is found in northern Wisconsin and Michigan, and at one time it was known as the Jack Pine plains.

Then we have a soil next to this of a sandy loam and a clay subsoil. Usually this combination is thought to work very good together. For the raising of hay, and for pasturage, it is all right, but usually, you find the water table too close to the surface, and when deep rooted crops send their roots down as far as the water, they refuse to go any deeper

and branch out close to the surface. In wet weather this soil usually is too wet and in dry weather the roots, not having penetrated deep enough, soon loses all the moisture on the top of this clay subsoil. Care must be taken in the cultivation of this kind of soil in order to have it packed when it is sown, so as to retain the moisture if possible.

We have then a clay soil, which is of a still finer texture. This kind of soil usually contains a great amount of humus and is usually very rich in the three plant foods, having at one time been covered by deciduous trees or hardwood forests, whose leaves were shed in the autumn, and which finally worked its way (through many generations) into the soil, while the sandy stretches were covered with evergreen trees, pine and hemlock, whose cones never added a single particle of humus or vegetable matter to the soil.

These evergreen forests were all cut away and floated to the saw mills, manufactured into lumber and the soil left bare to grow up into either underbrush or become what is known as pine-slashings; while the great hardwood belts and forests in Manitowoc, Sheboygan, Brown and Calumet counties have all been cut down, and the timber being of very little value at that time, was piled together and burned on the farms, leaving vast amounts of wood ashes to work into the soil to become one of the chief plant foods, known as potash.

We have also a prairie soil, which has been treeless. Some of our geologists claim it was made so by glacial action. It might be termed a black loam, but it has a very poor subsoil. While the prairie states are great in production of wheat, corn, oats and barley, they have never been able to produce any peas, as their soil is too full of nitrogen and grows all into foliage and vines.

Then we have reclaimed marsh or

bog land, which, after reclaiming, contains such a great amount of nitrogen and such a vast amount of moisture, that while they may be used for gardening purposes after considerable aerating and sweetening up with lime, they are of no use for the raising of grain cereals, being sour.

All grain and vegetables need heat, light and moisture, but they need more than that. The soil must also contain the necessary plant food, or the crop will be a failure. In the sands of the sea-shore, which contain abundant moisture, receive heat and light, yet nothing could be produced, owing to the fact that there was a lack of humus in the soil and also, there had to be lack of plant food; while the great desert of Sahara, composed of large wastes of sand, if it had the proper moisture, and humus in the soil to hold this moisture, would produce the grain cereals, as is plainly seen on the oasis or the fertile spots on the desert.

It is the amount of humus or vegetable matter, as well as the size of the rock particles that give texture to any soil and regulates its ability to hold moisture as well as to maintain the necessary plant food.

The brick clay, if properly cultivated and not allowed to bake, will give better yields without any rotation than any other texture of soil.

Soil, Fertility and Crops.

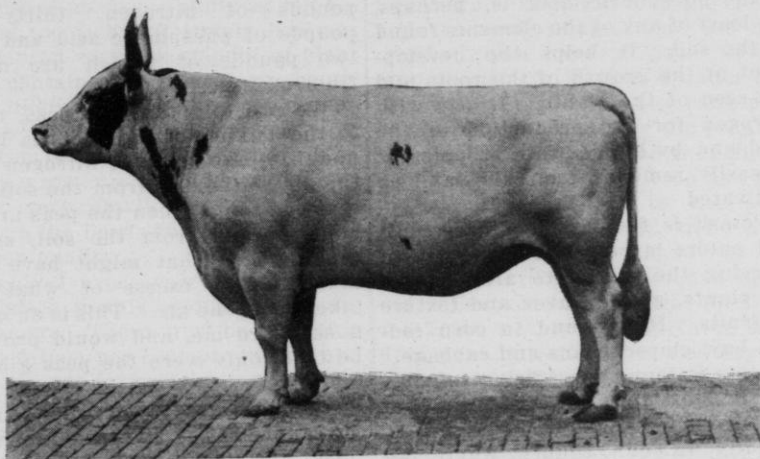
Soil and crops are made up of rocks, animals, atmosphere and water. The crops in their growth take some of the elements necessary for their life and growth from the soil and also from the air. A great number of elements found in both the air and soil are of no value whatever to the production of crops, and serve no purpose, whatever, as far as its growth or maturity is concerned.

The problem then confronting us

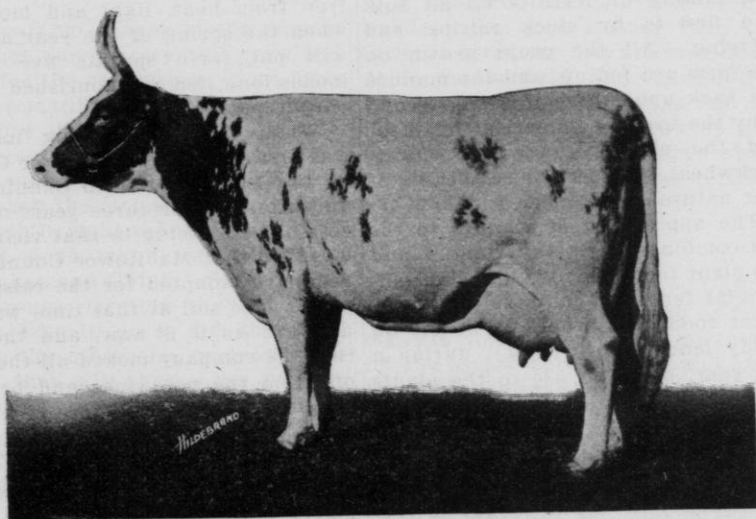
all is the necessary plant food elements in sufficient quantities in our soil to produce the desired results, as far as crops are concerned. After careful study, the learned chemists have narrowed it down to three necessary plant foods and sometimes the fourth. They are nitrogen, phosphoric acid, potassium and lime.

Nitrogen is a colorless gas found in plants and animals and composes about four-fifths of our air. It is, however, of no direct value to plants in its pure form, as they are unable to use it in that way. The pure fresh air that we breathe into our lungs is useless to the plants, but the air that we exhale or give out from our lungs in the matter of breathing, is readily absorbed and taken in by the plants, as you have all noticed that house-plants flourish best in a close room where there is very little ventilation, and a great deal of carbonic acid gas, or, as a stronger illustration, is where plants are growing in saloons or hotels, the air being most of the time polluted with tobacco smoke.

Clover, alfalfa, peas and beans are leguminous plants, that are able to build up themselves indirectly from the air by the bacteria contained in the little nodules on its roots. These produce the flesh forming substance, which is known as protein or fat. Nitrogen in the soil is usually shown by the dark humus. It is found in marsh lands in abundance. Such lands are useless unless they undergo this weathering or aerating process. Nitrogen, besides giving protein in the plants, also helps to strengthen the stem in its early growth and runs to foliage, which, if there is plenty of it, the plant is usually of a deep green, and if there is too much of it, it becomes rank and the fruit loses its flavor, as excessively large apples, the larger peas and larger beets are not as sweet as the small or medium size.



Champion Ayrshire Bull, Wisconsin State Fair, 1914. Owned by Adam Seitz, Waukesha, Wis.



Champion Ayrshire Cow, Wisconsin State Fair, 1914. Owned by Adam Seitz, Waukesha, Wis.

The phosphoric acid is, perhaps, the least of any of the elements found in the soil. It helps the development of the growth of the roots and the seed of the plants. It acts with nitrogen for the production of the seed and by heavy grain cropping it is easily removed from the land so cultivated.

Potash is found in ordinary soils and enters largely into the work of carrying the starch to all parts of the plants, giving flavor and texture to fruits. It is found in corn fodder, hay, clover, beans and cabbage.

Lime is found in sufficient quantities in most soils of Wisconsin, but the use of it should be increased especially in our county where we have sour soil, but is entirely unnecessary in Door County and some other counties where they have a limestone subsoil. It adds to the mechanical condition of the soil.

So far as known up to the present time there are but two ways of the maintaining of fertility on all soil. The first is by stock raising and dairying. All the crops grown on the farm are fed up, and the manure put back upon the soil. The second is by the use of commercial fertilizer and the plowing under of clover, buckwheat, sow peas or something of that nature.

The application of manure to the soil combines both the humus and the plant food in one, while the commercial fertilizer contains only the plant food, and where it is put on sandy land it may (first), during a dry year, be of no use to the plants and during a wet year may leach away in the soil. We have tried it in our county and in a great many cases it was only a case of throw good money after bad money in trying to continue the use of commercial fertilizer.

We find for a yield of fifteen bushels of peas per acre, when dry, 108

pounds of nitrogen, thirty-three pounds of phosphoric acid and fifty-two pounds of potash are moved from each acre.

We are told that the peas, owing to the activity of the bacteria in the nodules, take as much nitrogen from the air as they do from the soil, and that the roots, when the peas are cut and removed from the soil, supply the nitrogen that might have been taken out in excess of what was taken from the air. This is an error, it seems to me, and would prove to be true, only were the peas allowed to ripen.

The peas are green when cut by the canner. The vines are green and juicy. The bacteria in the nodules have just started to work finely, but, at once, after being cut, all roots die and become inactive. Before this, that pea-vine had taken a great deal of nitrogen from the soil, from the air and also from its parent seed, as a potato, rolled in a carpet, kept free from heat, light and moisture, when the spring of the year arrives, will put forth sprouts five to six inches long, fed and nourished by the parent potato.

When the pea canning industry was first started in Manitowoc County by the Albert Landreth Canning Co. and after two or three years of successful pea raising in that vicinity it was said that Manitowoc County was peculiarly adapted for the raising of peas. The soil at that time was not as worn as it is now, and the fact that the company picked all the pods off from the pea vines and brought them to the factory where they were shelled by podders and the farmers followed up and plowed all these green pea vines under. It was a pretty sure bet then that the peas did not take any nitrogen from the soil and it was just as rich the next year for the raising of another crop of peas.

There is no such a thing as soil becoming too rich. It simply becomes unbalanced with the amount of plant food contained in it, there being, most likely, too much of either one of the elements. Where too much nitrogen is in the soil, you have seen barley grow up and lodge, and the heads very small, tiny kernels of grain in the heads and this grain was of poor quality.

Eighty-five per cent of our entire population in this country today are consumers. There must be then only about fifteen per cent producers, and if we do not farm right, we will find that we will be an importing nation instead of an exporting nation.

We have been educating the farmer's boy away from the farm up to the present time, but now a change has taken place. The question is, "How to keep the farmer's boy on the farm," and, of course, if the boy is any good at all, he will be able to keep the farmer's daughter on the farm.

There is no danger at the present time that our country will grow less crops, for the reason that if we farm it in a scientific manner, better crops and more of them will be the result. We are only farming about ten inches of the surface now, and according to that, when the estimated diameter of the earth is eight thousand miles, we have a good many farms between Milwaukee and China. So, when we get through farming the top farm, all we have to do is dig down and mix up the other one, or grow some plants that will keep the fertility and bring the plant food from a great depth. The alfalfa has roots that extend twenty-one feet in the ground, so, consequently, that plant would be making use of twenty-one farms at the same time.

As to a crop rotation. Every canner should work out that problem for himself. The life of clover is only

two years. You seed it in the spring and the next summer cut the first crop. If you have a good second crop, do not cut it, turn it under and that will be a good field to raise peas on the next year. After the peas are removed, if you have the time and if you own the land, disk it up and sow a peck of buckwheat to the acre. Plow it under in the fall and I positively assure you, you have restored as much fertility as you have taken out. Use some commercial fertilizer 2-8-2 the next year, say three hundred pounds to the acre, and any ordinary year will give you a good crop.

Nothing spoils land sooner or quicker than to be allowed to lie bare after the pea crop is removed in the early part of July, as it is so mellow after the crop is removed that weed seed readily find lodgement and grow large and strong. The farmers always charge the canners with sowing their land with canada thistles, quack-grass and wild mustard, and, as a rule, the canner's seed is one hundred per cent cleaner than the farmers' seed, but it is allowing these fields to lie bare and unsheltered during the summer months and allowing all the weeds to grow up that causes farmers' complaints about weeds, and the soil loses its fertility and moisture growing weeds.

Cultivation.

Sod and stuble lands should all be plowed in the fall at a depth of from eight to nine inches. It helps to kill off the weeds, pack the soil and after the winter snows and the spring rains have been absorbed by the soil, little canals or capillaries have been formed from the surface down as far as to the water table, which has practically done away with the plow sole, which is the worst grievance to contend with in spring plowing.

All clay land should be cultivated and plowed in as dry a state as pos-

sible, as clay bakes very readily. Sandy soil should be worked only when wet, rolled over two or three times before and after seeding. If the humus is obtained in the sandy soil by the application of manure, it should not be plowed or tilled very deep, as you are apt to get the sandy subsoil on top.

Sod land should be disked from two to three times with a sixteen-inch disc, then go over it with the spring tooth harrow, and some roll it before seeding, but on clay soil I would never roll it after seeding. Sow the peas at least four inches deep in early spring and six inches deep later on.

Seed should be put in four bushels to the acre by disc seeders, and I think that where you have plenty of teams and machinery, it would be all the better for the peas to be sown two bushels to the acre by each drill; the first one sowing two bushels to the acre across the field in one direction, following later on by the other machine across the field in the opposite direction, also sowing two bushels to the acre. The seed is then more evenly distributed over the ground.

All plants get their moisture from underneath by the capillary circulation of moisture. This moisture is held in the ground down as far as the water table by the humus. It is necessary that a good seed bed be made, so as to form a mulch on top

of the soil to prevent the escape of this moisture. To prove this, and note the capillary attraction, have two lumps of cut loaf sugar. Place them in water with a drop of ink in the water. On the top of one of these lumps of sugar is flour or pulverized sugar. When both are placed in the water, you will notice how readily that ink colored water will rise to the top by the means of capillary attraction to the lump of sugar without any top coating; while it will only reach as far as the mulch or the flour or pulverized sugar on the top of the other one.

I have also noticed a machine that might be used to advantage by some of our canning companies who have a heavy clay soil as well as fertile clay subsoil. I would use what is known as the Gale Deep Tilling Machine. It can be drawn by four horses, consists of a heavy steel frame, carrying three large steel discs that can be operated to the depth of from eighteen to twenty inches. Now that brings up, not only some of the cold subsoils, but these discs throw it over from one side to the other in such a way as to mix the subsoil with the surface. Usually subsoil brought up by the means of a plow leaves the cold, sour soil on top and the other soil in the bottom, especially when they use a subsoil plow.

Adjourned to 1:30 P. M.

AFTERNOON SESSION.

The convention met pursuant to adjournment at 1:30 P. M., same day.
Mr. E. C. Jacobs in the chair.

ALFALFA.

Supt. Geo. McKerrow, Madison, Wis.

Just to outline in a very brief way this alfalfa question I am first going to begin by asking you people how many of you grow alfalfa. All that do, please raise your hands. Here is a showing of some fifteen or twenty hands. Now, how many of you have grown it long enough so you think you can raise it? Not quite so many; about ten or twelve.

I am a great deal more confident than I was some years ago about this question that Wisconsin can grow alfalfa, because we are growing so much alfalfa in Wisconsin; in fact, we are growing more than any state east of the Mississippi river, and we have it scattered in practically every county in the State, although, of course, the largest acreages are confined in the main to comparatively few counties. Green county has the most, followed closely by Jefferson and Waukesha, and then Fond du Lac and Dane, and so on through the State.

Now, I am going to make a prediction that the time is not very far ahead when it will be found that three out of every four acres in the State of Wisconsin can grow alfalfa. I do not believe this will be right away in your immediate district. You have a location that will grow alfalfa later.

Now, why should I, a farmer in Waukesha county, argue for alfalfa here? Simply because I believe it

is the best crop that can be grown on a Wisconsin farm. For ten years we have been keeping track as near as we could of the value of the different crops on our farm, and the three crops of alfalfa that we have got upon an average yielded us, according to our figures, seventy-five to eighty dollars per acre in feeding value per year. Now, our corn crops in the same periods have yielded us, as they have been put into the silo and fed out, about forty dollars per acre. Our oat crop has been down to or below thirty dollars. Our clover crop—and we grow a lot of clover—has been down around thirty dollars, or a little less. Maybe there are some other crops we could grow better, but under our system of farming, they are the best, and the best of all is alfalfa, nearly twice as good as corn, so we naturally stick to alfalfa, and we have sixty, seventy or eighty acres a year. You might ask why we don't grow more. Because that acreage fits into our system best, and if we grew more, it would mean too much hay, we would have to hay all winter instead of all summer. When we got up to fifteen or twenty acres, my son said, "Don't sow any more alfalfa, because we hay all summer as it is," but after one very dry summer, he said to me when I came back from Europe, "Hadn't we better get that twenty-acre field ready

and put it into alfalfa next year?" I replied, "But we have about twenty acres that really ought not to be plowed up." "Oh, well," he said, "we need more." Then he said, "Hadn't we better get that other twenty acres ready and put it into alfalfa?" "But that will mean you will have to hay all winter." Then he said, "This dry summer has made me turn to alfalfa, because it is the only thing that has been making profitable crops this summer."

though with all the acres we have grown we have never yet inoculated or limed, and I believe that of the fifty thousand acres that grew alfalfa last year, there are more than forty-five thousand that never had any inoculation or lime. In some places it grows very well from the start. With us, it took two or three years to develop any inoculation, but we kept on sowing on the same patch and I think the thing that did the most for us upon our



First Prize Oxford Get-of-Sire, Wisconsin State Fair, 1914. Bred and owned by Geo. McKerrow & Sons Co., Pewaukee, Wis.

How to Get a Start

Now, if we are going to start alfalfa, the first thing the scientist tells us to do is to inoculate our soil from some alfalfa field that has the nodules on the roots; that is, move the nitrogen-fixing bacteria from that field for seed, take two hundred pounds or more of soil to the acre to put upon your new field. That is inoculation. Then test your soil and if it is acid, if it turns the blue litmus paper red, put on two or three tons of ground limestone to the acre. Then sow your alfalfa and you will have a chance to get a crop. I believe that is good advice, al-

farms was accidentally mixing some alfalfa seed with the clover, because we happened to have some alfalfa seed left, and so we kept on doing that with every clover seeding for seventeen years. Now, on our home farms, in every field that we put into alfalfa, excepting some black muck, tile-drained, it has done very well. I would advise the farmers to mix in a pound or two of alfalfa seed per acre with their clover seed, so it may get acquainted with you and your land.

Good, clean seed is the first consideration, and alfalfa seed is cheap compared with what you used to

have to pay. This year the Wisconsin Alfalfa Association, Mr. L. F. Graber, Secretary, at Madison, furnishes clean, high-class seed at a very low price. It will cost you twenty-five cents to join that organization and then you can buy it at \$7.20 a bushel for Kansas seed; \$7.90 for Nebraska seed; \$9.60 for South Dakota seed; \$10.40 for Montana seed. That is probably the best for Wisconsin; and probably there was more alfalfa seed sold under that name in the State of Wis-

valley. Every man has to think for himself. But in a case like that I would cultivate it probably twice or three times as early as we can cultivate the ground; again in ten days or two weeks, and again after ten days or two weeks. By that time the fear of frost is gone, and it is well to remember it is more susceptible to frost even than clover. So I would say, do not sow it in this latitude before the last of May or the first of June. We do not sow in southern Wisconsin until the last



Alfalfa covered with hay caps. This part inoculated; at right part not inoculated and for that reason not sufficient growth to cut.

consin than was grown in the whole state of Montana last year.

Twenty pounds to the acre is generally recommended, but after you have grown alfalfa on your fields, they are in good condition and you make a good seed bed and cultivate it once in two weeks all through the spring up to the middle or last of June, and you have been growing alfalfa right straight along, I think sixteen pounds are enough.

If you have very rolling land, I would not advise you to cultivate it and make the seed bed continually all through the early summer, because there might come a big rain and wash your soil all down into the

days of May, on this rolling land, then we will drill in a bushel of barley to the acre, and we cut the alfalfa and barley off for hay, except that last year we didn't have time to cut the barley and got over thirty bushels to the acre, but the land was rich.

There are lots more things I would like to say, but I try to impress on these fellows that they must learn the happy art of condensing. I am like all the rest of them, when we get started talking to farmers we don't know when to stop, but I am going to stop right now and Mr. Convey is going to open the discussion on this subject.

DISCUSSION

Mr. Convey—I have attended, I think, about twenty-five Round-up Institutes. In what I say I want to have special regard to the people on the west side of the State. One of the nicest Institutes we ever had was one down here at Ono about twenty-five or six years ago.

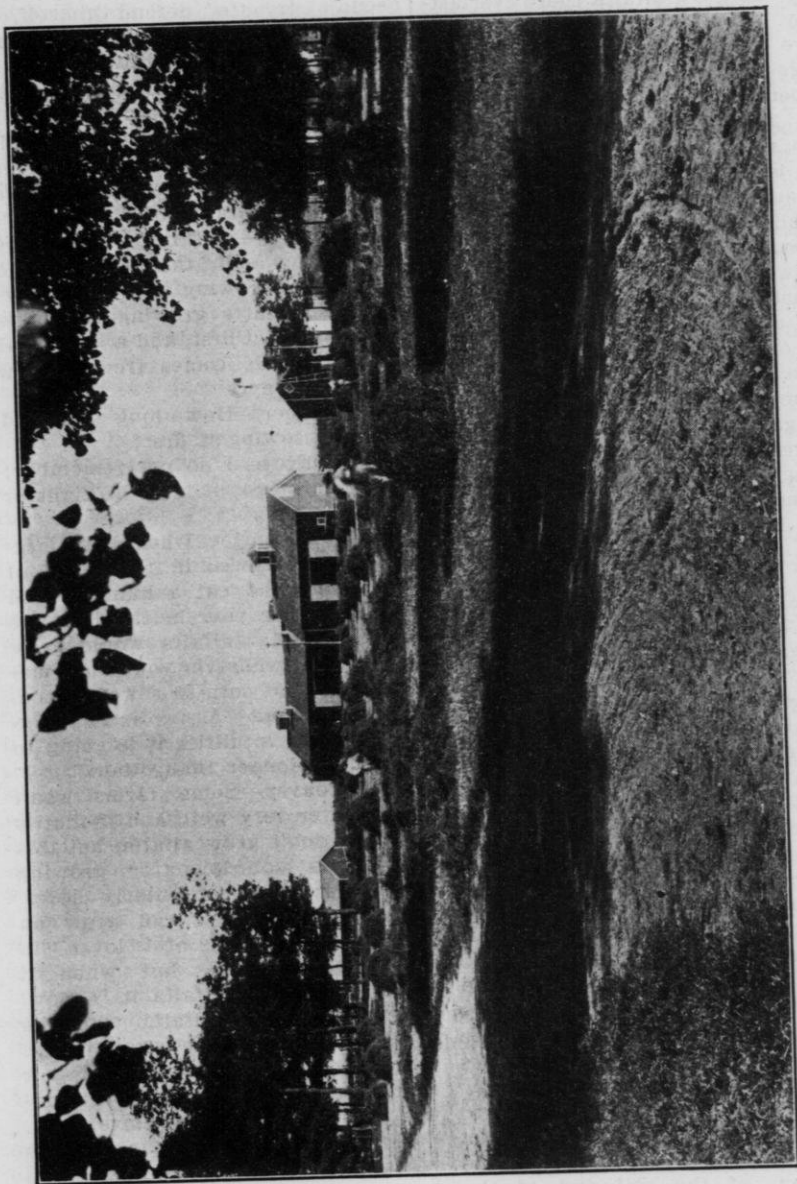
I am specially interested in this subject of alfalfa, for the reason that I believe you people have splendid alfalfa land here, but you cannot grow it whenever you take a notion and if you buy any kind of seed. You must get it started right. We never sow it so very heavy at first. We sow it with our regular grain crop, two pounds of alfalfa to the acre with clover, and we did this because I was afraid that if we failed the whole neighborhood would lay down on the alfalfa proposition. everybody in the country would know about it, and they would be casting it up to me as long as I live. It didn't look at all promising, but it staid as well as the clover seed, and it kept getting better. I have the same rotation as our friend Jacobs and other men here, but it kept doing so much better and finally getting ahead of the clover that I became quite enthusiastic about it later on.

Now, about the quantity of seed to the acre. We got some South Dakota seed through my son who was living out there. We sowed five pounds to the acre, in with the clover seed, and we had a good mixed crop; the next crop was mostly alfalfa, the second crop; then the next year the clover began to thin out, but the alfalfa began to thicken up, so that last year we really had a fine crop, about five tons to the acre in the three cuttings. Alfalfa does not do its best the first year, or even the second year, but it keeps

increasing in value. How long that will last, I do not know. It seems to be getting bigger and stronger all the time, and if I were to tell you the truth about the amount of hay we have on hand now you would hardly believe me. My neighbors said, "Are you going to be haying all summer?" because we started in the middle of June and finished up about the middle of September, but we carried over a hundred tons of alfalfa hay, although we fed a hundred tons. It is worth about twenty dollars a ton and I shall sell some, because I want barn room, but I always carry over some on good years so as to have it in poor years.

I know you people can grow it here. You have the limestone soil and you have the timber soil. You have practically the same kind of climate that we have, and I think you have a better climate than they have on the lake shore. I know about what you can do here, so do not be afraid to try it. Get the best seed and if you can get it growing and you have good stock of the kind that has been described here and have silage to feed—and I know you can raise splendid corn—with your alfalfa you can get three crops a year in any kind of a season. But do not try to cut it too late and do not tramp it with young stock or anything else. It will stand as much abuse as clover will, but start out with the intention of growing it, no matter how much trouble you have.

Twenty-five years or more ago we were holding a meeting in Fond du Lac county. A few people had started to grow alfalfa, although everybody was laughing at them, but those fellows were determined to win out, and they did, and the fellows that were laughing at them have fallen in line and won out since. That is a locality situated similar to this, limestone subsoil,



Alfalfa on the demonstration fields of the Chippewa Asylum Farm.
One of the twenty-five state and county farms on which demonstration work is conducted.

rolling land, ordinary timber land. They can grow alfalfa there everlastingly. Some of the stock men over there are feeding good alfalfa and silage to their stock, and they have no better results when they start to feed grain with their alfalfa and keep right at it. The question for you is to grow it just as rapidly as you can, because once you get it established, it has more vitality than clover, it has more feeding value and will give you better returns.

Last spring I was invited to attend a County institution of some kind over at Dodgeville, they wanted me to go over there and be of a little help. Prof. Moore came down and gave them a splendid talk on the value of alfalfa. When he got through, a party in the audience jumped up and said, "You tell us these big stories about growing big crops, but we have tried it and it won't grow at all, these are just big stories to fool farmers." Well, Prof. Moore felt badly. The chairman gave me a little chance and I said, "You farmers in this county are growing timothy hay. Your land gets foul with insect pests and all kinds of cut worms and wire worms and the timothy impoverishes your soil. Now, I can make twice as much money and grow clover hay to feed my stock as you can growing timothy, but I can take alfalfa and double the net results even as compared with clover hay." There was quite a lot of opposition, but I didn't want to take back tracks. They didn't challenge my language at all, and I said to them, "You come out and see me, only six miles east, and see whether I can grow alfalfa." But when I stopped to consider the difference in the value of the feed, the difference in the condition of the soil and of the growing crops, I felt I was within bound when I made the statement,

and if it is true, the timothy grower needn't try to defend himself, I hardly think he can. If you want to leave it there for five years, it would be all right, and the frost won't kill it as badly as clover.

Mr. Nordman—Do you think alfalfa will grow all over through the northern part of the State where there is good drainage?

Mr. Convey—I think where there is good top soil, there will be no difficulty in growing it here. Everybody that starts growing alfalfa is disappointed at first, and a good deal of the trouble comes from sowing poor seed.

A Member—How long ago did you start sowing it first?

Mr. Convey—I do not remember; many years ago; it must be eight or ten years.

Mr. John Imrie—I heard the largest alfalfa grower in the State of Wisconsin, who cut a hundred and fifty acres per year in the last two years, say that alfalfa would grow and do well wherever you could mature a crop of corn in a wet season.

Mr. Nordman—As far as I can figure, in some localities it is going to take much longer than others.

Mr. Convey—Some farms won't grow clover very well, and if that is so, they won't grow alfalfa, but this district is notorious for growing most everything, particularly clover.

Mr. Nordman—We can grow an unlimited amount of clover in northern Wisconsin, but when it comes to starting alfalfa it is slow. I sowed my first alfalfa with the other grass seeds some ten or twelve years ago, and have been sowing it continuously ever since. I can notice it gets ahead of the clover now.

Mr. David Imrie—Four or five years ago, everybody thought we could not grow alfalfa in St. Croix county, around Roberts. They are growing it all right now, but I have

an idea that this bacteria that we get by sowing it must be attached to the seed or we wouldn't get that bacteria. I asked Prof. Delwiche about that, and he said it was his opinion that some adhered to the seed. Now, if it adheres to the seed, why doesn't it adhere to the straw and the grain? In the year 1910, we had no rain in St. Croix county, a man got a carload of alfalfa hay for feeding, he put the manure right on the field, then he sowed it to alfalfa last year and he got a splendid catch all over that field. He cut it once and just before the Fourth of July it was up two feet high; it seemed to grow without inoculation all right. I have been growing it for four or five years and the first I sowed without inoculation, but I limed the soil. It didn't do so very well, hadn't a very good color, and it hadn't many nodules on the roots. The next year I sowed some more and I inoculated one acre of it. It was all manured, fifteen or twenty acres to the load. Last fall I noticed the alfalfa was up about a foot high when it froze up. After it froze up and turned white, you could just see wherever that manure spreader had gone, showing where it was inoculated, and that showed that inoculation is a benefit on a soil that has never been inoculated. So what I am going to sow this year, I am going to take some of the land from the field we already have and sow it onto the new field and inoculate the soil. I believe it will become inoculated all right although it will grow without that, but it will do better, you will get better and quicker results, if you inoculate.

Mr. Brown—I have raised alfalfa a number of years, but last winter all my seed, except what I sowed in the spring, was winter killed.

Mr. Imrie—We had the same thing a year ago in the spring; the

frost came along and it seemed to kill out the alfalfa. We sowed about a pound and a half with clover. This spring I am going to inoculate.

Mr. Martiny—How will you inoculate a five or ten-acre field?

Mr. Imrie—I got the soil from the Experiment Station at Spooner. I had three hundred pounds sent down and I sowed it by hand. In applying this inoculated soil you must remember that this bacteria is really a very small plant and all plants lying in the sun are killed, so you cannot do it on a sunny day. If you scatter it on the field and leave it there for several hours before you harrow it into the ground it will be sure to be injured. The day I spread mine was a cloudy, rather showery day, and along towards night I harrowed it in. Then it was dry the next day and for a week and I was fearful of it, but it was there all right. In sowing with a drill, you get that drill even, and if it is a sunny day, you take a handful and scatter it in front of the drill and cultivate it in before the sun has any action. You can sow your barley in the drill and the alfalfa, and you can inoculate at the same time by having a driver and a man to scatter it along.

A Member—How about sweet clover?

Mr. Imrie—Yes, sweet clover soil is all right.

Mr. Convey—You want to dig out a handful of your alfalfa and examine it so as to notice whether there are nodules or tubercles there. We have a prairie farm, and timber land, and I know where the timber spots are, because I always find good alfalfa where it had originally grown clover. That is one reason I have such faith in this country here. In examining our land, when we struck the patches of prairie, the nodules were weak and of no consequence, but after we cut it the first time, it

seems to grow better all the time, and the best help I know of is a good top dressing of manure; that is the best way to coax it along. Once you get it started, you do not need to inoculate very much. Of course we feed alfalfa hay and we have top dressed thirty-four or five acres already this year with the manure from the feeding of alfalfa hay and there we certainly will have no trouble in inoculating. All the land we have top dressed this winter is alfalfa land. Get it started, and after it is started you can grow it just as easily as any farmer can grow clover. A poor farmer cannot grow clover or alfalfa either.

A Member—Would you advise cultivating or discing up an alfalfa field?

Mr. Convey—I have never done it.

Mr. Imrie—You had better plow it up and seed it down again.

A Member—Could you use a manure spreader to inoculate, say, six acres?

Mr. Imrie—There is no manure spreader that will spread less than about three loads to the acre. You might do it by putting in a part of a load of manure and then fill it up with the inoculation soil, but it would be a slow process, you would have to take three loads to every acre. One load will inoculate ten acres, if you scatter it on. We used to sow wheat by hand, ten or fifteen acres in a day, and six or seven acres won't take very long. If you want to sow it by hand, distribute your sacks or boxes so you can pick up a new lot when you come to it, and it is not so very much trouble.

Mr. Convey—In regard to cultivating an alfalfa field, I believe it is a good plan to harrow with a good, sharp, straight-tooth harrow. That will kill more or less weeds and it won't do the alfalfa any harm.

Mr. Imrie—In one field we ap-

plied inoculation with manure. We just harrowed it in on top. This was hardly a ton to the acre. We put it into the spreader about three tons to the acre; we put in about six tons in all. Some we scattered over the ground and got a fine crop. We found in one case that there was danger in covering up the alfalfa with manure, so we let it alone until after we got in the first crop, and then we covered it with lime and manure.

Mr. Martiny—Has anybody tried liming for alfalfa?

A Member—Yes, I did. I think I got results, but I did not at the same time sow on a piece without lime, so I cannot tell.

Mr. Convey—Your soil is like mine. I have limed, but I couldn't see any difference. I see limestone cropping right out on the surface here.

Mr. David Imrie—But around Roberts there is no limestone in our surface soil. While they were making the geological survey they went right in an alfalfa field and dug down. A short distance west of us there is limestone, and at a meeting of the Farmers' School in February, they had some samples which were reported at Madison to be capable of making good agricultural limestone, so our soil is made up with limestone. Some have limed and some have not, and I cannot see that those who did lime got any better stand. This year I shall not bother to lime.

Mr. Pearse—A year ago last fall we manured three acres of timber soil on the grass and plowed it last year, and intended to work it up and sow alfalfa. We worked it up once, but we failed to work it again, and finally the weeds grew up about two feet high. All we could do was to plow that under. This was on a side hill and it washes some. We

sowed a bushel and a half of rye and we got a beautiful stand there. Now, I want to know if we had better plow it up this spring early and work it a few times and sow about the first of June, or would you advise cropping it, taking the rye off and then sowing?

Mr. Imrie—I hardly know how to answer that question. I have sown at three different times and the worst trouble with us is this red root pig weed. It seems as though if you sow along about the last of June or the first of July, it will come up just as thick as the hair on a dog. I have not seen it in the corn or clover or anything else, but as soon as we sow alfalfa it comes up and we have got to get it. This year I am going to sow it a little early and with some barley, to get ahead of that pig weed.

Mr. Nordman—The barley is less detrimental than the pig weed.

Mr. Imrie—Yes. In 1910 I sowed the 15th of August, that was the first rain we had that summer. I waited all summer for a chance to sow this alfalfa, then it rained a little, and I sowed the alfalfa and it rained a little after that, but it wasn't big enough when winter

came, so it winter killed. The next year I sowed about the 20th of June and got a good stand. The next year I sowed the first of July and it seemed to be just as good a stand, only for the pig weed.

A Member—My son took a box and went out and gathered some very rich soil from a hog pasture. He took some from one spot and then he took some that was not so rich in another box. Then he dug down and got some subsoil and he planted it all to alfalfa. It started and I asked him which looked the best. He said, "This one," and he told me it was the subsoil lot. I want to know if deep plowing wouldn't be a good thing to mix up the subsoil with the top soil.

Supt. McKerrow—We would have to know more about the local conditions to be able to answer such a question. It might be that digging down into your soil you got more lime, while your upper soil was acid. The fact that you did not carry on the experiment in the field I should say made it of not much value as an experiment. I would want to carry it on out doors in the sunshine that you would naturally have.

SEED GRAINS.

Noyes R. Raessler, Beloit, Wis.



Mr. Raessler

When the farmer is ready to purchase a pure bred sire or a cow to add to his dairy herd, the first thing he does is to look up the breeding of this animal; the appearance doesn't count much unless the individual, as well as the ancestors, have been heavy producers of butter fat and milk. How much attention is paid to the breeding of the grains upon which our live stock must depend largely for a living? It is just as hard to tell what an ear of seed corn or a bushel of grain is capable of producing as it is to tell how many pounds of butter fat a cow will produce in a year by looking her over, and still this is about the only consideration given to the seed

on a great many Wisconsin farms. In some cases it goes into the ground without even a germination test.

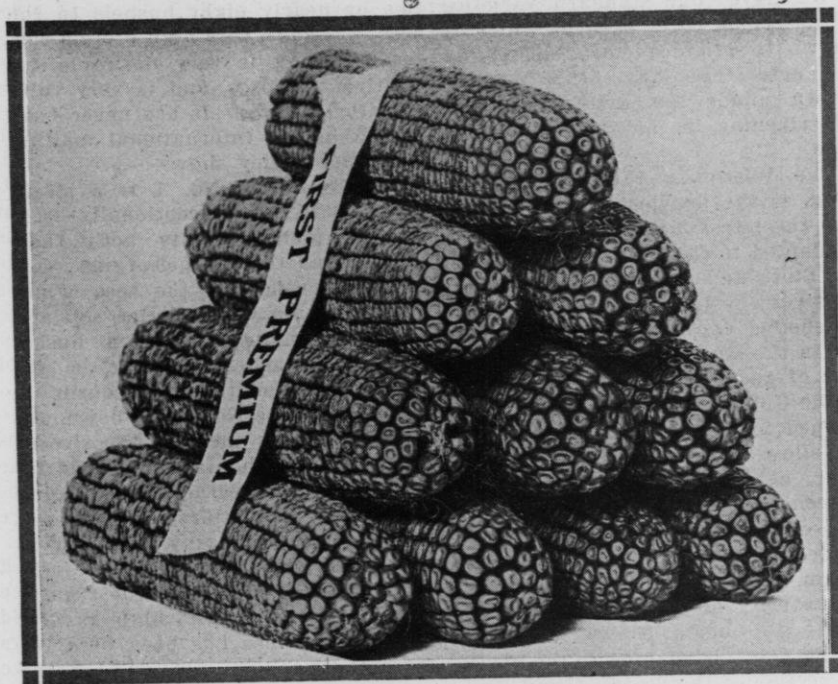
Since the maintenance of our soil fertility depends largely on the amount of live stock kept, we must turn our thoughts to the production of such crops as will enable us to feed more farm animals. We know clovers and alfalfa are by far our best field crops, but we cannot finish the beef cattle, hogs or sheep, balance up the rations for our dairy cattle, or even feed our poultry without drawing on the cereal crops, and this includes corn. Moreover, as the area of undeveloped land in this country is growing smaller and smaller, while the population is ever increasing, a much larger portion of the grain crop will be used for human food in the near future. We have already reached the point where one of two things will have to be done, either the yield must be increased or we must import more from foreign nations.

That higher yields can be obtained with the same work and the same soil has been demonstrated over and over again by a great many farmers of Wisconsin. Fifteen years ago we knew practically nothing about pedigree seeds. We were growing nearly two hundred varieties of corn and altogether too many varieties of small grains, most of which were of little value on this soil and climate. Today we are recognized as the greatest seed growing State in the Union. We have five standard varieties of corn, and at least one pedigree strain of barley, oats, wheat and rye, all of which are recognized throughout the world as being far

superior to any others in yield and disease resisting properties.

Prof. R. A. Moore, the Agronomist of our College of Agriculture, started the work of grain breeding about fifteen years ago and as a result of his work millions of dollars in wealth have been added to the incomes of farmers in Wisconsin.

grain to use for foundation stock, comparative tests were carried on for a number of years to determine which variety of each particular kind of grain was capable of producing the highest yield under Wisconsin conditions. Then the real work of improvement was started by selecting ten of the strongest and highest



First Prize Golden Glow Corn.

In breeding up grains, the same principles were employed which were used in developing those wonderful breeds of dairy cattle which we find over on the Islands of Guernsey and Jersey. It was simply a matter of carefully culling out the undesirable individuals and selecting only the very best producers for breeding stock.

Before selecting the variety of

yielding plants out of several thousand. Nine of the ten were finally discarded and only the best one was used for the foundation of the future pedigreed strain. As soon as a sufficient quantity was produced at the Station to supply several hundred farmers with enough seed to sow one acre each, the final and most important test was made.

Here the pure bred seed was grown

on the same soil with other seed of the same variety and the yields carefully compared. In practically every case, a much higher yield was obtained from the pedigreed seed, as it was now called.

Pedigreed Seed vs. Common Seed

We have four standard varieties of Wisconsin corn, each of which is known to produce more bushels to the acre than any other variety grown under the same conditions and ripening in the same length of time.

The Wisconsin No. 7, or Silver King, is the heaviest yielder and is also the latest maturing variety. It is adapted to the southern section of the State and is capable of producing over one hundred and ten bushels shelled corn per acre, and when put in the silo from sixteen to twenty tons of good rich forage.

The Golden Glow, No. 12, was developed for central Wisconsin. It is a yellow variety, of rich, golden color, about ten days earlier than Wisconsin No. 7, but has been known to produce as high as one hundred bushels to the acre in central Wisconsin and is perhaps the most popular variety in the State.

The Wisconsin No. 8, or Early Yellow Dent, is adapted to the northern section of the State. It is a little earlier than Golden Glow and also a lighter yielder. This variety was introduced from Minnesota and can be grown in nearly all of the northern counties of Wisconsin, where we were unable to ripen dent corn before.

The Smut-nosed Flint was developed for soils as are of such a nature that dent corn will not mature on them. These are located mostly in the region along Lake Superior. Although flint corn is lighter in yield than any of the dent varieties, it is

richer in protein and makes an excellent quality of silage. More forage can be produced per acre even with flint corn than any other crop we know of.

Pedigree Barley No. 5 is a barley which was developed from the Oderbrucker. It has an exceedingly stiff straw and outyields all other varieties by nearly eight bushels to the acre. It has a very high protein content, making it very desirable for malting purposes, and is very valuable for feeding. It has never been beaten in the International malting tests, nor barley shows.

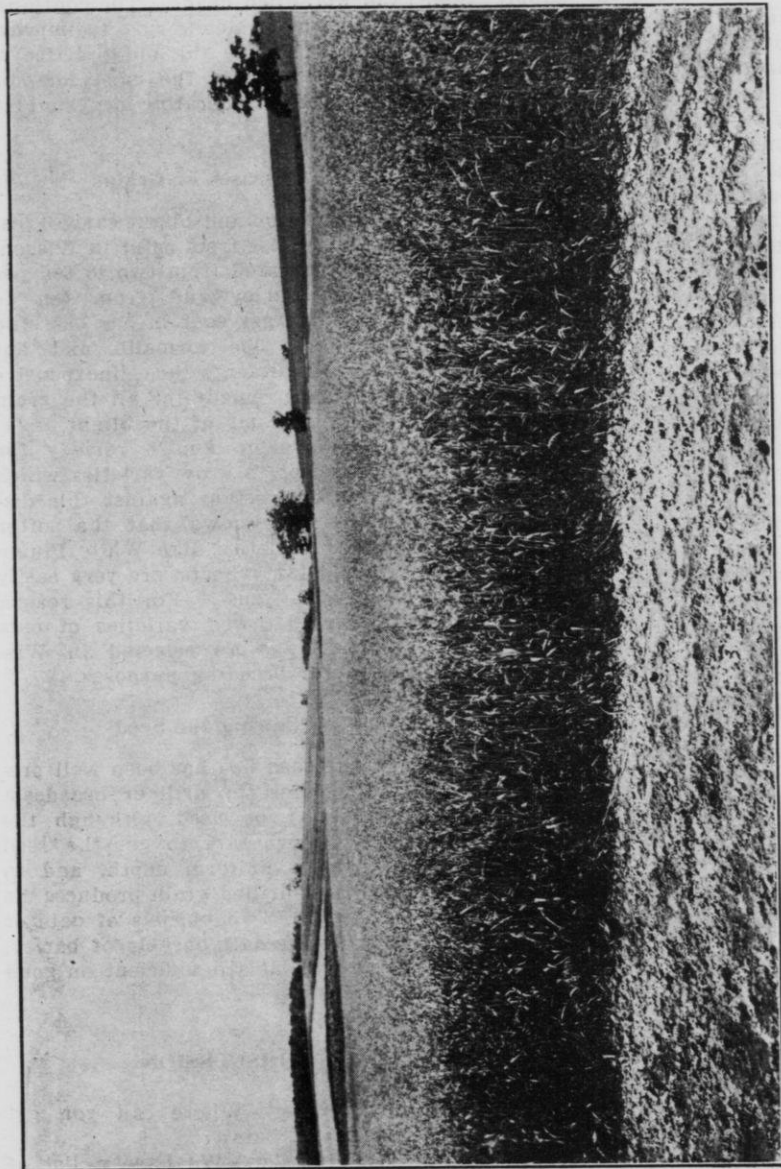
Pedigree Oats No. 1 is a strain which has an exceptionally stiff straw which prevents both their lodging and the ravages of rust. One hundred bushels to the acre is not an uncommon yield on rich soil and the one hundred and ten bushel mark was reached last year on several farms in southern Wisconsin.

Pedigree Rye No. 2 was developed with a view to increase the size of the berry, lengthen the head and increase the yield without lengthening the straw. The stiff straw makes it desirable on our heavy soils and on our lighter soils in central Wisconsin rye has found a place in the regular rotation of crops. As high as fifty bushels per acre has been obtained from the pedigree rye, and on the average twenty-three per cent greater than common rye.

Two pedigreed strains of winter wheat have been developed from Turkey Red and Karkoff, producing yields ranging from forty-one to forty-five bushels per acre. These will be sent out to the farmers with in the coming year for the final test.

Dissemination

The farmers obtain enough seed from their acre plots to sow their entire acreage the following year and



Wisconsin Pedigree No. 1 Oats.
The largest yielding pedigree. Stiff straw adapted to loam soils.

the third year enough pedigreed seed is produced to supply their neighbors. Thus by this system it is possible to change the entire seed on the farms of Wisconsin in three years time. As a matter of fact, only sixty per cent of the farmers of Wisconsin are growing pedigreed seed at the present time, but this is no doubt due to the fact that the remaining forty per cent have failed to recognize the value of this kind of seed. The farms on which pedigreed seeds are grown are known as seed centers. There are over two thousand of these in the State at the present time and enough seed is produced to supply a great many farmers throughout the United States and to foreign countries. Last year we shipped nearly two million dollars' worth of pedigreed seeds out of the State. Wisconsin is fast becoming the seed center of the world. If foreign nations are willing to go to the trouble of sending way over here for these seeds, it is hard to understand why there are still so many farmers in this State growing scrub grains, especially since the pure bred grains were developed originally for the benefit of Wisconsin farmers. However, through the co-operation of the Wisconsin Experiment Association, the Wisconsin Bankers' Association, the young people's contests and the county fairs, the work of disseminating pure bred seeds is being carried on very effectively and it is safe to assume that in a few years time nearly every farmer in the State will have discarded the scrub seeds.

Preparation of Seed

No grain should be sown before it has been thoroughly cleaned and graded. The grader removes all but the plump heavy kernels, and these are the ones which germinate quick-

ly, produce strong, vigorous plants and well-filled heads. The continual use of the grader is sure to improve the seed, while the old practice of sowing is one of the most common causes of degenerating or "running out."

Diseases of Grains

Rust, smut and blight cause great loss. The loss from smut in Wisconsin is estimated from two to ten per cent in barley and from ten to twenty-five per cent in our oat crop annually. The formalin and hot water treatments are inexpensive and a sure remedy for all the grain smuts and some of the blight.

We have no known remedy for rust, except to grow varieties which are most resistant against this disease. It is known that the softer strawed varieties, like White Plum oats and late wheats, are very easily attacked by rust. For this reason the hard strawed varieties of oats and barley were selected in Wisconsin for breeding purposes.

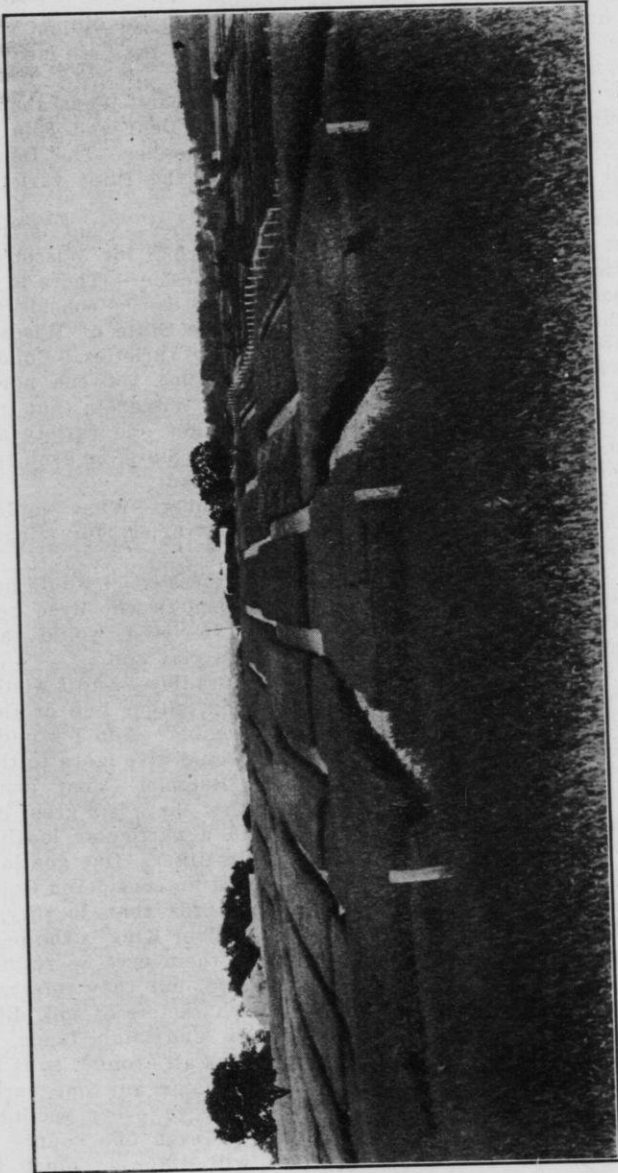
Sowing the Seed

If the seed bed has been well prepared, either the drill or broadcast seeder may be used, although the drill is more sure to get the seed down at a uniform depth, and in most cases drilled grain produces the best yield. Two bushels of oats or one and one-half bushels of barley, rye and wheat are sufficient on good soil.

DISCUSSION

A Member—Where can you get those No. 1 oats?

Mr. Raessler—We have a list of all the growers of pure bred seeds, and that list may be obtained by writing to the College of Agriculture



Agronomy fields Experiment Station where pedigreed grains were bred and tested.

for the Seed Growers' List, and you may find growers who are near you, who have had their farms inspected, and so you can know that you will not be buying foul or impure seeds. That list is published every year and can be secured by writing Prof. R. A. Moore, Secretary of the Wisconsin Experiment Association, Madison. I have a few samples here of pure bred barley, wheat, rye and oats, also one of the most perfect ears of corn that grew in Wisconsin last year.

A Member—What does No. 1 oats weigh to the bushel?

Mr. Raessler—They are very heavy. Of course they differ on different soils. They have been known to weigh over forty when they were well graded, but that isn't the point. The question is rather that of yield. They have out-yielded all of the varieties in the State, with one exception. In some parts of northern Wisconsin, the Pedigree No. 5 produced the largest yield per acre.

Mr. Cartwright—Isn't it a fact that these pure bred strains of seeds degenerate very rapidly in the average farmer's hands?

Mr. Raessler—It depends on the farmer. They will degenerate just as fast as the pure bred cow will degenerate in the hands of a man who does not handle her right. You have to feed her right, take care of her, or she will soon become a scrub. Pure bred seeds can be improved by proper grading and soil conditions, while the reverse tends toward deterioration.

A Member—What is the average of an acre of No. 1 oats that will weigh forty pounds to the bushel? The average yield?

Mr. Raessler—These crops that I speak of that yielded a hundred bushels to the acre did not scale forty pounds, but were figured at thirty-two pounds to the bushel.

Mr. John Imrie—It was one hun-

dred bushels to the acre net by weight?

Mr. Raessler—When we speak of a bushel of oats, we mean thirty-two pounds.

A Member—What about the corn averages, Dent and Flint varieties?

Mr. Raessler—The Dent varieties out-yield the Flint varieties on the average.

A Member—What is the best variety of corn for Wisconsin?

Mr. Raessler—There is no one variety that can be considered best for the whole State of Wisconsin. We have four varieties. Conditions differ so much between northern and southern Wisconsin that it is impossible to get one variety adapted to the entire State, or even to one particular county.

A Member—What would you call the best variety for silage for this location?

Mr. Raessler—I would have to ask some farmers who lived here.

Mr. Imrie—I would say Golden Glow on clay soil.

Mr. Bradley—And I would say Silver King, either one or the other.

A Member—And I would consider Flint would give more to the acre.

Mr. Raessler—That just goes to show that there is a great difference, even in a particular locality where the soils differ. One gentleman over here said he considered Golden Glow the best for that locality, another thinks Silver King is the best. Now, both of them may be right, and no doubt are, but they referred to different characters of soil, different in the low and high lands, different conditions all around, so it is impossible to name any one variety that will apply to every section of the State, or even one county. Conditions will differ so much that you have got to have different varieties suited to almost every township.

Chairman Jacobs—What you must

do is to try out the different varieties and use the variety that gives you the best results.

Mr. Bradley—I do not like what Mr. Raessler says about northern Wisconsin. They have an idea down there around Beloit that we are raising nothing up here but wigwags. Now, I want to tell you that in St. Croix county, up here at New Richmond, they raised more than a hundred bushels of dead ripe Silver King corn last year and sent it into southern Wisconsin for seed, just as good as any they can grow down there at Beloit. I was down in Rock county and saw Silver King corn sold at five dollars a ton, close to where Mr. Raessler lives, because it had not ripened in Rock county and had spoiled in the crib, and yet we ripen it up here.

Mr. Brown—I have traveled this State for fifteen years and I believe the only corn fit for filling silos is the Flint corn. It is an early crop, it gives you a chance to fill your silo, and you will double the yield per acre of any other corn for filling the silo, but when you are raising anything else, take the No. 8 for northern Wisconsin.

Mr. Raessler—Just a moment Mr. Brown. According to our Experiment Station, the yield of silage corn runs as follows: Silver King, Golden Glow, Wisconsin No. 8 and last of all, Flint.

Mr. Nordman—I want to refer just a moment to a crop of corn that was produced by Superintendent Delwiche of the Northern Station, where he made his Flint corn produce at the rate of eighteen tons of silage to the acre.

Mr. Raessler—That is true, and still our best authority places Dent corn a long way ahead of Flint in average yield of both grain and silage.

Mr. Imrie—Mr. Bradley lives about eight miles from where I live and I live only seven miles from New Richmond, so I know about this corn he talks about, but I still say Golden Glow for this section, because we do not always ripen the Silver King, so it is just a little bit too late for us to be safe and sure that it does get ripe. We know that the Golden Glow will ripen where the other will not.

Mr. Raessler—To sum it all up, gentlemen, you will have to go back to my original statement. You must determine for yourselves which variety will produce the greatest yield of ripe corn on any particular soil, and also which will yield the best silage. You will find that variety among the four pure bred strains I have named. It is sometimes a difficult thing to drop scrub varieties and scrub ideas, but invariably the pure bred strains win out. Mr. Bradley speaks the truth about the corn he saw in Rock county. Our soils differ here as much as they do in any part of the State and we have some heavy wet soil that will not mature Silver King, while in general, throughout this section, Silver King is considered early and is grown more extensively than any other variety. I know they can ripen Silver King on some farms in St. Croix county, also in North Dakota, but still, generally speaking, the season is too short, I certainly would recommend it on those farms where it is safe to grow it; however, as the tendency among farmers is to grow varieties too late for the locality, it is only right to offer a word of caution against the late varieties so not too great an acreage will be risked until the farmer knows it is safe to plant them.

CORN CULTURE.

John Imrie, Roberts, Wis.

Corn has been called "King." Now that alfalfa is considered more valuable per acre than corn, perhaps it would be as well for corn to divorce clover and marry alfalfa, but it makes little difference which comes first, as there is quite an agi-

First, that there may be an abundance of nitrogen in the soil, as corn is a rank grower with large stalks, very leafy, therefore uses considerable nitrogen.

Second, that we may have plenty of vegetable matter present, in the



Corn curing room, Chippewa County Farm.

A handy and inexpensive way of curing and storing seed corn. Note each ear is separate from its neighbor, plenty of space for ventilation.

tation at present in regard to equal suffrage.

The Soil

To grow a good crop of corn, we prefer soil which has previously raised clover or alfalfa, or some other leguminous crop, for the following reasons.

decaying of which the necessary chemical action takes place to make the mineral elements in the soil available.

Again, that this decayed vegetable matter, called humus, may act as a sponge to hold moisture in our light or sandy soils and these deep rooting plants break up the subsoil in

our heavier clays, filling them with thousands of little wells or reservoirs to fill up with water as the inside of these roots decay. In this way we can control the escape of the moisture largely and feed it to the plant as is required.

This moisture problem, I think, is a serious one. Our Bureau of Investigation at Washington has found that the water level in our soil here in the United States has been sinking at the rate of from twenty to

alfalfa sod in the fall, these hay or pasture lands having received all the manure from the stable up to time of plowing.

That plowed without manuring, we top-dress in fall and winter, working it well into the surface in the spring with a disc or spader.

The Seed

The seed to plant should be selected before frost, of a variety



thirty-five inches in the last thirty years. If this continues, the time will surely come when we will be compelled to irrigate to grow the ordinary farm crops, so let us absorb the water in this way, which with careless farming cannot soak into the soil and runs from the surface to the creeks and rivers. When the sun's rays warm the surface of the ground, the moisture will come up to give the plants a drink when thirsty.

Preparing the Soil

On clay soils, we usually get better results by plowing the clover or

which is the largest yielder that we can be sure to ripen every year under our different conditions as to soil and location.

Fire dry the seed corn to secure good germination and keep dry until ready to plant.

Plant not deeper than one inch on clay soil, unless the ground is very dry. For sandy soils it is advisable to plant a little deeper.

Very good crops of corn can be grown by drilling in the seed where the field is not weedy, but on the majority of Wisconsin farms it seems better to check row. For the silo I like to plant three and one-

half by three feet. This can be done by getting a check wire with the buttons three feet apart. We can cultivate both ways very nicely by narrowing the cultivator for crossing. Most of the cultivators now on the market have a sliding axle for this purpose.

Cultivate shallow and often, do not prune the roots, cultivate as soon after rains as the ground can be worked.

A Few Hints

These few hints I leave with you. Choose as heavy a yielder as will ripen on your own farm every year.

Raise clover and alfalfa for the humus and nitrogen.

Plow clay soils in fall; sandy soils in spring.

Save all the stable manure and top-dress before or after plowing.

Save the seed corn early to avoid frost and fire dry.

Plant just deep enough to have the seed well covered.

Cultivate shallow and often.

Feed to more and better live stock on the farm and put the profits into better living.

DISCUSSION

Mr. Cartwright: You gentlemen and farmers assembled here, do you know that we can raise seventy bushels of corn to the acre without a drop of rain during the season? We can do that if we cultivate it, just as well as in Missouri. We raised it in 1910 in this county and we hadn't a drop of rain from the first of March until after the corn dropped, and we raised seventy bushels to the acre.

Mr. Imrie—You probably have a good subsoil.

A Member—I have never raised any corn in this section of the country or over in Missouri without rain,

and I do not know of any that has been raised without rain. I planted No. 12 Wisconsin last year. That year I planted twenty acres. The boy was going to high school and I told him I wanted him to pick out one acre and consider it his acre of ground. He wanted the upper side and I told him he had better take the lower side, but he took what he wanted. The corn was husked by hand and it was all weighed. The harvest of that acre was a little better than eighty-one bushels, and I calculated that the rest of the field went somewhere about eighty-four. Out of that field I filled two silos, one twelve feet in diameter and the other thirteen feet in diameter and about thirty-three feet high.

Mr. Campbell—Do you recommend dragging corn, and if so, at what time?

Mr. Imrie—Down at our place we have not done much dragging after the corn is up, for the reason that we drag very thoroughly before planting and drag once right after planting. We get onto it right away, as soon as the corn begins to come up, with the cultivator, and in this way we keep ahead of the weeds. I do not see the advantage of dragging it after it is up if it is well worked beforehand.

Chairman Jacobs—We had a condition last year which made it somewhat difficult to drag corn satisfactorily, because of the heavy rain that came soon after the planting. In that case we followed the planting with the cultivator and cultivated the rows, and it was the best thing we ever did with our corn.

Mr. Imrie—A good many of our farmers blind-cultivate, keep cultivating one way until the corn begins to show, and then begin to cross. In that way, of course, you cannot drag, you would destroy your checks. We like to plow in the fall, disc it,

or cut it up with the cultivator in the spring to kill all weed seeds that will germinate after stirring the soil.

A Member—Would it hurt it to top-dress it?

Mr. Imrie—No.

Mr. Brown—Let me tell you how I prepare my ground for corn. I plow it right after I get through stacking, and then I drag it. From that until spring that corn ground gets the benefit of all the manure I can get on it.

Chairman Jacobs—With the Appleton spreader?

Mr. Brown—Oh, yes, of course.

Mr. Imrie—I believe it is the ideal way, to top-dress the fall plowing.

Mr. Nordman—If your land were hilly, would you do it that way?

Mr. Brown—There is only one way to get the benefit of manure and that is to put it on top of the ground.

Mr. Nordman—That policy is all right on a level farm, but I happen to have a hilly farm. I used to work that way too, but I found that our land very soon washed full of gullies, so we had to stop that.

Mr. Imrie—We can readily see the difference in Mr. Nordman's case. If the land is plowed in the fall of the year and we put the manure on top, if it is a rainy spring, a good deal will wash away. We have got to be guided by our location, by the quality of our soil, the location of the farm, and whether it is level or hilly.

A Member—Which do you get the better results from, checking or drilling?

Mr. Imrie—You can probably grow a larger tonnage if it is drilled on very clean soil, but with us we find that where there is any danger of quack grass or foul weeds of any kind, it is better to check row, and

I find almost everybody has some quack grass on their farm.

A Member—This morning we were told that the best way to place our manure was on clover sod and then put our corn on afterwards. Now we are advised to plow our land in the fall and top-dress the land. Which is correct?

Mr. Imrie—My idea is that we would put on all the manure we have through the spring as top-dressing on our new seeding of clover. Then plow in the fall and top-dress on the plowed ground through the fall and winter months.

Mr. David Imrie—All the difference is the gentleman didn't commence quite soon enough on his clover sod, and then he is behind part of the year, because he would have had that all manured before he plowed if he had commenced sooner.

A Member—If he would follow both practices he would get better corn still. What do you say would be the best time to top-dress your corn ground?

Mr. Imrie—Through the fall and winter months.

Mr. Brown—Wouldn't it suit better after you had your corn planted?

Mr. Imrie—No, I think not. I do not believe you would have time to cover a forty-acre field before it would come up.

Mr. Brown—After your corn is planted, do you have anything to do between that and haying time?

(Cries of "Oh, oh," and "I guess so" all over the room.)

A Member—This gentleman ought to cultivate his corn with his manure spreader.

Chairman Jacobs—We believe that if we would stimulate the growth of clover that that will do a great deal towards fitting your ground for the corn crop to follow.

THE SILO.

David Imrie, Roberts, Wis.

As Mr. Jacobs has said, we want a good place to put this corn after we have grown it, no matter whether it is Golden Glow, Wisconsin No. 7 or Flint corn, and there is no better place to put it than in the silo, and to put all we can possibly feed on the farm, because every part of the corn that is put in there is eaten with a relish. In any other way that we feed our corn there is a lot of waste. I have tried every way of feeding, in racks in the yards, shredding it, cutting it, and every other way, and I find that in every way there is great waste unless it is in a silo.

There is little opposition to the silo in Wisconsin now. We do not hear any one who says that silage is poor stuff to feed cows, as we did fifteen or twenty years ago. In stead of that, the question that is bothering most farmers is how to get a silo and get it cheap. And a good many farmers have asked themselves that question, because they say Wisconsin has more silos than any other state in the union. and in fact, possibly more than all other states combined. We have lots of them anyway, and there are more being added every year than in the year preceding.

The Best Kind of a Silo

Some of you want to know what is the best kind of a silo. Now, just keep this in mind, that any kind of a building that is air-tight (except the roof) will keep silage. The sides, the walls on the side, must be air-tight, the doors must be air-tight. Just have a continuous door and some plank across the door with

some tarred paper, and then you do not have to throw the silage up in order to get it out. If you have doors with solid pieces between, you have got to throw the silage over the solid pieces and over the door before you can get the door out. Better have a continuous door from top to bottom, just a plank across the opening, and then you can always scrape out the silage on the level.

Put your silo as near the feeding alley as possible, because it is heavy stuff to carry. I would rather have it on the east or south side of the barn than on the west or the north side, because it will not be so liable to freeze. There is practically no difference as to the freezing in the kind of material you use for your silo. Some say it will not freeze in one kind of a silo, one says that the hollow tile silo will freeze, but that isn't so. I was in one this winter in cold weather and it was frosted in ten or twelve inches. I have been in the hollow concrete block silos and it freezes there some. Stone silos, two feet thick, will freeze. The concrete wall, six inches thick, will freeze in a long cold spell. It depends a good deal more on the condition of the corn that is put into the silo and the way you take it out about freezing than the material from which the silo is built. If the corn is immature, full of its sap, it will freeze worse. If it is fully ripe, it will not freeze so badly. Then again, if you take it out in such a way that some of it is left standing against the wall on the sides, it will freeze. So in taking it out, keep it level. Then in cold weather put some hay on top, put



Golden Glow Corn Breeding Plot.

These rows produced the Champion Ears. Note the strong, vigorous plants required to produce them.

it over on one side and take out of the other side and turn it back feeding from each half alternately.

The Concrete Silo

A few years ago we built a silo in St. Croix county with solid walls six inches thick, and there are more of that kind in St. Croix county now than any other kind of silo. They cost less, they are permanent and they give excellent satisfaction if they are properly built. They should be well reinforced and made of a good mixture of concrete. Do not attempt to economize on the cement; put in enough to make a good solid wall and you will have a good silo.

Remember that the diameter of the silo must correspond with the number of cattle that are to be fed from it, but do not make a wide shallow silo rather than a narrow and deep one. I would not build anything under thirty feet, from thirty to forty feet is the most practical depth. The diameter must be nothing less than ten, and from that to sixteen. I would rather have it twelve, fourteen or sixteen feet. I would rather have two fourteen-foot silos than one eighteen-foot silo, unless I was using it for a very large herd of cows. It is necessary to calculate the amount of feed to be fed each day and to build accordingly, so you can take off a certain amount every day if you want to keep it fresh and good. If it is so large that you cannot feed off a layer each day, you will be feeding spoiled silage most of the time.

Most of us are now feeding silage in the summer and it is a good plan to have two silos, one for winter and a smaller one for the summer, because it spoils more quickly in warm weather.

Lower your silo floor from four

to eight feet below the stable floor. If you have a bank there, go down through the bank. If it is sandy soil, it makes a big job digging this hole, but if it is clay you dig straight down and put your silo in there, have considerable of the space under ground; it will keep better in the summer and does not freeze in the winter.

I have with me here a model of the forms that were used in the first silos built in St. Croix county, which you can look at after the meeting. It is an inexpensive frame, there are no patents on it, any one can make it, and if you forget how to make it after looking at it and after I am gone, go to Institute Bulletins Nos. 24 and 25, which you will find in all your school libraries, if you haven't them yourself, and you will find it, you will find cuts that show how to cut out the forms, how to put them together, how to build your silo, how to mix the concrete, how to reinforce it, all about it. We have better forms now than those described there. These cost only about thirty-five dollars. Contractors are using the better forms everywhere. About nine-tenths of the silos in our county were built with forms the farmers made themselves. In our township in St. Croix county there are thirty silos and they are all concrete. When they once got started, everybody liked them so well that all the neighbors wanted them. That is always the case in any locality where you start something good and cheap that gives good satisfaction.

DISCUSSION

Mr. Wyatt—I have a neighbor who put up a silo a year ago largely under Mr. Imrie's directions. He put it up of concrete blocks, filled

it with silage and it cracked from top to bottom in three or four different places.

Mr. David Imrie—It was not reinforced. A concrete block is not as good as a concrete wall, the joints are not so good. In building a silo, a concrete silo, the principal thing is to see that it is well reinforced, and the same way with brick, the same with stone. Do not let your mason put up a stone silo for you and say he will guarantee it will not crack. Masons built two for me. I wanted them to put in some reinforcing, though I did not know much about silos in those days, but they said they would guarantee that they would not crack, but they did crack just the same. So put in plenty of reinforcing.

Mr. John Imrie—In building a silo, a very important thing is the finishing off. With the very best of them, the cement will be more or less porous at first, and the pores must be filled up with cement and water. That is one of the main things in building a silo. Unless you look after that, the mason will simply take the forms off and let the cement dry. It must be coated on the inside and outside and twice on the inside, and if that is thoroughly done, it will keep the silage up to the wall as well as in the center.

A Member—What kind of carrier would you use?

Mr. David Imrie—If you have power enough, use a blower.

A Member—I have a brick silo with a cement facing on top; the cement facing is a preparation used by railroad companies for water protection, absolutely water-proof. My silo acted just as has been suggested here and we have concluded around here that when we put in our silage we will put a lot of boys in there and have them tramp it down on the

edges. The nearer they can stay in the center, the better they like it as a rule, so they do not tramp around the outside as they ought to. My silo is, in my estimation, as perfect as I can built it. It is brick from the bottom up, a small silo. It has an eight-inch wall with a two-inch hollow space, and the mistake I made was in not putting in the continuous door. I have the individual door and it is a nuisance.

A Member—I built a hollow block two or three years ago and I was told it would not keep the silage on account of being so porous, so I plastered it on the inside with wood fiber cement plaster and I have never had a particle of spoiling on the inside.

Mr. Convey—Tell us the best way to reinforce.

Mr. David Imrie—In reinforcing either brick, stone, concrete or concrete blocks with a continuous door, you have to have rods across the door. I used seven-eighths rods (not three-eighths). They cross the door every two feet all the way up, going into the concrete or stone about eight or ten inches, with a hook on each end, and the reinforcing wire is attached to these hooks.

Mr. John Imrie—I think a better way is to use three-quarter-inch well pipe and run the wire all the way around.

Mr. David Imrie—I think it will rust off sooner.

Mr. Convey—You want to use good pump pipe, so you can use it at the same time for a ladder, pump pipe an inch and a quarter, or even an inch, will do, and run the wire all the way around.

Mr. Wyatt—Another point to remember is to put the wire on next to the outside and not next to the inside.

Mr. Bradley—Since Mr. Imrie and all the rest of us built our silos from

these plans, we have contractors now all over the country who know how to build silos, so I do not believe it is a good thing to advise people to use these forms, though they were all right in our time. I believe now, if we can find a contractor who really knows how, we can make a contract and get it done cheaper and get it done all right. The average farmer had better hire this contractor, because he knows how better to do the work. There are hundreds of silos up around River Falls which were built by contractors and built at such a reasonable price that I do not believe the average farmer can afford to do it in any other way. Years ago we had to do it ourselves, because there were no contractors that really knew how and they wanted to do it in their own way, which wasn't always right.

A Member—Would you recommend painting a wood silo inside?

Mr. David Imrie—I never did. I built two silos about twelve years ago of wood, that is, there were eighteen feet of wood on the top and twelve feet of stone below, and they were not painted. They lasted eight or nine years and began to rot where the stone and the wood came together. I kept patching them up until it became too big a job, then I tore them down and built concrete silos. I did not paint them either inside or outside. I do not know whether they would have lasted any longer if I had. At one time coal tar was recommended.

A Member—I would like to know how to build a silo that wouldn't freeze.

Mr. Martiny—Two years ago we had the worst winter we have ever experienced; I think all types of silos froze that winter.

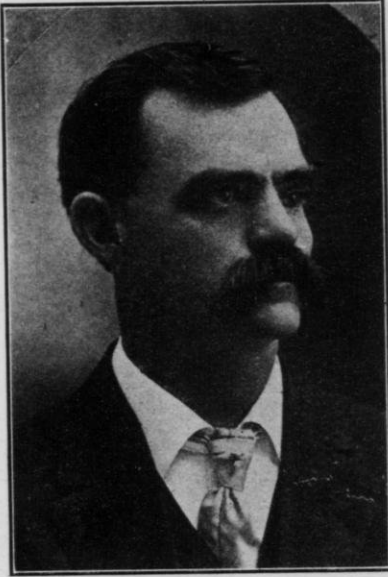
Mr. David Imrie—We keep about a foot of hay on top of it all the time to keep it from freezing on the top. When we go into it to throw out feed, we put the hay over on one side and take the silage out of one-half of the surface only at a time. Sometimes it looks as if it is frozen much deeper than it is.

Supt. McKerrow—After seventeen years' experience in covering up our silo with hay and keeping the outside a little lower than the center, we can keep our silage in good shape. I remember when we put in fifteen or sixteen inches of hay in very cold weather, and with that much we could keep the frost out. I have known of people using canvas, but I do not believe that is as good as fine hay, then as the weather warms up that hay can be thrown out. The freezing mostly comes from the top. I have noticed myself, I have found a little fringe of frost clear back to the wall, at the same time it would begin to freeze a little on top, at first on the outside near the wall.

Mr. Jacobs—Do not forget that cold air is heavier than warm air, so you want to keep the ventilator in the top of the silo closed.

SILAGE.

W. P. Bussey, Omro, Wis.



Mr. Bussey

Perhaps in all the history of the silo and the feeding of silage, there has never been more interest shown than there is at the present time in regard to the best methods of handling and feeding this feed. According to figures published by the "Wisconsin Farmer" in December, 1913, there were nearly forty-three thousand silos in actual use in this State, besides the large quantities of pea silage at the canning factories.

Corn Most Generally Used

In point of the economic production of feed, corn is considered the cheapest and most generally used crop for silage. With the improved varieties of corn that we now have,

and a certain amount of education that has followed the introduction of these varieties, the farmers of Wisconsin are growing more and better corn year by year.

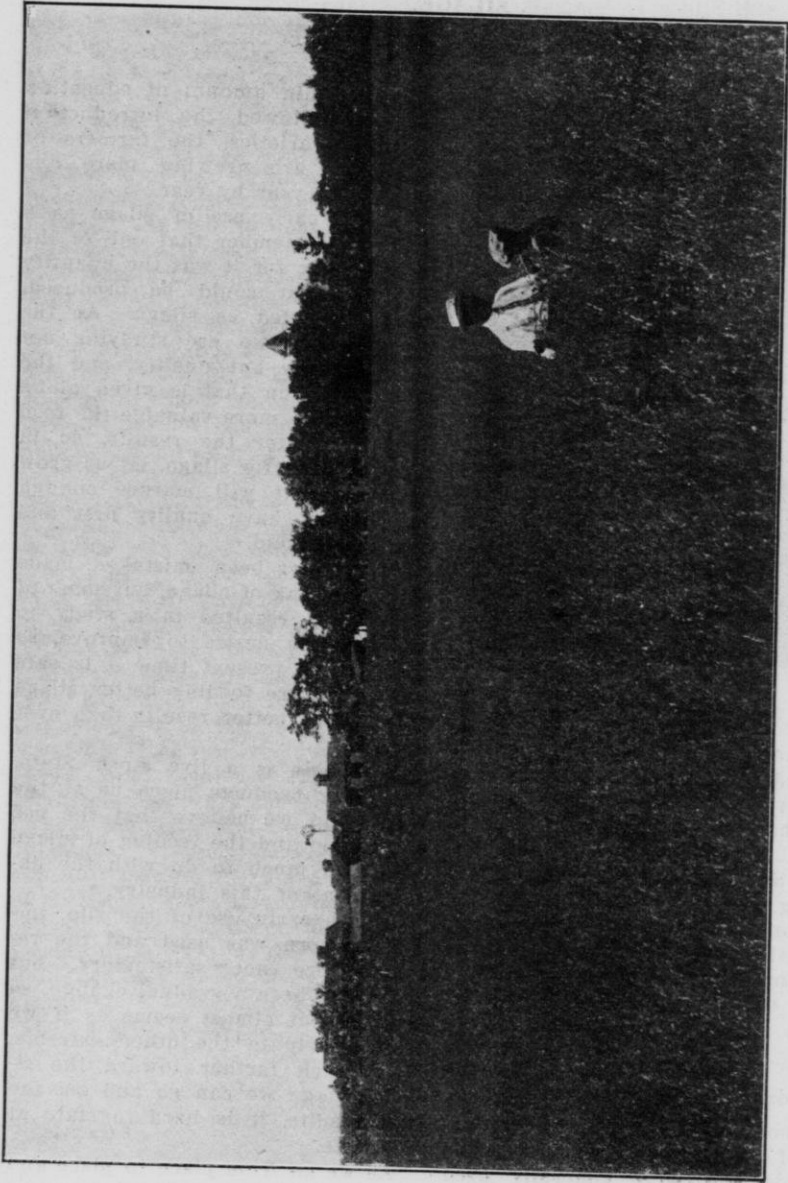
In the early use of silage as a feed, we remember that one of the claims made for it was the quantity of feed that could be produced, stored and fed as silage. At the present time, we are studying not only quantity but quality, and the more attention that is given along this line, the more valuable the feed and the better the results, so in growing corn for silage, let us grow a variety that will mature enough so we may have quality first and quantity second.

There have been mistakes made in the feeding of silage, but some of them have resulted in a study to avoid and a desire to improve, so that at the present time it is safe to say we are feeding better silage and getting better results than ever before.

Wisconsin is a live stock State, our dairy products place us at the front, and we believe that the use of the silo and the feeding of silage have had much to do with the development of this industry.

In the early use of the silo, immature corn was used and the results were not satisfactory, but there has been a gradual change, so that now it almost seems as if we were nearly to the other extreme. How much farther toward the ripened stage we can go and get the best results, it is hard to state at this time.

As we go from place to place and examine samples of silage shown at Institutes, we find generally a fine



Pedigree No. 1 Oats grown on Chippewa County Asylum Farm. 2,500 bu. of these disseminated from this farm in 1914.
A useful County Asylum Demonstration Farm.

quality of feed, and those who are feeding this kind of silage are very well satisfied and endorse and recommend the use of silage.

Clover Where Corn is Not Available

Although corn is conceded to be the best and cheapest crop to grow for silage, there is perhaps a part of our State that as yet is not growing corn in quantities, and also in quality, suitable for silage. Where these conditions exist and clover can be grown and is grown in such large crops, it might be well for those in these localities to consider the use of the clover crop as a substitute for the corn crop for silage. On our own farm, we have been pleased with the results of the use of clover silage.

Peas for Silage

We have been interested in examining pea silage this past winter at several places where we were attending Institutes, and to inquire of those who were taking this silage home for the feeding of their stock as to results. The price paid for this feed varies from a dollar to a dollar and fifty cents per ton at the factories and those who do not have any other silage and are using this pea silage seem quite satisfied with it as a feed.

According to the experiments of our own and other experiment stations, and the results obtained by thousands of farmers who are feeding silage, there is no feed as cheap, economically stored or as convenient to feed as good silage, not for the feed nutrients alone, but because in the use of silage as a feed, the digestive organs of our stock are kept in the best possible condition and better results are obtained from the other feeds used.

DISCUSSION

A Member—Do you want more ears or more fodder?

Mr. Bussey—We want an ear for each stalk.

A Member—You cannot get too many ears.

Mr. Bussey—We never have had it, and we have had some pretty good crops, too. There is no way we have ever fed feed with as good results as we have through the silo, because it is all used up, every bit of it.

A Member—How many kernels do you plant to the hill?

Mr. Bussey—In check rowing, three to four, three and a half feet apart; and in drilling, five to six or eight inches.

Mr. Imrie—Wouldn't it be a good rule to follow to plant it as thick as you can to get an ear on every stalk?

Mr. Bussey—We want an ear on every stalk, and the larger the better.

Chairman Jacobs—I would say, plant it so as to get the largest amount of corn and at the same time as much stalk as possible.

A Member—What stage would you suggest for cutting for the silo?

Mr. Bussey—We want it well ripened, not quite as ripe as it was used this year. Some of it must have been ripe enough to pick for seed.

A Member—Was that too ripe?

Mr. Bussey—There are conditions which make it almost impossible to lay down rules. Last year was an exception at the latter part of the season, and the stalks were much drier at the time the silo was filled than they usually are. There was less moisture in the lower part of the corn than what some of us would like, and I think that was true throughout Wisconsin.

A Member—Will it make any difference how long the corn was cut before it was put into the silo?

Mr. Bussey—Not if it was as dry as it was last year.

A Member—We cut some of our own corn and put it right into the silo. We had elegant corn and the silage kept well, though every one said it was a little too far along to make good silage. Do you think it advisable to water silage?

Mr. Bussey—I think there was quite a large amount of corn used last year in silos that would have made better silage if there had been water used when it was put in.

Mr. John Imrie—Would you advise watering if it keeps all right without it?

Mr. David Imrie—I would rather for my part have it when there was just about juice enough of its own to cure it and make it right, and I think that if we will study the conditions a little closer perhaps than we ever have in the past, we can strike that point.

Mr. Wyatt—But you would rather put it in a little ripe and have to wet it than to put it in too green?

Mr. Bussey—Yes, if it came to that point, but I would rather have it just right to put it in without watering.

Mr. Hansen—I planted two kinds of corn, one a week ahead of the other, and I cut some just a little ahead and the other a little later, and that worked all right.

Mr. Jacobs—Why not cut each one just at the time it should be cut? I would rather have it all just right.

Mr. Hansen—It takes two weeks to fill a silo. We cannot always fill just when we want to, particularly where we have the whole neighborhood to do the filling. If we had all the tools ourselves and could get

the men, we might put it in just right.

Mr. Convey—There was a place in our neighborhood where they had to wait a week or ten days, so it was after the 22nd of September before they got in it, and it doesn't heat up and it makes good silage. If it heats up too much, it blackens. Where it is put in on the dry side, it is better to wet it. In that case we had some spoiled on top. It was not so bad underneath. We have had poorer silage this year than we have had in many years.

Mr. Nordman—I want to make the point that the wetting should be on the top. The air is excluded down below ten or twelve feet, but at the top there isn't so much weight and it needs water to get the best results. We have a silo that is still open to the weather and it rains in the fall of the year and we have the best silage on top of that silo, although we wet the other one too.

A Member—There were some people here who made corn silage after it had been shocked three weeks. They had ordered their silos and they didn't come, and the corn stood in the shock all that time.

Mr. Moore—We filled our silos just before it froze up and it was just about as cold as it is now. We put in a good deal of water, at least we thought we put in a good deal, but I know that in my silo I didn't get in over half enough. It was too dry and didn't freeze any. It mold- ed around the sides a little.

Chairman Jacobs—The most definite information I have seen in regard to the amount of water to put in the silo comes in a bulletin from Vermont, where they have weighed the corn put in and the water, and to eight tons of corn they added twelve tons of water, a ton and a half of water to every ton of dry

corn. I think we usually do not put on enough.

Mr. Moore—In selling these silos, the agents told us to put in about a barrel of water to a ton of silage. We thought we did put a barrel all right, but we found it needed about five or six barrels.

Mr. Bussey—It may be possible to take this dry corn and wet it and get more out of it than you would otherwise, but I do not think you will ever get anything that will take the place of the natural juices which are there at the proper time to make the very best good rich feed.

Mr. Nordman—It is a fact, I think, that the only reason why this so-called dry corn is better for putting into the silo than if it was handled in other ways that we have of handling it, is that it still contains considerable natural juice and by putting it up in this way we preserve these natural juices. Otherwise there would not be any advantage in putting it into the silo. In fact, if it was all dried out, it would keep as well in the mow or stack; but what we are after is the preser-

vation of these natural juices, and that is why we put it into the silo. Northern Wisconsin corn hardly ever dries out completely, and that is why you can feed corn stalks in the winter up there and get the results that you do. They make elegant feed, although they are not balanced, and that is true because they have still left in them a considerable quantity of these natural juices.

A Member—I have heard very little said here about the difficulty in getting silos filled. All Institute workers seem to be trying to get everybody to fill silos, but everybody who would like to build a silo hasn't laborers enough to fill it.

Mr. John Imrie—You can put it into the silo cheaper than you can put it into the shock. Of course it takes more men.

The Member—Yes, one man alone can put it into the shock, but not into the silo.

Supt. McKerrow—He will have to arrange to change with his neighbor. That is the way most of them do.

PERMANENT SANITARY FARM IMPROVEMENTS

F. M. White, Madison, Wis.



Mr. White

Do you know that the value of the farm buildings in Wisconsin is more than twice as much as that of all the domestic animals, poultry and bees in the State; that the value of the implements and machinery on the farms in Wisconsin is one-third of that of the value of all of the animals? With even this immense value of property, how much attention is paid to the best type of building, the most permanent or the most sanitary buildings? How many societies are there that give any attention to these matters? You have a live stock association representing every breed of live stock, you have an experimental association working for the improvement of your grain, but you do not have

an association for the betterment of farm buildings or for making your farm more liveable. The hit-and-miss method of living on the farm has been very largely responsible for the decrease in rural population.

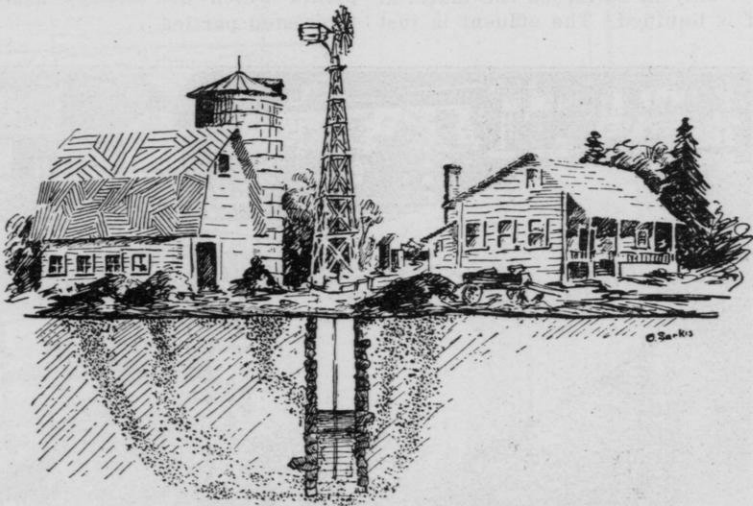
The average American farm home has failed to keep step with the improvements that have been made in our general agricultural conditions. The steps in the improvement of the average farm are, first, for better live stock and better methods of general farming; then, for better barns to house the live stock and machinery; lastly, if at all, the home is given some attention.

The House the Most Important Building

The most important building on the farm is the house. The health and happiness of the family depends upon the comfort and convenience of the farm house. Proper sanitary conditions, so sadly lacking on most farms, are very essential to improved service about the farm. There are many conveniences found in city homes that should be found in country homes. Economy, of course, is very important for the average builder, but economy is not synonymous with cheapness. The kitchen costs money, but in the long run it saves many steps for the busy housewife, and therefore is economical. The smallest and most unpretentious house should have a kitchen sink and water supply system, some method of disposing of sewage, a sleeping porch, and a screened-in kitchen porch. Useless doors, numerous angles in the walls, and fancy shaped roofs should give way

to labor-saving devices. Of all places, the farm home should be sanitary, as it is located in the open country, free from the smoke and dust of the city; but, unfortunately, such is not the case. The death rate in the country from such diseases as typhoid fever and diphtheria is greater than that in the city. This

city neighbors under equal circumstances. It is a very poor sort of home in the city that does not have a bath-room and other modern conveniences. The man on the farm can install modern conveniences at a cost of from \$250.00 to \$500.00, depending on the quality of plumbing fixtures, bath tubs, etc.



Manure piles are dangerous if they are near the well.

Fig. 1.

is due entirely to the unsanitary conditions found about the farm.

The open type of well, as shown in Figures 1 and 4, and the typical farm homestead, illustrated in Figure 1, are direct causes of such conditions. It seems strange that farmers do not take better care of their lives when such care really costs so little. Figure 3 shows the proper precaution to take in all dug or open wells. Although some wells are bad on account of polluted materials which enter from the bottom, this is not true in the large majority of cases.

There is no reason why the farmer should not live as comfortably as his

Sewage Disposal

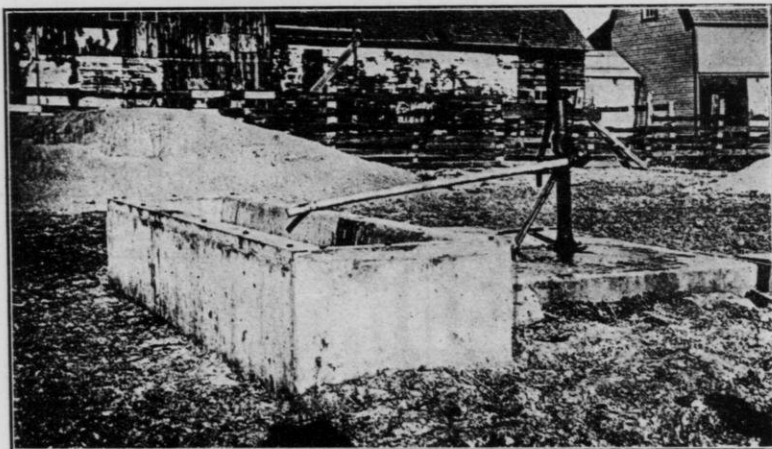
The big question is the disposal of the sewage. Figure 5 illustrates a complete system of sewage disposal that can be installed on the average farm for from \$50.00 to \$100.00. In the construction of a sewage disposal tank, there are a few important details that must be carefully considered. In the double chamber tank, which is the best type, the scum in the first tank, that collects on the surface, should not be disturbed, as the bacteria carry on their work best in the absence of air. No bad odors will come from

the tank and so it can be situated close to the house if desired. The dissolved sewage passes over into the second tank as fresh sewage enters the first tank. Some people have the idea that when the sewage leaves the second tank, it is purified, but such is not the case. The septic tank is no better than the old-fashioned privy, only in so far as the material in it is liquified. The effluent is just

the most rapid absorption possible will take place and therefore the complete purification of the liquid sewage.

Some Questions Anticipated

There are several questions concerning these small sewage disposal plants which are always asked by interested parties.



A good concrete well top adequately protects a dug well from surface contamination.

Fig. 2.

as dangerous as that of the privy unless the disposal system is carefully and correctly installed. It is just as necessary to have air in the disposal system as it was not to have air in the septic tank. It is, therefore, necessary to have the tile near the surface of the ground and well surrounded with cinders or gravel. (Figure 3). If the sewage, or better, impure water, which is in the second tank, was allowed to flow out as fast as it comes in, the ground would soon become water logged. The water must pass into the disposal system intermittently, so that

Will not the sewage freeze in the tile during the cold winters of Wisconsin?

No, the liquid enters the tank at 60° to 70° temperature and goes into the tile at from 40° to 50°.

How much sewage per person per day should be estimated in designing a septic tank?

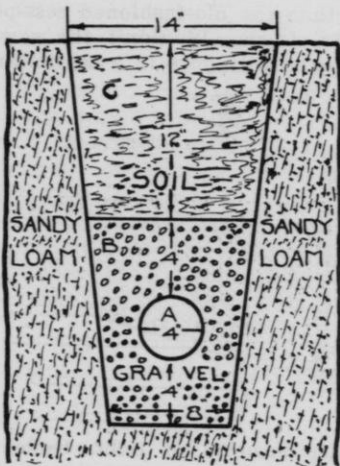
Thirty gallons per day per person.

Is there danger of the plumbing fixtures clogging?

Yes, unless standard toilet paper is used and in no case must insoluble material be allowed to get into the tank.

What is the best method of insuring intermittent dosing of the disposal system?

An automatic syphon will require the least attention and is the most satisfactory. Although, if careful attention be given to the system, a plug can be pulled every twenty-four hours, depending on the nature of the soil.



Cross-section of Single Tile System.

Laid in a sandy loam. A, four-inch farm drain tile; B, coarse gravel or cinders to aid the circulation of the soil air; C, soil 10 or 12 inches deep as thrown back into the trench on top of gravel or cinders.

Fig. 3.

How large should tank No. 1 be built?

Large enough to hold at least from three to four days flow of sewage.

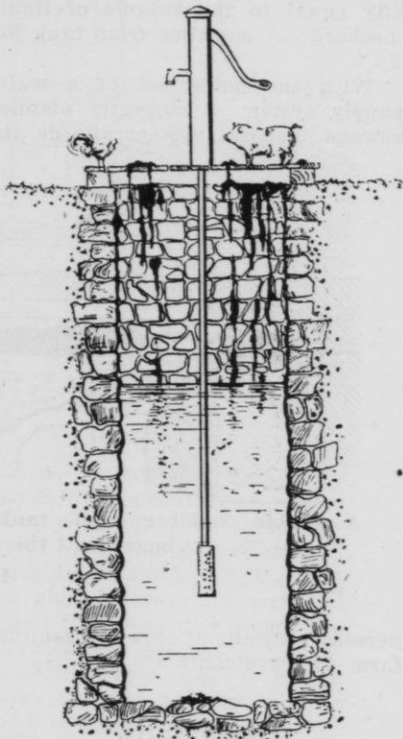
What, if any, relation has depth and width or length in tank No. 1?

The depth should be about twice the length, so that there will be little movement of the sewage in tank

No. 1. The width will be governed by the capacity.

What is the object of the baffle board shown at (a) Figure 5?

The baffle board prevents any sludge or scum entering tank No. 2, and prevents a current in tank No.



A very common type of dug well.

Fig. 4.

1, which would destroy the scum and thereby the bacterial action in liquifying the sewage.

Is it necessary to have a grease trap in connection with a sewage disposal system?

The grease trap, Figure 6, is a most important accessory to a septic tank. If the grease is allowed to enter the tank, the bacteria can-

not change it to any appreciable extent and it will eventually clog the system.

In designing the absorption system, what should be the capacity of the tile?

The tile should have a total capacity equal to the volume of liquid discharge at one time from tank No. 2.

With the perfection of a water supply system, a correctly planned sewage disposal system affords the

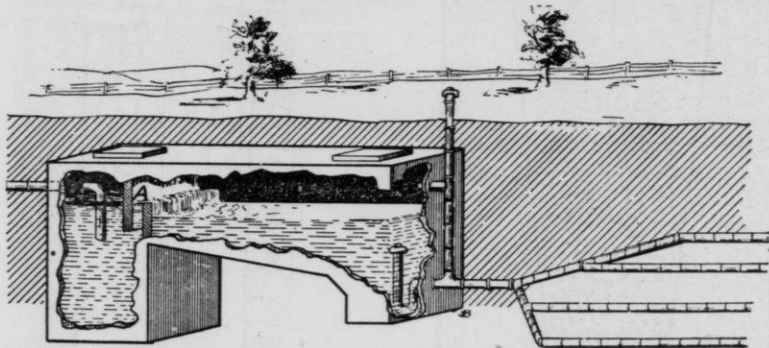
Madison, no doubt, but in the Colby clay do you think it would work?

Prof. White—I would recommend more cinders or gravel.

Mr. John Imrie—What would be your objection to having a well deep enough to run it in?

Prof. White—There is danger of polluting your drinking water. Such an arrangement would be little better than the old-fashioned cess-pool.

Mr. Imrie—Wouldn't the sewage be practically pure in a septic tank?



A double chamber septic tank. Notice location of inlet, baffle board and the absorption system.

Fig. 5.

necessary means of securing sanitary farm improvements.

DISCUSSION

Mr. Scott—In the case of an impervious soil, would you let the tile from the septic tank into the soil without any other precautions?

Prof. White—Around the tiles, we have cinders and sand which still practically take care of all the sewage that comes out. We have one of these systems installed at Madison that we have been watching and we have yet to find anything reaching the end of the tile. It is all taken care of before it gets there.

Mr. Scott—That is very true in

Prof. White—No, it would not as it comes from the septic tank.

Mr. Wyatt—Would it be practical to carry the sewage off into a barrel three or four hundred feet from the well?

Prof. White—That would be all right for a time; I would not recommend leading it into a well, because we have known of instances where the water supply has become polluted in a lime stone region from sewage disposal four hundred feet away from the well.

Chairman Jacobs—That would hardly be a parallel case with the pollution of the well where it went into the soil, not having the same fissures as there are in the lime stone.

A Member—Would there be danger of polluting the well from the cess-pool if it had a casing of rock?

Prof. White—Not unless it went below the bottom of the well.

A Member—Prof. Ocock explained a system of water supply down at Madison which was different from the ordinary well.

Prof. White—Yes, I attempted to bring that out in explaining the so-called fresh water system, commonly known as the Perry system.

The Member—I am satisfied that there are many farmers in this locality who would like to use that system if they knew about it. How deep a well can you pump out of with the Perry system?

Prof. White—You can use this system in any well that you can get your cylinder into. I think it takes a four-inch hole for this cylinder. The depth to water should not be over 125 feet.

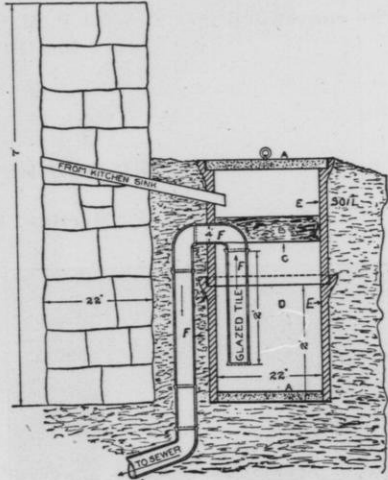
A Member—I have heard Dean Russell say that the system used at his residence had only a six-inch hole and that he had a well 100 feet deep; that there is a sort of ram fitted into the bottom of the well, and it makes a continuous flow to any part of the building he wanted it.

Prof. White—Dean Russell does not have a system comparable with either the fresh water supply system, commonly known as the Perry system, or the hydro-pneumatic system. He has a windmill on his lot, and I think has a gravity water supply system.

Mr. John Imrie—I talked with Fairbanks-Morse's agent at Richland Center, and he told me it was not advisable to install the fresh

water system in a well over 100 feet deep.

A Member—In putting in the air pressure system, I noticed that the



Grease Trap.

A, A, concrete cover and bottom; B, grease floating on water; C, water level; D, occupied by water; E, E, glazed sewer tile 22 inches in diameter; F, F, F, 4 inch glazed sewer tile arranged so that the water and grease are separated, the grease being kept above the water and out of the sewer by placing the tile as shown in figure.

Fig. 6.

tanks were a little bit small. In one place I advised the man not to put in one of those tanks, but to put in not less than a nine, ten or eleven-hundred gallon tank.

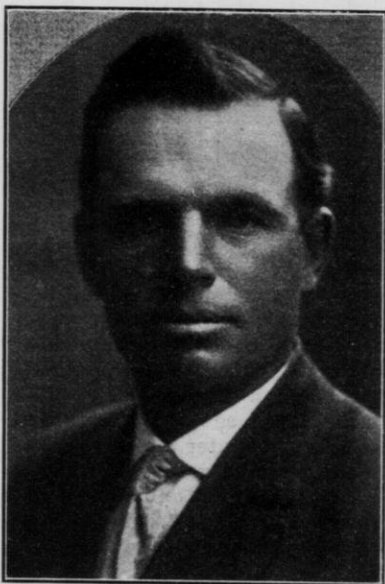
Recess to 7:30 P. M.

EVENING SESSION.

The convention met at 7:30 P. M., Mr. W. C. Bradley in the chair. Music by the Girl's Glee Club.

MORE AND BETTER LIVE STOCK.

L. P. Martiny, Chippewa Falls, Wis.



Mr. Martiny.

For over twenty-five years, Wisconsin Farmers' Institutes have been making live stock on Wisconsin farms the principal subject of discussion in their meetings and it has had a wonderful effect in developing our dairy herds, flocks and studs. Yet after all this, we seem to be awakening to a new era in live stock development, a keener sense of its im-

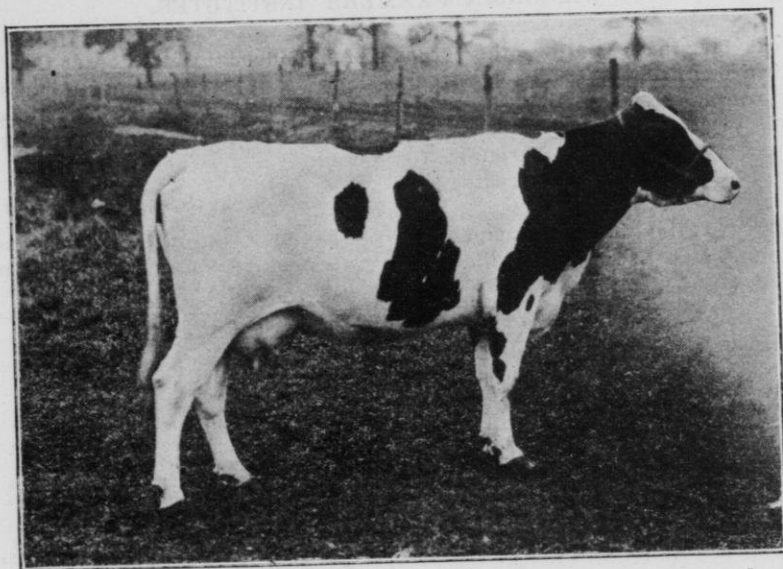
portance in permanent agriculture and the greater profits to be derived from live stock farming.

Conditions Changing

As a nation we have been soil robbers. There seemed to be no limit to the land available, rich in fertility and low in cost. The solution for any difficulty in poor farming, due to exhausting the soil's fertility, was to move west and take up new lands with all their original fertility at a lower cost.

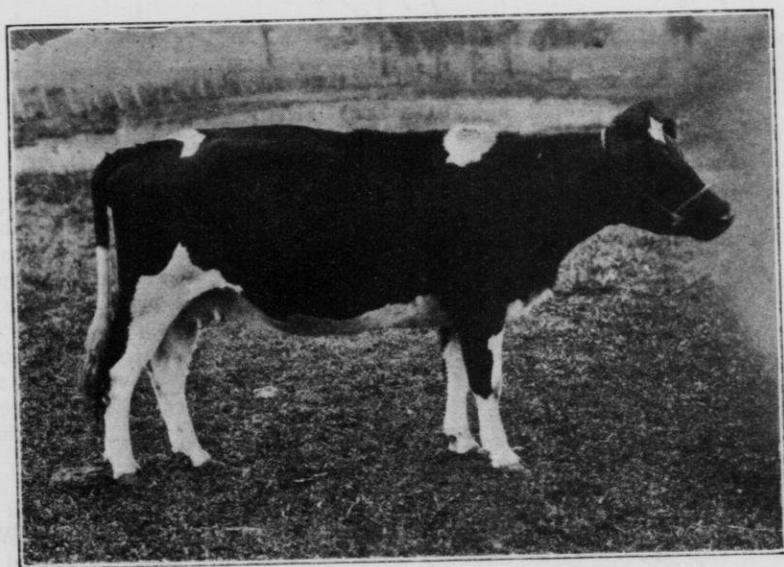
This condition is fast changing. The new lands are practically all taken up, land prices have gone up, having practically doubled in the past ten years, our population has been increasing very rapidly and as the population increased our exports to foreign countries have been declining until our nation consumes nearly all it produces. With our population increasing at the ratio of over two million per year, no new lands to go to, here is a situation that will have to be met. It means that larger and larger crops will have to be produced on the land now available. In order to do this, the fertility of these lands will have to be conserved and increased.

The most practical method of meeting this condition is by live



Cow Testing Pays.

This "dairy cow" produced in one lactation period 378 pounds of butter fat, worth \$113.02, at a feed cost of \$34.20—return above feed, \$78.82.



The Babcock Tester Locates Leaks Which External Characteristics fail to reveal.

This "boarder cow" produced in one lactation period 136 pounds of butter fat, worth \$43.52, at a feed cost of \$35.23—return above feed \$8.29..

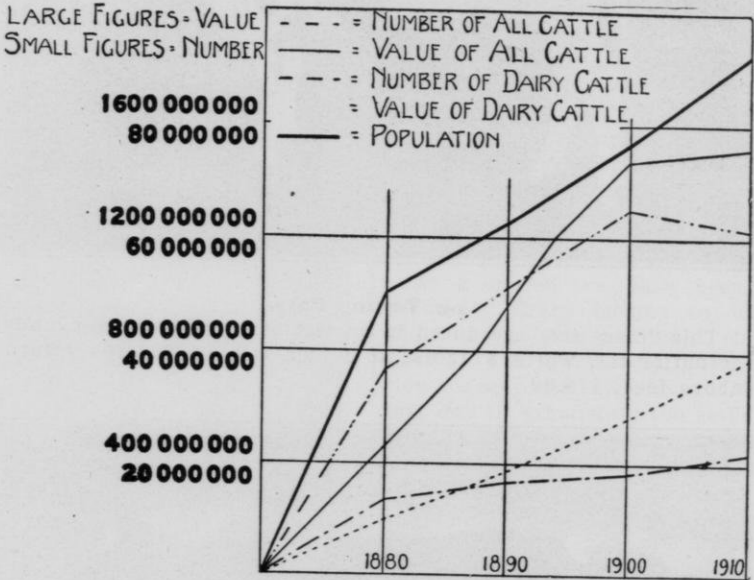
stock farming, feeding the crops grown on the farm to the live stock, restoring the fertility back to the land. Nor is this the principal advantage of live stock farming, for live stock farming offers greater profits.

By studying the accompanying charts, which show in graphic form

bright indeed. But in order that live stock be profitable, even under such favorable market and economic conditions, certain precautions must be taken.

Some Requisites for Success

The first essential to successful live stock production is the man

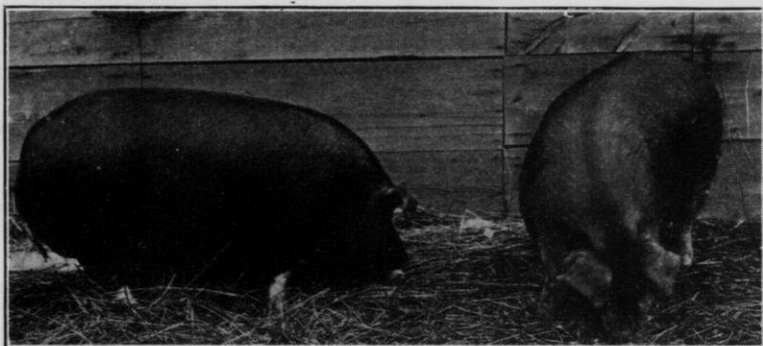


the number of our population and different kinds of live stock, as taken from the United States Census reports for the past thirty years, you will note that none of our live stock has increased in comparison with the population and the last ten-year period there has actually been a decrease in our meat producing animals, which is showing its effect in the high price of our meats and animal products.

With an increasing population to feed, a cutting up of the ranges in the west, the prospects for live stock development in Wisconsin are very

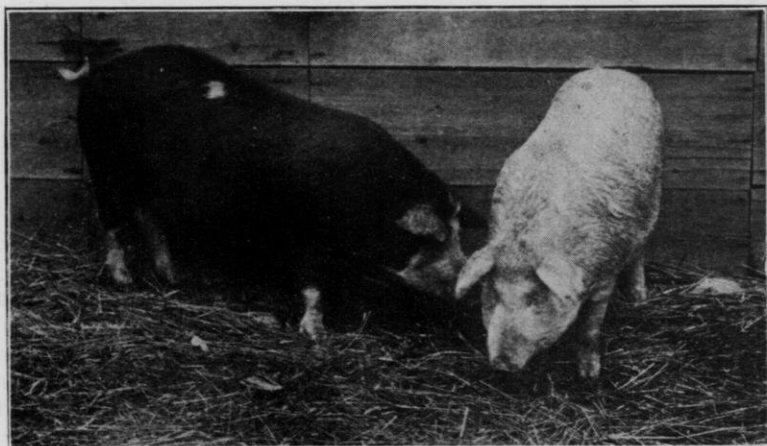
himself. In this Wisconsin is admirably situated. As a rule the man on the farm is the owner. A large portion of our farmers are foreigners, or descendants of foreigners, from the highest civilized countries of Europe, where they have learned by toil and experience the necessity of careful attention to detail in caring for land and live stock.

Another factor that counts for successful live stock production is the size of the farm. As a rule, Wisconsin farms are small compared to some of our neighboring states, and where live stock is kept in small



Breed the low-set, blocky, wide, thick Hog. He matures cheaply and quickly and satisfies the demand.

The profitable hogs weighed 307 pounds (average) and sold for \$8.40 per cwt.—average value \$25.79.



Don't Use a Scrub Boar.

The unprofitable hogs averaged 140 pounds in weight and sold for \$7.00 per cwt.—average value \$9.80.

flocks or droves and each animal can receive individual attention, is where greatest improvement can be made. Having the right kind of people and a good soil, producing a great variety of animal food, we are admirably situated.

How to Improve Our Flocks and Herds

Wisconsin stands today among the states of the Union as the great dairy State, which it truly is, but, when we

farm for nothing. A better market would be the common cow, which will pay the market price for our crops and in addition to that will leave the fertility on the farm to maintain the soil fertility. A still better market would be the good grade dairy cow that has been produced by the use of a good pure bred dairy sire of one of the dairy breeds, a cow whose production has been determined by the scales and test. This type of a market will pay us two



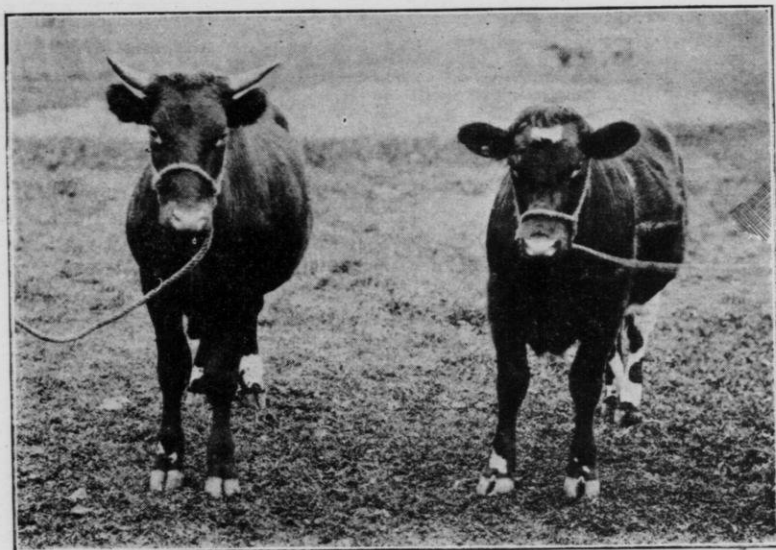
Herd of Pedigree Poland China Hogs. Farm of L. P. Martiny, Chippewa Falls. Cement base hoghouse, also hog cots.

on the inside see the character of some of our herds, the way they are bred and fed, we must conclude there is still great room for improvement. By the use of the scales and Babcock test, herds have been developed to the standard of dairy production until they will pay two dollars and even higher for every dollar's worth of feed consumed.

The illustration of the warehouse, the scrub or common cow and the grade dairy cow typifies very nicely the three markets every Wisconsin farmer is patronizing. The warehouse man will pay the market price for farm products. In this way we are giving away the fertility of our

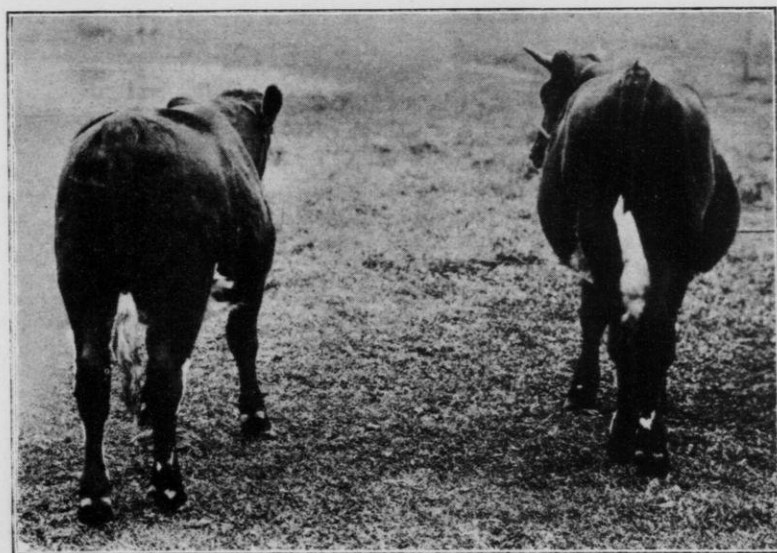
and even three dollars for a dollar's worth of feed. What is true of the dairy cow is equally true of beef cattle, horses, sheep and swine.

One of the best ways by which more and better live stock may be produced is by co-operation and association. In a locality where enough interest in a certain breed is shown, greater advancement can be made by organizing an association, where all members are interested in the same breed, working for the same end, advertising, and thus developing a market for their stock. Wisconsin has a number of these breed associations that will be a



A broad back and thigh, thick loin and deep twist make the carcass valuable.

The profitable steer (at right) weighed 950 pounds at 13 months of age and sold for \$95.00.



Put the meat where the market wants it.

The unprofitable steer (at right) weighed 830 pounds at 2 years of age and sold for \$45.65.

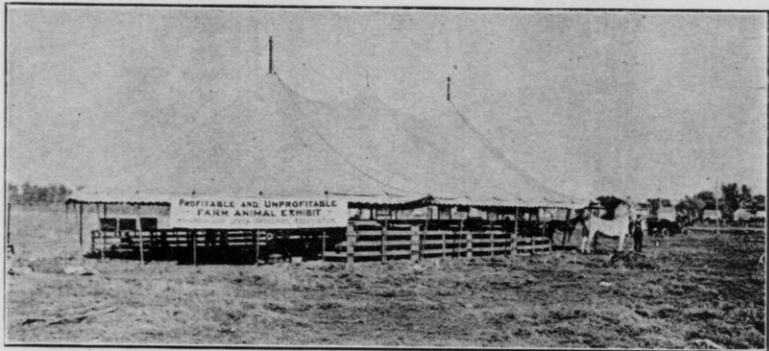
great factor in developing and advertising these different breeds.

The Work of the Live Stock Breeders' Association

Because of the many advantages of live stock farming when properly managed, a strong sentiment for a concerted effort has sprung up all over Wisconsin and as a result we

the breeds are carried along the different lines of railroads, where farmers gather and are given instruction in the selection, breeding and management of the improved types of live stock.

Another feature that is proving very educational is the profitable and unprofitable animal exhibit, where animals of different types were

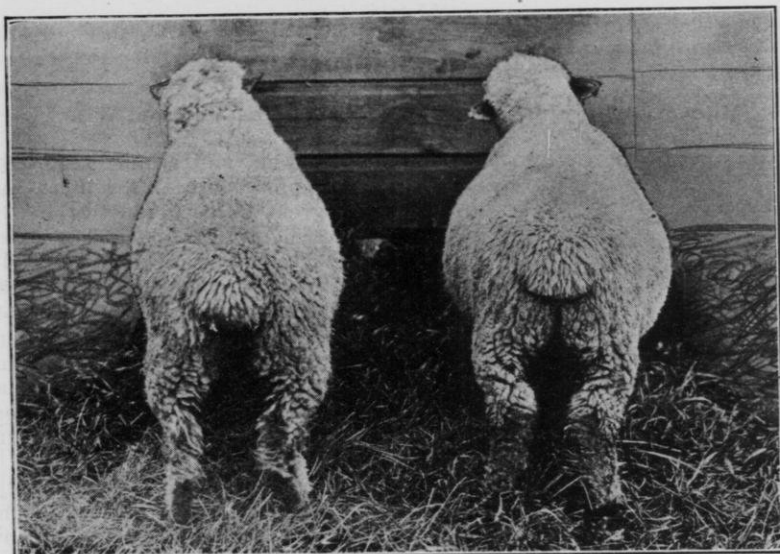


Tent Which Housed the Exhibit of the Live Stock Breeders' Association.

have a Wisconsin Live Stock Breeders' Association, consisting of over one thousand members who are farmers, dairymen and breeders of pure bred stock, scattered all over Wisconsin. The legislature has recognized the value of this permanent and successful agriculture and has made appropriations to the Wisconsin Live Stock Breeders' Associations which are being used in carrying on an educational campaign throughout the State by running "Live Stock Specials", where typical specimens of

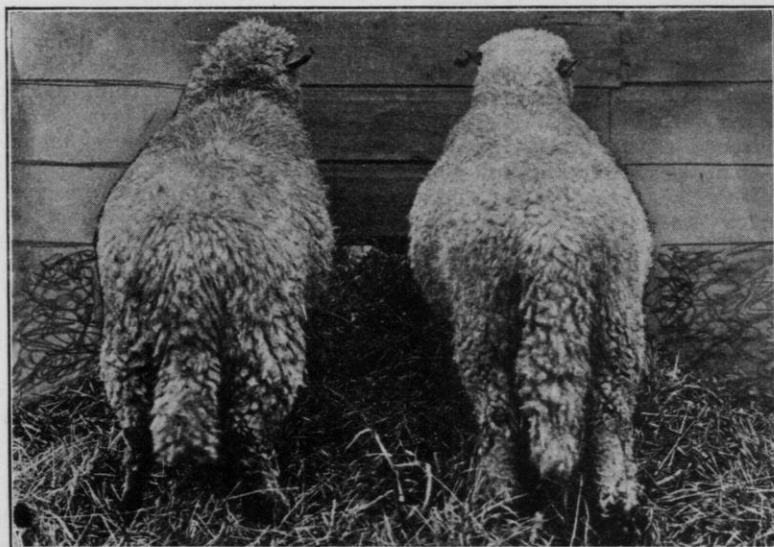
bought in the open market, giving their age, weight, and price, as illustrated by the accompanying photos.

This and a number of other methods are the plans by which the management of the Wisconsin Live Stock Breeders' Association wishes to make Wisconsin the most successful live stock state in the Union and thus secure to Wisconsin the maintenance of a permanent and successful agriculture that will react both directly and indirectly for all mankind.



Trimmed Lambs fatten quicker, sell better and always bring a higher price.

The trimmed lambs averaged 77 pounds in weight, brought \$7.75 per cwt.—average value \$5.97.

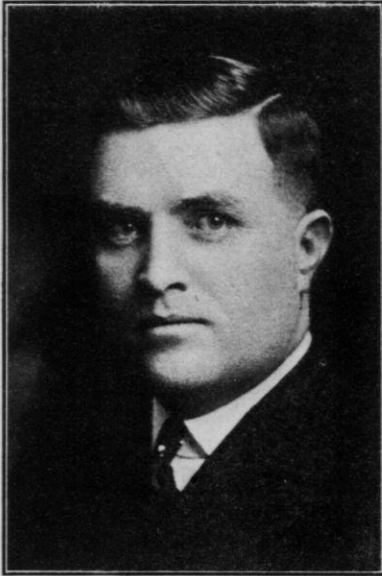


Docking and Castrating Increases Sheep Profits.

The untrimmed lambs averaged 83 pounds in weight, brought \$6.50 per cwt.—average value \$5.39.

RURAL CREDITS.

Miles C. Riley, State Board of Public Affairs, Madison, Wis.



Mr. Riley

The subject assigned to me involves a mass of details. It will be my purpose to as far as possible avoid some of the details and talk over with you the fundamental principles underlying the general movement in this country for the establishment of a system of rural credits. My talk will be entirely informal. I shall be glad to have you interrupt at any time.

It has been said that all great movements, like inventions, are the offspring of that great parent necessity. If that is so, there is a grave necessity for the establishment of a system of credits for our agricultural industry, for the movement is on. Congress, the legislatures of

the different states and statesmen are grappling with this subject. All three great political parties in the last presidential campaign advocated the enactment of laws which would make credit accommodations to the agricultural industry more favorable and appropriate than at the present time. The aim is to establish for agriculture a system of finance as responsive and efficient as the system worked out for other lines of industry.

This movement and these agitations are sure to bear fruit in the very near future. There are now seven or eight bills before Congress designed to accomplish this end. Some of the states, including Wisconsin, have already passed laws designed to aid agriculture in this direction.

The movement is at least a century old. Throughout all that time charges have been made from time to time that agriculture or the agricultural industry was being discriminated against,—was being insufficiently or inappropriately financed. It has been contended that our banks, in spite of their wide extensions and willingness to adapt their methods as far as possible to the needs of agriculture, are unable, because of business and banking conditions and customs, to deal with the special requirements of the agricultural industry.

The acuteness of the movement at this time is due to several causes.

The high and increasing prices of land, the increase of land tenancy, the decrease of the rural population in many sections of our country, the possibilities of more intensive agri-

culture stimulated by improved methods of distribution, the high cost of living and other causes all join in making the movement one of great significance to our people. Furthermore, the farmer is coming to realize more and more that one of the up-to-date business ways to make money is to borrow the other fellow's funds at a reasonable rate per cent and utilize them on the farm so as to return a margin.

Capital Demands of Agriculture

The capital demands of industry, generally, including agriculture, naturally divide into two classes. These are the loans for temporary purposes on short time credit, and loans for permanent purposes on long time credit. To this general extent all industry is the same, but each class of industry has characteristics peculiar to itself—characteristics which distinguish the class from other classes. These characteristics should and must in the end dictate the terms upon which loans are to be made to the particular industry. Loans, for instance, which might be adequate, sufficient and appropriate for the commercial or manufacturing industry, may be absolutely inadequate for those engaged in agriculture. The question is, have the characteristics—the seasonal character and other characteristics of agriculture—dictated the terms of the loans to those engaged and about to engage in agriculture, or have these terms been dictated in some other manner?

From the beginning in America the man on the farmstead has been dependent upon the banks for his loans,—upon a banking system which was born and reared in the cities and which was designed purposely and specially to finance the commercial and manufacturing industries. These industries are conducted on the quick-turn-over plan,

to which they are readily susceptible. The successful business man figures on turning his stock over several times each year,—often monthly, if not weekly. His business and his output depends upon man and his activities and the intensity of his application. A mercantile or manufacturer's stock bought today is disposed of the following week or month. For this class of business short time loans for temporary purposes and short time loans for semi-permanent purposes also have been sufficient. Short time money has satisfied the demands of that class of industry.

Banking Customs

Around these requirements of commercial and manufacturing industries, the banks have built up their businesses and have established their so-called banking customs. They have adopted as the instrumentalities of credit the note secured by endorsement, or by pledge of collateral, or unsecured, and the mortgage in some form or other; the former, the note, restricted in term to sixty or ninety days, the latter, the mortgage, to a term of five years. The terms of but few mortgages exceed five years; and seldom do banks loan on note for a period of more than ninety days. This class of loans, I say, has been appropriate for the commercial and manufacturing interests, and just so long as the demands of the urban industries have come in sufficient number and have come often enough to keep the working capital of the banks busy. These institutions have not sufficiently felt the necessity of adjusting their methods and customs to the demands of other classes of industry. Even the cross-roads country banks, as we find them in Wisconsin, restrict their loans to sixty and ninety days, or to three or five years.

This is merely following the customs that have been established generally by banks throughout the United States. The bankers say, "it is our depositors' money we are handling; we cannot let go of it for too long a time." Unquestionably there is great reason in this statement. A sound system of banking demands that the banks shall remain in a position at all times to liquidate in the shortest possible time should that become necessary.

Sixty to ninety-day and the three to five-year credit accommodations are the best that the man engaged in agriculture or negotiating for a farm has been able to secure. The banking customs permeate our entire credit system. The man who sells you a piece of land and accepts part of the purchase price and a mortgage, as a business proposition insists upon bankable security. He, and other money lenders, accept only such security as may be converted into cash via the bank route. The farmer and prospective farmer thus are bound and regulated by these banking customs that gradually grew up as part and parcel of the commercial and manufacturing industries of our country.

Now, the sixty-day and ninety-day loan has been utilized time after time by the farmer and has benefited agriculture. Sixty to ninety-day loans suffice for marketing crops, but such terms are not an appropriate aid on the production side. The farmer borrows money to sow his crop, and unless the period of the loan is extended, he is required to repay before he harvests that crop; or, if he buys young stock, he is required to pay the loan, unless the note is extended, before that stock is mature and ready for market. We all know it is a great inconvenience to the farmer who lives some distance from the bank to come in from time to

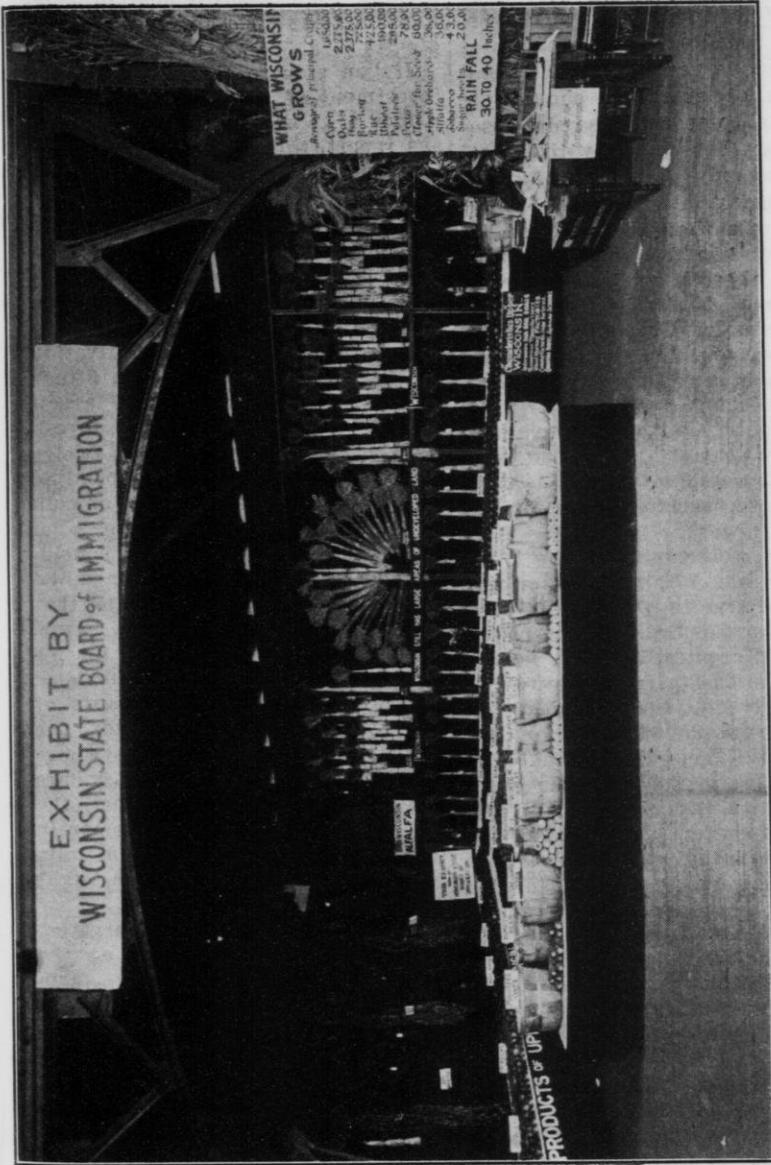
time to renew. We know that the inability to meet the short-term note when due too often discourages borrowing for productive purposes, and we occasionally hear stories of high interest rates and high commission charges in connection with these notes. Banks rarely, if ever, charge a commission. Loan sharks do, however, and I hope that this matter of commissions and high interest rates will be more closely regulated by law.

However, it is not so much in connection with these short-time loans that the farmers have difficulty in adjusting themselves to the established banking customs.

We have in Wisconsin 653 State Banks, I think those are the figures; and 128 National Banks, a total of 781 banks in all, or, as I have been told, a bank for each six hundred families in the State of Wisconsin.

These banks, many of them entirely rural, should be and are well able to take care of the short-time demands of agriculture, and they are doing it better and better each year, far better and more satisfactorily than ten years ago. The banks in Wisconsin are today carrying note-cases full of farmers' notes ranging from five dollars to two, three or four hundred dollars, and are successfully handling and encouraging a conservative business along this line.

Our last Legislature, however, passed what is known as the Co-operation Credit Association Law. This law authorizes a system of co-operative banking under the one-man-one-vote plan. Seven or more persons may incorporate and operate under this law. The working capital of these banks or credit societies when organized and operating consists, first, of the proceeds of the sale of capital stock; second, of the deposits from members; third, of the loans from outside, and fourth,



Wisconsin Exhibit at the Illinois State Fair, 1914.

Similar displays were made by the state Board of Immigration at Streator, Peoria and Princeton, Ill., Mason City, Sioux City, Marshalltown and Des Moines, Iowa, Lincoln, Neb., Topeka, Kansas and St. Joseph, Mo., in connection with State and District Fairs. The purpose of the exhibit is to show crop possibilities of Wisconsin and good results have followed in increased settlement of idle lands.

of reserve and profits. The law is designed to afford an opportunity to do collective borrowing and to secure the benefits in interest rates that collective personal security and cheapness of operation should assure. The co-operative credit association law has to do with short-term loans only.

In Germany, at this time there are seventeen thousand of these little co-operative banks. In certain provinces, there is one bank for each 3,600 acres of land. They have helped to make Germany prosperous. There are something like one hundred and thirty or forty of these banks in Canada; about thirty in Massachusetts, and there are a number in New York, Connecticut and Texas. No co-operative credit associations have been formed under the Wisconsin law.

It is in connection with the long-time loan that I think the agricultural industry in Wisconsin and elsewhere in the United States have found their greatest difficulty in adjustment. The instrumentality for long-time credit, the mortgage, is defective from the viewpoint of the farmer. It is defective in the first place because of its short duration; it is defective, secondly, because of its local character; and, thirdly, because of the usual requirement that the principal be kept intact and be paid back at the end of the mortgage period in a lump sum.

As to the first defect, the short term or duration: The capital needs of agriculture, as these same needs of the city man, divide into those for permanent and those for semi-permanent purposes. There are certain financial requirements of the farmer which are met perfectly well by the three to five-year mortgage. It is the longer term mortgage, it is the money that is wanted for the acquisition of the farm, or for the

building of the house or barn, or for making some improvement of magnitude on the farm, that I will speak of.

If you stop to think it over, the investment of the farmer runs into money. According to the last census report, the value of agricultural land per acre, including buildings, in the State of Wisconsin, is \$57.06. Now, that might be mighty low in certain sections, and, of course, high in others. Let us go up into some of the northern counties, Chippewa, Rusk and others. You will find that wild land, even, fit for cultivation in those counties, ranges from fifteen dollars upwards in price. If a settler buys eighty acres, his investment in land alone runs up to twelve hundred dollars or more, depending on the location, the quality of soil, what timber may be on the land, etc. Then, if you take into consideration the amount of money he has got to invest or put onto that land for the necessary house, barns, out-buildings, for his fences, for his clearing and for equipping the farm with live stock, including beasts of burden, with machinery, etc., the man's investment will run anywhere from three to five thousand dollars or more. As a matter of fact, the average investment of the farmer in Wisconsin today is \$7,978.00, only twenty-two dollars less than eight thousand dollars.

But we will take a conservative case now. The investment of the farmer when he has his farm equipped, even if he has bought wild land, runs anywhere from three to five thousand dollars. I leave it to you gentlemen if the average farmer in the State of Wisconsin is able to realize the purchase price of the land within the period of three to five years. If that were possible, instead of having an exodus from farms to the cities, as it is now, I

believe we would have a wild stampede in the other direction. If he cannot pay for his land in that time, why not adopt a system whereby he can get a longer time? To be sure, renewals are often granted or the mortgage term is extended, but whether or not the term shall be extended rests entirely with the lender. It creates an uncertainty. In case of renewal, the interest rate may be increased and a commission may be charged. In fact unconscionable commissions are too often charged. Why not establish a system whereby the term can be made appropriate and eliminate the uncertainty of renewals?

The Local Character of the Mortgage

The next bad feature of the mortgage is its local character. If I, living in one of the extreme northern counties, should come to you and apply for a loan of a thousand dollars on my farm, you might think it a fine farm, but you would say to yourself, and probably to me, "I can't very well afford to loan you money on that farm; it is too far away. I don't know anything about the farm and worse and more of it. I can't go up there to collect my interest from you and the principal when it is due, and I will not be there to see that you keep your buildings insured; I will not be there to see that you are not allowing your premises to run down so as to jeopardize my security. Why don't you get somebody up there to let you have the money?"

That is the character of the security the farmer,—the man engaged in agricultural industry,—has to offer. The mortgage has no currency. Its non-currency has made agricultural land a non-liquid asset. We hear once in a while of somebody taking mortgages and selling

them outside of the community where the land mortgaged is situated, but, as a rule, those mortgages are taken by the investor on the say-so of the man who sells them, he acts as a medium between the man who executes the mortgage and the man who loans the money. In other words, the mortgage is not a current security, and until it is shorn of some of its local character, it is bound to make an unsatisfactory security.

The man who has land in the northern part of the State is confined to that certain district in his negotiations for a loan, because of the local character of the mortgage. See what this means!

We have two interest zones in Wisconsin; the lower portion of the State constitutes the higher interest rate zone; the higher portion the lower interest rate zone. The man in the high rate zone seeking a loan with a land mortgage as security is confined to that zone, he cannot enjoy the benefits of the larger market; he cannot negotiate with any degree of success in the low rate zone. His security at best is a local competitor. Confining the farmer or prospective farmer to his locality gives the local money lender a dangerous power over a fundamental industry.

We pass to the third defect of the mortgage, and that is the requirement that the principal shall remain intact and be paid back in a lump sum at the end of the mortgage period. This is bad, because it denies to the farmer the opportunity to cut down his overhead expenses. He, like those in other industries, should be given an opportunity to pay off the principal on the instalment or amortization plan and in that way reduce his annual or semi-annual interest payments.

Now, the plans that have been

proposed and that are before Congress and which have been proposed or enacted by the different states, are the systems of rural credits we are most interested in, and I will take the Wisconsin law as a sort of example of what the different proposals stand for. It brings out the fundamentals contained in most of them.

Wisconsin Land Mortgage Association

The Wisconsin law and others are based on the proposition that the banks or the individual will not loan for more than five or ten years at the very most, and will not grant the instalment or amortization privilege. They do not want the money coming back in driblets, they want it all at one time. What Wisconsin did, and what the others propose doing, is to establish an intermediary between the lender and the borrower. They propose a system whereby bonds can be issued and those bonds act as an intermediary between these parties.

The Wisconsin system is somewhat like this: Fifteen or more persons incorporate with a capital stock of not less than ten thousand dollars. That capital stock must be fully paid up. They start in, say, with ten thousand dollars. They loan, for example, seven thousand of that on first mortgage security on Wisconsin land. The loan, the law provides, shall not exceed forty per cent of the value of wild land, or sixty-five per cent of the value of improved land. When they have made loans up to seven thousand dollars, say, and obtained mortgages to that amount, they take the mortgages to Madison, where they and other records attached are examined by the Commissioner of Banking to ascertain whether or not all necessary legal steps have been taken. If

he finds they have, the mortgages are deposited with the State Treasurer, and then the Land Mortgage Association is authorized to issue bonds up to the amount of the mortgages deposited. These bonds are not guaranteed by the State of Wisconsin, they are not obligations of the State of Wisconsin; the State Treasurer acts as mere custodian of the securities. The bonds themselves are the direct obligation of the issuing association.

Possibilities of the Wisconsin System

Now, you can see what that system can accomplish. In the first place, although still utilizing the land mortgage, it absolutely eliminates the bad feature due to its local character. The man who buys the bond doesn't know anything about the land; he leaves this entirely to the land mortgage association to look after, and instead of having a mortgage with one certain piece of land as security, he has a bond secured by a pool of mortgages. The bond of this man is secured, not by any one certain mortgage deposited with the State Treasurer, it is secured by all of the mortgages deposited. The investors in these bonds look to the organizations for the payment of the interest and principal—not to the borrower himself. This arrangement should make the bond and thus the mortgage and land liquid securities. It has in other states and countries. Associations have been incorporated under this law at River Falls, Eau Claire and Marinette. Others are contemplated.

The new system makes possible long-time loans, because these associations can issue their bonds for twenty or thirty years, the average period for which the commercial people and our public service com-

panies issue their bonds. So we may have mortgages running ten, fifteen or twenty years.

The law requires that at least one per cent of the principal of the loan shall be paid off each year. Under the plan adopted by the organizations already incorporated, borrowers will make semi-annual payment of interest. That means that twice a year interest and a small portion of the principal will be paid off. Of course if the mortgage runs for ten years, the amortization will be very high. Amortization does not work very well when the mortgage is under ten years. The longer the term, the smaller the instalment or amortization payment will be. I understand that the practice will be from the start to loan for not less than ten and not more than twenty years, and later on to loan for thirty years, if desired. The borrower is given the privilege under the law of paying off all or a part of the principal on any interest paying date, or upon sixty days' notice, or without notice by paying sixty days advance interest. This privilege protects the borrower in case of a decreased rate of interest in the money market; he can pay off the old mortgage and secure a new loan at the lower rate.

There seems no good reason why the farm, or the farmstead, cannot carry a two-generation mortgage just as well as a railroad system does. The railroad systems all do this, and I believe that sooner or later the farmer will be afforded the privilege and be given the opportunity to pay the principal off in small instalments.

There is another feature of the Wisconsin law that is worth mentioning,—several, in fact. First of all, no loan can be made unless a credit committee provided for by the law, after investigation, is satisfied that the loan for the purpose speci-

fied in the application therefor promises to benefit the borrower. The credit committee is elected by the stockholders of the organization; they cannot be directors. No loan can be made unless the members of this committee unanimously approve, in writing, the application. We all know of the so-called chronic loser, the man who is a great deal better off if he is refused a loan than if he is granted it. We all know we have the speculator and the man who used poor judgment. This system and this committee is a check on loans for any but a productive purpose, that promise to benefit the borrower, and lend stability to the bonds. All valuations are subject to check by the assessor of incomes. The associations are under the supervision and control of the Commissioner of Banking to the same extent as are State banks.

I have mentioned this Wisconsin plan because it involves or takes in the fundamentals underlying all of the systems proposed. The details differ very greatly, but I take it those would not be of interest to you.

Agricultural Loan Bills Before Congress

There are six or seven bills now before Congress. These bills are either based upon the bond as an intermediary between the lender and the borrower, or provide for loans of Government funds to the farmer. Senator Fletcher has a bill in which he provides for the establishment of farm land banks, as he calls them. Under his scheme, the banks may be operated under the co-operative plan as a private enterprise. Mr. Bathric, of Ohio, proposes that the Federal Government issue its own bonds and secure funds to be loaned to the farmers. He proposes also turning the postal savings banks funds into

a certain fund to be loaned back to the farmers at a very small rate of interest.

I have outlined to you these various proposed systems. They are, with few exceptions, built around the bond.

Some states loan educational funds on land mortgages. At the present time there are eight or nine states, among them New York, Oklahoma, Oregon, Indiana, and a few others, which follow this practice. Some of them have as high as seven or eight million dollars outstanding. It is usually provided in the law authorizing these loans that the interest rate shall not exceed five per cent per annum and that the loan shall run anywhere from five to twelve years.

The sole aim of all the systems is to make possible long term loans to the farmer, with the privilege of paying off the principal on the installment or amortization plan, so that by making certain fixed payments throughout the life of the loan, at a certain time the principal and interest will all be paid up.

Whatever else happens, I hope, and I know you hope, that the right system will be adopted, a system which will make agriculture even more prosperous than it is today, because agriculture is fundamental, and, as Mr. Martiny well said, when you have a prosperous farming industry, you have a prosperous State and a prosperous Nation. I thank you.

DISCUSSION

Mr. Nordman—I would like to inquire whether, in your judgment, those people would be able to do business more cheaply than the banks now in existence?

Mr. Riley—I should think so.

However, I do not believe that the people of the State of Wisconsin, or of North America generally, can expect in the near future the low interest rates of Germany. In the first place, the banks of this country are required to set aside a fifteen per cent reserve. Then again, over in Germany there is no trouble foreclosing the mortgage, the mortgagee does not have to wait a year, as in this country. There are no exemptions in Germany, and, of course, all these things affect the interest rate. Until we have met those conditions in this country, and I am not sure that it would be wise to do so, we cannot expect to borrow money as cheaply as they do over there. I do not know of any system proposed now, unless it is the loaning of State funds, or the loaning of postal savings funds that will materially lower the interest rate to the farmer. Any of the proposed systems should help to eliminate interest rates and commission charges.

Mr. Nordman—You speak of high interest rate zones and low interest rate zones. The high rate zones are prominent in the northern part of the State. Do you not think that in a measure that is justified by the greater risk that the lender is forced to assume? You spoke a moment ago about values and prices. Now, you know there is a great big difference between price and value. For instance, you can take it in some sections of the State of Wisconsin on farms, and the price has been driven way up, not because of the actual value of the land, because we find land in other localities that is just as valuable selling for much lower prices, but because of its local position. Perhaps in that particular locality there are a number of people that might have a certain amount of land and they are bidding against one another to get that particular

land and they have driven the price up. Up in the northern part of the State, the same thing is true; we have land held at a certain price, but that does not mean that the value is the same as the price by any means. The value of that stump land, a great deal of it, is nothing, because it will produce nothing, and by the time you get that land in condition so it will produce, it has cost every cent that you put into it if you got the land for nothing. Now, the chances that a man will have to take when he loans money under those conditions, I think is what causes him to be charging a high rate of interest, and anybody that would loan money there would be forced to charge the same rate, or, in the end, he would go under in his business.

Mr. Riley—It is my theory that land in northern Wisconsin, I mean land fit for cultivation, is better security than the two hundred-dollar land in Dane county, and for this reason: I believe that that security which is adequate in the first instance and which is gradually increasing in price and which is not so high in price as to be prohibitory for agriculture, is a good security. In Dane county, where conditions are more settled, land is sold, some of it, at two hundred dollars an acre. Now two hundred-dollar land looks like ideal security, and it is until it becomes necessary to enforce the terms of the mortgage. A sixty per cent loan would mean one hundred and twenty dollars per acre. It is hard, as you know, to dispose of land at that price for agricultural purposes. It does not find a ready market or enough bidders. Land in northern Wisconsin, on the other hand, and high class land in an improved state, can be bought at forty or fifty dollars an acre. Then, too, when loans are made on wild land, your secur-

ity increases, in fact, doubles in value as the land is cleared. It is given as security for a certain percentage of its value in its wild state, so the value of the security keeps increasing all the time. For myself, I have always felt that there was no more ideal security than fertile agricultural lands.

Supt. McKerrow—In the hands of the right man.

Mr. Riley—In almost any hands, Mr. McKerrow. To be sure, income producing qualities affect the value of a security, but when the market price of the security is on the increase, the security is good irrespective of the owner. I know of cases where whole counties in northern Wisconsin were bought for from fifty cents to one dollar an acre, and these same lands are now selling for twenty and twenty-five dollars per acre. There is one situation in which the law of supply and demand is absolutely supreme, and that is in respect to land. You cannot increase the supply of land. You may reclaim some waste land, of course, but not enough to affect prices. The demand for land is bound to increase, you cannot stop it, and when the demand is great and the supply is decreasing, up goes your price. In 1850, in the State of Wisconsin, land and buildings were worth per acre an average of \$9.58. Today it is \$57.06. In 1850, the average investment of all farmers in the State of Wisconsin was \$1,078. In 1890, it was less than \$4,000, and now it is \$7,978, or a little bit less than one hundred per cent higher than it was twenty years ago, and it is going to increase in value. I, personally, fail to see the hazards in a loan secured by land that is steadily increasing in value.

Mr. Nordman—You spoke of land increasing in value. Do you mean value or price?

Mr. Riley—I get your distinction; I should say both.

Mr. Nordman—Undoubtedly land in the State of Wisconsin has increased very fast in price, but it has not gone up anywhere nearly as fast in value. The population has been increasing, land is not increasing, but when you come to speak of land and the value of land, it is worth just what you can get out of it over and above the labor that you put into it. Now, these things are not what determine the price of land,

while they are what determine the value of land.

Mr. Riley—As a matter of practice between you and me, it doesn't make any difference. If I can sell my farm for five hundred dollars per acre, the five hundred dollars represents either, and both price and value to me. The land owners are getting more each year for their lands in Wisconsin.

Adjourned to 9 o'clock A. M., next morning.

WEDNESDAY MORNING SESSION, MARCH 18.

The convention met pursuant to adjournment at 9 o'clock A. M. Supt. McKerrow in the Chair. Prayer by Rev. Mr. Davis.

THE FARM POWER HOUSE.

E. C. Jacobs, Elk Mound, Wis.

The model dairy farm is a factory that runs every day of the year; its permanency and prosperity is assured. In proportion to the work which it accomplishes, the plant which provides the power for this factory and houses various activities to which it may be applied, may well receive the same consideration that the power house of any factory receives.

The building used for a power plant at Elk Lake Farm is not a model, yet a presentation of its construction may serve to provoke a discussion of a more ideal and satisfactory plant.

It is centrally located and easy of access from the other buildings. It is well built and provided with storm doors and windows. The inside dimensions are fifteen by forty

feet, with nine-foot ceiling. It could be eight or ten feet less in length and still accomplish its purpose.

The floor is of concrete, sloping to a drain near one end. The foundation extends above the floor at all points, so that water does not come in contact with the wood construction.

At one end of the building is the gasoline engine, the pump, the separator and the boiler. The engine is a four-horse power and is sufficient for all purposes for which it is used, except grinding feed. It has been demonstrated that a six-horse power engine can be used to develop one or more horse power with the same economy of fuel as a smaller engine, so it would be wise to install the larger size.

A door at the back of the building opens in front of the engine. Through this door a rope transmission is passed when grinding feed or shelling corn in the granary some seventy-five feet distant. The wood saw is also in line with the door and is run by a belt from the line shaft. This shaft is 1 7-16 inches in size, extending lengthwise of the building, and attached to the ceiling with drop hangers about

pump laid so it will drain. This method, however, is not recommended, for it will freeze in cold weather if care is not exercised.

A water tube boiler about twenty inches in diameter and six feet high, furnishes steam and hot water for all purposes and also heats the building. This form of boiler, while a little more expensive to install, is much cheaper in the end than the upright flue boiler. It fires quickly,



eight feet apart. These hangers are so arranged that they are near the pulleys that bear the heaviest load. Split wood pulleys are used.

The separator is run from a governor pulley attached to the ceiling and belted to the line shaft.

A pump near the engine furnishes water for a tank in the attic of the power plant. This tank supplies water to all parts of the building, as well as to the barn and stock tank.

Water is pumped to a tank in the attic of the house by an elevated

steam being raised in ten minutes.

By connecting the steam pipe with the cold water pipe, water can be drawn at any temperature.

The dairy utensils are washed and sterilized in the power plant building. The common creamery sink is used for washing. It is made of galvanized iron and is large enough to wash a ten-gallon can conveniently. Above the sink is a water pipe which supplies by a turn of a faucet water at any temperature desired. A faucet at the bottom of the sink drains it.

A wide shelf of convenient height and covered with galvanized iron, is placed near the sink. A one-fourth-inch steam pipe extends upward through a hole in this shelf for the purpose of sterilizing the dairy utensils.

Near the separator is a small tank in which the cream is cooled. It is slightly elevated, so it will drain to the stock tank by the underground pipe which furnishes the water from the storage tank above. A steam pipe is connected with the pipe supplying the barns, so the water may be warmed for the stock in cold weather.

The Washing Machine

At the other end of the building stands a simple looking machine, guaranteed to keep the women of the household young, beautiful and sweet tempered. Incidentally it does the family washing. This piece of machinery should attract special attention, because it conserves the energy and vitality of the home-makers of the farm. Both the washing machine and wringer are run by the gasoline engine. The washing machine rests on an extension bench upon which the other tubs are placed that are used in the washing. The wringer is so attached to the bench that it can be moved from one tub to the other as needed without detaching it. It operates by a foot lever and may be instantly stopped by removing the foot, thus preventing any tearing of clothes or breaking of machinery by overcrowding.

The tubs may be filled with either hot or cold water by a short hose attached to a water pipe near the machine. The clothes may be boiled if so desired by injecting steam into the tubs through the hose. There is no carrying of

water. The pipes bring the supply to the points needing it, the drain conveys away the waste.

The housewife provided with this equipment for washing finds her work quickly and satisfactorily done with comparatively small effort on her part. Not only is labor saved, but the kitchen is no longer on Monday morning a watery scene of soap suds and confusion.

DISCUSSION

Mr. Scott—I notice the gentleman said that that shelf was made of galvanized iron. Our shelves for the drainage and aeration of dairy utensils are made of one-half wire mesh and they are very satisfactory.

Mr. John Imrie—Do you have a window so the sun shines in on that slatted bench?

Mr. Jacobs—Yes, there is a window, although it does not bring the sun in on the whole of the shelf.

Mr. Imrie—Don't you think it would be better if the window was right at the end of the slatted bench?

Mr. Jacobs—One of the objects in showing this plan is to show the faults as well as the good points.

Mr. Scott—I would like to ask Mrs. Jacobs a question. Don't you prefer this style of washing machine with the movable wringer, to the stationary washtubs?

Mrs. Jacobs—Yes, I do very much.

Mr. Jacobs—There was a point in the talk yesterday which I wish to criticize, and yet it is hardly fair because the gentleman has gone home. He showed those stationary sinks in the laundry room, but no power was shown by which the washing could be done. I think it is a great mistake for the farmer to ever put up any dairy room or laundry without

power to do the washing. Indeed, I believe that is the solution of the washing problem on the farm. We have been talking for years about co-operative laundries for farmers to patronize, and I believe one or two have been started, but I think that this is a very much more practical means of getting that hard work done on the farm.

A Member—Do you use a steam mangle on your farm?

Mr. Jacobs—No, sir, we do not.

Mr. Convey—Do I understand that you run a four-horse power engine for grinding feed and sawing wood?

Mr. Jacobs—No, I said that it is suitable for all purposes except grinding feed. It is all right for sawing wood, though a six-horse would be better.

Mr. Clark—Wouldn't a twelve-horse power be too expensive for running that machine?

Mr. Jacobs—Oh, yes. Experiments have shown that a four-horse power was all right for all these things.

Mr. Scott—What kind of a washing machine is yours?

Mr. Jacobs—The same as yours, the Litchfield, made by the Litchfield Manufacturing Co., of Waterloo, Iowa. There are others made on the same principle, one called the "ABC," and there is one handled by the Lindsay Brothers.

A Member—Whereabouts is this house located with reference to the house and barn, Mr. Jacobs?

Mr. Jacobs—About half way between the house and the barn, of easy access to all buildings.

A Member—Couldn't it be so arranged that this power would run your silage cutter?

Mr. Jacobs—The power which we require for this kind and amount of work every day in the year is so small that it wouldn't be policy for us to keep an engine there that would be able to do the work for the silage cutter. That takes a ten, twelve or fifteen-horse power. It would be considerable extra expense to run these small things with so large an engine.

A Member—Isn't the best place for your power house around the well?

Mr. Jacobs—Yes. Our well is in the power house. I want to make this point in regard to the well being contaminated. We have a cement floor in the power house, which is situated itself on a slight elevation, so that no water ever stands around it. The drainage from the power house is carried away some twenty rods in a tight drain through a septic tank. This makes a good arrangement, and the well is perfectly safe.

Mr. Scott—What is the material of your drainage pipe?

Mr. Jacobs—It is sewer glazed pipe, with the joints cemented.

Mr. David Imrie called to the chair.

LABOR SAVERS ON THE FARM.

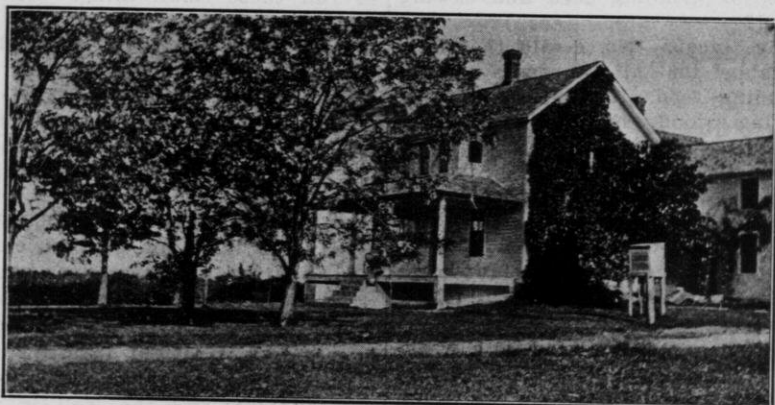
L. E. Scott, Stanley, Wis.

With wages at five or six cents a day, man power is the cheapest possible power in China. In America, horse power, wind, steam, gasoline and electricity are all cheaper and more satisfactory, wherever they can be successfully applied.

Most farmers recognize the value of good field equipment, but are

hand weeder will save much time and annoyance in weeding the row of small stuff. Bright, sharp hoes are also muscle and time savers. In buying a hand cultivator, get one with a large wheel.

A full set of auger bits, a good grade of hammers (with whole handles), a hack-saw for iron, a few



Home of L. E. Scott, Institute Conductor, Stanley, Wis.

often neglectful in providing a full complement of small tools for the barn, garden, work-shop and dwelling, and in keeping the same in good repair.

Forks, shovels and brooms should be supplied for barns and stable and so placed that one in doing chores will not need to go far for the tool needed.

Garden tools are as scarce as the proverbial "hens' teeth" on many farms. The garden soil may be prepared with the field tools and the little small garden truck the average farmer raises may be sown by hand, but a good cultivator and a lang's'

drill bits and a couple of good saws, a plane and a carpenter's level should be in every farmer's work shop.

When purchasing the saw, do not forget a meat saw for the kitchen and have the hardware man put in a new blade at least once a year. It will only cost a few cents and will save you time when you carve spare-ribs.

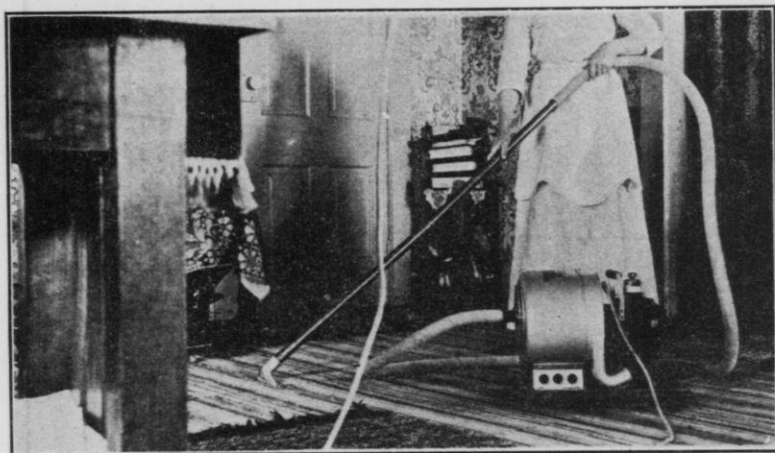
A variety of wrenches that will fit any burr and in any ordinary position may save both time and profanity.

We haven't had a pump man or a plumber on our farm for twenty-

five years. A set of pipe tools has been cheaper and has saved us many a trip to town.

Much time and energy can be saved in the field if farmers would use the low-down wagon for hauling silage corn. We still use and like as well as ever, the one described in Farmers' Institute Bulletin No 21, 1907, with timbers slung under the axle, preferably a long axle. This will haul easier than the low

just a double drum, made of boards, revolving on an old gas pipe for a shaft. The larger drum is twenty-four inches in diameter and the smaller one is eight inches. A half-inch rope runs from the larger one to the carrier, and a $\frac{3}{8}$ cable from the smaller one to the weight outside the gable of the barn, so that a fall of twenty-five feet will bring the carrier back seventy-five feet to the lock. Some use a double or



Using an electric vacuum cleaner in Mr. Scott's home. Doesn't require any head or much muscle.

wheel wagon, but anything is better than lifting heavy corn up onto a high rack. It makes me tired to see farmers do it.

The biggest rush on our farm is in haying time. We have tried nearly every kind of device for unloading and have concluded that the largest grapple fork obtainable is the most satisfactory. Be sure to get one that is well poised and has an easy and sure lock.

Last summer we put in a drum to pull back the carrier. We made it on a rainy day and it saved time when the sun was shining. It is

triple block instead, but I prefer the drum. It need cost little if any more and being under cover at one end of the barn it will last a life time. The weight may be made of concrete.

The power hoist will probably be the next number added to our haying tools. The single hoist, together with the drum that we already have, I believe will enable us to put in considerable more hay with the same help in a given length of time.

A cable stacking outfit will not only save time, but a better stack

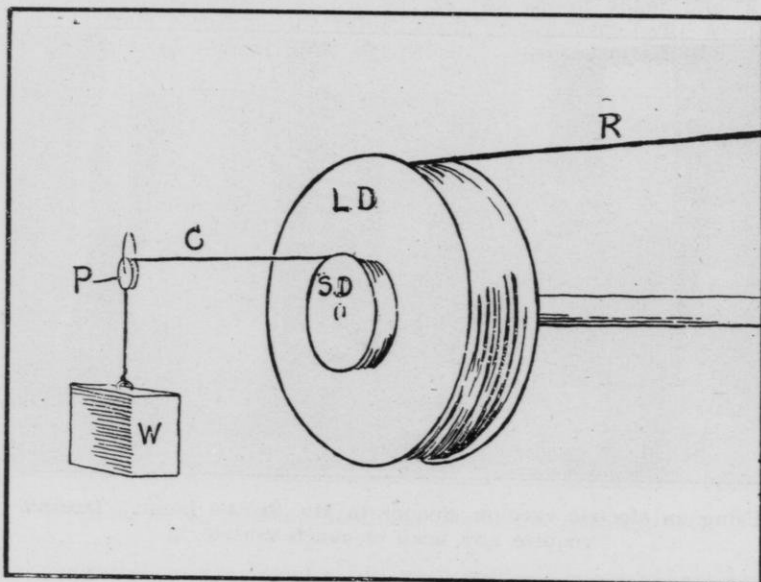
can be built with it than where the hay is pitched up by hand. The grapple fork will work as well here as in the barn.

Every farm that has its gasoline engine or other power, should have its line shaft. One of the best machines that we run from ours is the washing machine and wringer described by Mr. Jacobs. It lightens the material materially in the house fifty-two weeks in the year. I be-

grind-stone frame and a horizontal sprocket chain runs the stone, so you can tip the mower sickle either way without encountering pulley, belt or other obstacle.

Last fall we belted our sausage cutter and ran that from the line shaft. The only trouble was we didn't have hogs enough.

I would urge farmers, as soon as they can get to it, to put in some system of waterworks. We find in



Drum and weight for pulling back empty fork from hay mow.

lieve that most farmers' wives will be better satisfied with this method, enabling them to do their own washing, than with the farmers' co-operative laundry advised by our city friends, where everybody's clothes would be washed together in the same batch. As we are fortunately served with an electric current, an electric iron saves time in ironing the clothes.

We run a grind-stone from our line shaft. The drive pulley is on a short shaft on one end of the

washing our milk things that a water pressure saves us as much time as would pay the interest on the entire plant.

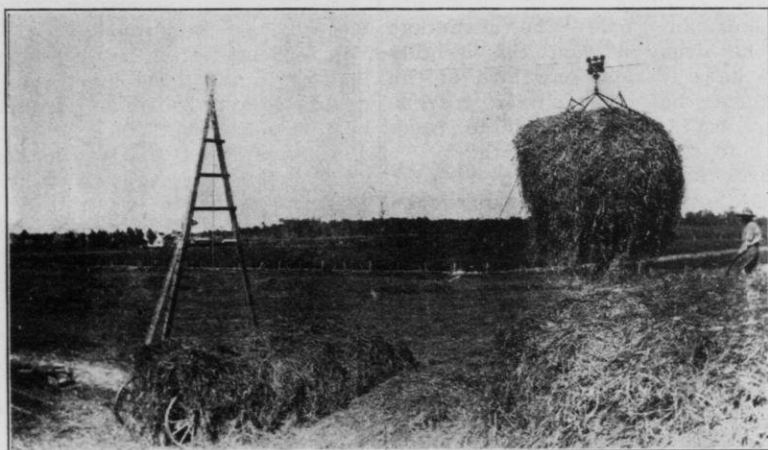
By all means, provide for sewage disposal. The carrying of waste water from the house by the pailful is a hindrance and a drudgery. In absence of an open stream, run the sewer into a septic tank where the ground is sufficiently porous to absorb the water. Where no better disposal is available, it has been demonstrated since I presented this

subject last year that running into a covered cistern and pumping out to run over your land or upon the manure heap is entirely feasible. It beats packing it out by the pailful a hundred to one.

We haven't arrived at a point of vantage that will enable us to touch a button on our bed post and have the cows fed and milked mechanically and have our breakfast cook-

them. Maybe they can sometime, but there are many who can afford them, and I assure you they are more satisfactory than money in the bank.

I heard a man once say, "There need be no such thing as drudgery." He said, "Cleaning a cow stable is not drudgery unless we make it drudgery." And that is true. If we have the right equipment, a good



Stacking hay with cable outfit and grapple fork at Fairmount Farm.

ed and brought to our bed, nor would such a condition be desirable. "A certain number of fleas are good for a dog", and a certain amount of manual labor is necessary for our best being, but every hour saved from unnecessary toil and drudgery adds that much at least to our lives of usefulness and well earned pleasure.

I am not urging farmers to go beyond their means to secure these conveniences, nor mourn their lives away because they cannot yet afford

gutter, a good carrier and plenty of room to dump it, and we have a vision of a fine crop growing from the plant food contained in the manure, then cleaning the stable becomes a pleasure.

DISCUSSION

Mr. Scott—Of course we are fortunately situated in being served with electric power.

Mrs. Jones—Why do you need a

new blade in the meat saw so often? Can't you file the old one?

Mr. Scott—No, the modern meat blade is made so very hard that you can hardly touch it with a file. They can be bought for just a few cents and your hardware man will punch the holes and fix it for you at a very small expense.

A Member—I wish Mr. Scott would explain that drum business a little better.

Mr. Scott—The diagram will make it clear, I think.

Chairman Imrie—The advantage of the drum is that the weights only have to raise one-third of the distance that the carrier travels. There isn't room enough to come down to carry it full length.

Mr. Bradley—Have you ever tried these double harpoon forks instead of the grapple fork?

Mr. Scott—Yes, I have used everything I believe, but the grapple fork is the most satisfactory thing I have used. I have taken two harpoon forks with an evener and used them, but this fork is more easily set. If it is a well poised fork, it comes down open just ready to set, all you have to do is to shove down each side and lock the fork and you are ready to move.

A Member—What is the object of the double harpoon fork, or the grapple fork either? I think I can beat any two with a single harpoon fork if I have the right kind of men.

Mr. Scott—That is all right in handling timothy hay, any fork will work in timothy hay, but it takes the right kind for clover or

alfalfa. We tried slings three or four years, and they were not very satisfactory; they were always more or less tangling. First, I operated the grapple fork to try it out with a borrowed one before I purchased. We got our fork last year and used it all through the season, and I feel perfectly safe in recommending it.

Mrs. Jones—How much does it cost?

Mr. Scott—I think mine cost eight dollars.

Mr. Martiny—Mine cost five dollars; it has two prongs.

Mr. Scott—Mine is the largest made. It has three on a side and opens something over seven feet; it is none too large.

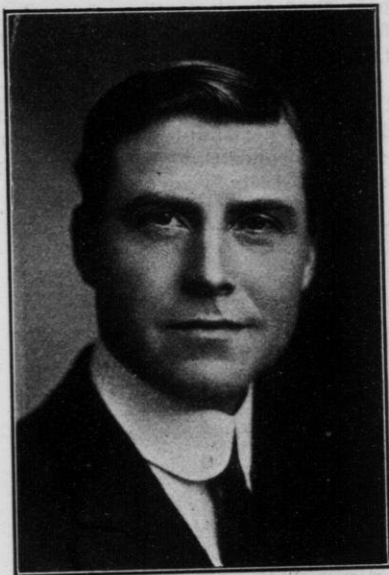
A Member—Does it ever catch you when it comes down?

Mr. Scott—No, I do not get under it. There is one advantage of having a power hoist; you have a brake on and you can regulate the drop of the fork with the drum and the fork comes down quite rapidly sometimes, but with the brake on the power hoist, one can lower it gradually till it comes to the right place.

Mr. Convey—In a barn that has no cross timbers in the center, it is hardly necessary to hoist the hay any farther than you need it. You can put a rope between the fork and the trip pulley and swing it over there. We have a barn forty feet high, we can put two hundred tons of hay in there and one man can do it very easily. Of course we do not allow the party to trip the fork until we give the order, but one man can do it, and in a high barn that is specially desirable.

ORCHARD DISTRICTS OF WISCONSIN.

D. E. Bingham, Sturgeon Bay, Wis.



Mr. Bingham

Since small fruits can be grown in all parts of Wisconsin, our consideration of this subject must necessarily be limited to that of tree fruits, as these are more exacting in their requirements as to location, and for the same reason we may include the grape.

Whoever plants a commercial orchard, should first and above all select a region where conditions are most favorable to the profitable fruiting of the varieties he attempts to grow. To plant in a place where these conditions are adverse is folly. There are certain general conditions that are required by all tree fruits. These we will name under two heads; first, soil and subsoil, and second, climate or weather.

Soil and Subsoil

Since a fruit tree once planted is limited in its capacity to secure plant food to that it can reach with its roots, it is evident that the character of the soil and subsoil become prime factors in determining the suitability of the site. Permeable lime stone clay subsoils, such as are found upon many of the hills and ridges in Wisconsin, are very good orchard lands, while marsh clays and pure sand subsoils are the worst. Nature selects soils and subsoils for different trees and this selection can be taken as an index pointing to qualities that must be selected for the good or rejected as bad.

Where white oak, hard maple or white ash grow healthy and sound, you may be certain to find soil favorable for tree fruits, but where white elm, alder, tamarack and willows grow, you will find a soil unfit for tree fruits and it is to be avoided in selection.

Climate

Under the second head, that of climate, it might be assumed to be about alike for all the State. While it may be true that extremes of heat and cold, drouth and storm, come alike to all parts, it is a practical fact that these extremes are modified by local conditions.

What is called air-drainage, shows the difference in temperature of high lands and low lands. The actual difference is usually about eight degrees where the elevations reach three hundred feet, and the slopes somewhat abrupt. The air of the valleys will have the lower

temperature and the hill-tops the higher.

Another influence on climate is that of surrounding bodies of water. It is a noticeable fact that peninsulas the world over possess climate that is adapted to some product that thrives better because of this peculiarity.

Having considered these general conditions, we are now prepared to point out parts of Wisconsin that possess these conditions sufficiently

upheaval, there is a region where air-drainage is a great factor. With a high summer temperature, this region is eminently adapted to the growing of summer and fall apples that are in active demand before the winter apples begin to fill the markets.

On account of the high temperature, such fruits as the cherry would prove too perishable for a safe commercial proposition, while the grape is successfully grown.



Three-year Cherry Tree, Gays Mills, The Kickapoo Orchard Section.

to entitle them to be ranked as commercial fruit sections; also to note the type of fruit that each may exploit.

In the southwest part of Wisconsin, is what geologists term the driftless area. This is about ten thousand square miles in size and lies mostly in Wisconsin. Here the ice of the glacial drift never came, hence a topography of hills and valleys entirely different from the rest of the State. With hills from three hundred to five hundred feet high in the driftless area proper and an extension into the Baraboo

Nowhere can finer Concord, Brighton, Worden and Delaware grapes be grown than on the uplands and southern slopes of this region.

The only wholly peninsular region in Wisconsin adapted to commercial orcharding is the Door county peninsula. The modifying influences of Lake Michigan and Green Bay give this region a distinctly different character from the rest of the State. Here the cherry is the favorite fruit and will produce wonderful crops. European and Japanese plums can be quite successfully grown. The apples in

this region are later in season and keep longer than the same kinds grown in the region first considered. Here, however, the grape is not a commercial proposition. Where the varieties of fruit are well liked on the market, the lateness of season may be a decided advantage, for

there seems to be good evidence to warrant a success of a certain kind.

To plant upon some of the sandy soils and subsoils found in that locality, is to invite disaster sooner or later. While the modifying influence of the waters of Lake Superior upon the climate may be a



Apple tree 65 years old, Waukesha Co., Wis.
Like Topsy, it "just grew". There are thousands of these trees in Wisconsin.

instance, in such sorts are the Snow and McIntosh apples.

There is another part of Wisconsin that has lately come into prominence on account of a somewhat promising outlook for commercial orcharding and a very active campaign of real estate men. This region is what is known as the Bayfield region and is confined mostly to Bayfield county. Where early apples of the hardy varieties are planted on well drained clay soil or sandy soil with good clay subsoil,

good factor for the cherry, it is equally certain that commercial planting should be only upon the clay soils and subsoils, and not upon the sand, if we expect the trees to be long lived.

In other portions of the State, notably along the lake shore, there is a limited area possessing commercial possibilities along some lines of fruit culture. When these combine soil and subsoil along with good local climatology, they may be quite valuable when properly ex-

ploited. The determining factors in every case should be, first, favorable conditions, and then intelligent management.

It is true all through certain sections, that real estate men are very poor horticulturists, at least in determining orchard conditions, and usually their statements concerning these commercial fruit sections

DISCUSSION

Mr. Convey—I think Mr. Bingham has an idea that the driftless area covers a great deal less territory than it really does. I think myself that this is part of that driftless district and they raise some very fine apples up here.

Mr. Bingham—I think as a mat-



Power sprayer at work in cherry orchard, Sturgeon Bay, Wis.

are very misleading. There is only one place where they shine as real horticulturists and that is in figuring up yields and profits. In order to get their lands in certain districts before the people, they oftentimes lose sight of the facts as to yields and conditions and their stories are very much exaggerated. For instance, they will find a single tree in a man's orchard bearing pretty well and they will soon be able to tell you what an acre will produce.

ter of fact that the larger part of Pierce county might be considered one of the best orchard places in the State.

A Member—What is the best time of year to prune your orchard?

Mr. Bingham—We consider that March and April is the best time for pruning. We want to prune before the sap starts, before the buds burst. There is less evaporation from the cut wound and there is no loss from sap, and at the same time, the cold weather is

over, so there is no danger of injury from the cold as there would be on freshly cut limbs late in the fall or in the winter.

A Member—I am speaking of young trees, those that have not come into bearing.

Mr. Bingham—The smaller the tree, the more apt it is to be in-

does not bleed. It is more apt to bleed along four weeks from now than it will now. As to maples and such trees, it is better not to prune those until just about the time the buds are bursting into leaf. Then they do not bleed. The sap in different kinds of trees flows at different seasons.



Seven-year-old McMahon Apple Tree in Door County.

jured by the cutting of the limbs during the cold weather.

A Member—Isn't it a fact that this is the season when they tap trees to get the sap out of them?

Mr. Bingham—Sure; but we do not tap apple trees for sap, and they will not bleed if you cut them now.

A Member—I had in mind iron wood and maple trees. I know it is generally thought that this month is the proper month, but I had a different idea of it.

Mr. Bingham—The apple tree

Mr. Corneliuson—The gentleman over here remarked that this county was adapted for raising fruit. It certainly is good for small fruit in small spots. I have lived in this county since 1844 and I have known a good deal of money being squandered trying to get fruit trees to grow. There is a ridge of country through here running north and south a little ways north, that we call the high ridge, the highest part of the county, clay soil, and they are raising fruit there. There is another ridge halfway between

Trumbull and Prescott, which is similar land to what we have, and they are raising fruit there, but you take it anywhere in the valleys, along these creeks and a man might as well leave his money in the bank, if he has got any, as to put it in fruit trees there, because he will never see it again. Now, I want to ask, in setting out a new orchard on these slopes, which slope would you prefer for an apple orchard?

Mr. Bingham—I would prefer a northeastern or north slope rather than an eastern or south slope. The objection to the southern slope is that by this time of year, when the sun is beginning to get pretty warm, it is apt to start the flowing of sap; then it will get caught with the frost and causes injury. It will cause apple canker and other troubles later on. There are many portions of the State where small tracts can be selected and good orchards raised, but, as a general rule, you do not have to look around much in this district, at least in the valleys, to find places where trees will not grow. On the clay ridges, it is all right. On the lake shore, you have a good clay soil and lake influences and even then we have to keep off the lower land.

A Member—What is the idea about painting trees in orchards as a protection against rabbits and mice?

Mr. Bingham—That depends on what you paint with. We do not paint at all. Those prepared paints that are sold for the purpose of protecting trees against rabbits and mice may do considerable injury to the tree. We just throw a little mound of dirt around the tree and that turns the mice away.

A Member—Our trouble is with

rabbits. I have put on tarred paper.

Mr. Bingham—I would rather not use tarred paper, because that excludes the air and it may warm up too much by the sun shining on the dark paper. I would rather use wire screening. You ought to be able to get those out for a very small amount per tree.

A Member—And this tar paper that was put on last fall, it would be better to take it off immediately, wouldn't it?

Mr. Bingham—Yes, but I prefer not to use that.

Mr. Pearse—These higher lands that have been spoken of around here are underlaid with limestone. Is that a good thing?

Mr. Bingham—Yes, we consider any limestone soil good fruit soil. Winnebago and Calumet counties, where limestone comes near the surface and drainage is good, is good fruit soil. Up in Door county is the same, down through Campbellsport and down to Milwaukee, all the ridges are more or less limestone soil.

Mr. Pearse—In our lands north of here, of course it is sandy and clay loam, though there is a good deal with limestone around the edges. These high lands are exposed right on top. Would you think there would be any use trying there?

Mr. Bingham—Of course they are a long way from the water influence, and there will be seasons when the winter is cold, they will winter kill.

Chairman Imrie—They do not seem to hurt in the winters.

Mr. Bingham—Then the soil ought to be all right.

Mr. Campbell—My apples kept very well. I had some forty or fifty bushels and they kept all right, but there are dark spots on

them that look bad, it looked like mildew.

Mr. Bingham—I think it is what they call a late scab formation. Can it be washed off?

Mr. Campbell—I do not think so.

A Member—I have tried to polish that off. I took a rough cloth and rubbed them. I had the same trouble that Mr. Campbell did. You can rub it off a little, but it shows, the taint is there just on the skin of the apple.

Mr. Bingham—Yes, it is late scab, probably comes from the heavy dews at night. The only remedy for that is good, thorough spraying with Bordeaux mixture and to thin out the tree so that it dries quickly after rains and mornings after heavy dews. Spray should be applied to winter apples, about five applications, the last one along some time in the middle of August, or towards the last part of August. The Northwestern Greening is subject to this late scab and nothing will prevent it but spraying well and pruning to thin the top. The first application comes along about the time the buds burst in the spring, and all these applications are for the control of scab. The Snow, the Northwestern Greening, the Wolf River, all of the late sorts, are subject to that same condition, if they are not pruned out thoroughly, so there is a good circulation of air.

A Member—Would you advise picking out the buds of small trees, say three or four years old, so as to keep them back?

Mr. Bingham—No, I never bother to take the buds off. You see a tree full of blossoms will only bear about what the trees can support. If there are a hundred blossoms, all of them will blight except probably about four or five; they will just set and then fall.

A Member—Is not the Northwestern Greening subject to dark colored spots in the apple itself? It is with us.

Mr. Bingham—It gets a little brown around the core, when it gets past the season, it shows it up around the core first and does not show on the outside.

A Member—I notice some people recommend the wrapping of trees with burlap. What do you say to that?

Mr. Bingham—I never have used it, but I should judge it would be all right. Those things make rather an expensive process when you come to a large orchard, but in a farm orchard it is a very reasonable proposition, you can easily do that, and it certainly is better than tar paper. Rye straw will keep the rabbits away, or even mice. When we first started planting trees in Door county, we had some trouble with woodchucks and rabbits. We dipped some rye straw in Bordeaux mixture and tied it around the trees, cut the rye green, tied it in bundles, or took rye bundles and threshed the grain from the heads, and used the straw as tree protectors.

Mr. Convey—We have a lot of bran sacks; we cut them in strips about four inches wide and wrap them around like a bandage.

Mr. Campbell—About what time would you pick the Northwestern Greenings to get the best results in keeping?

Mr. Bingham—With us, we pick the Northwestern Greenings along about the 10th to the 15th of October. Sometimes we have cold weather by that time. We aim to pick just as late as we can before there is danger of freezing.

Mr. Campbell—A light frost won't hurt them. I want to say about mice, I never have been

bothered with mice if I trampled the snow solid about my trees.

Mr. Bingham—Mice will never bother when there is no snow. We find mice seldom work off the ground. We have found them sometimes when the snow was very deep, coming up to where a large quantity of weeds and weed seeds had drifted together. In that case they might work above ground between the layers of the drift. Tramping the snow is a good practice.

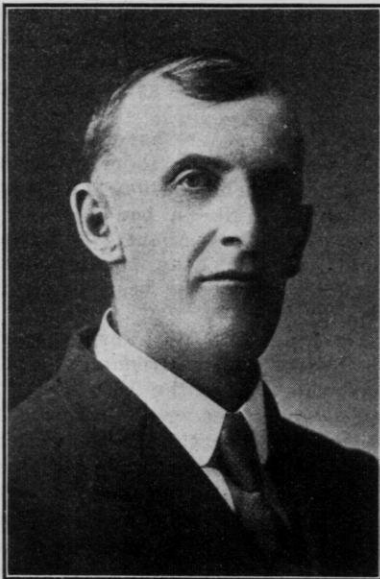
A Member—I was down in Walworth county this fall, about the first of September, and there on Big Foot Prairie, it is almost as level as a house floor, I noticed the top

soil is a kind of sandy loam and anywhere from one to three feet into that is pure sand gravel, and I saw the finest orchards and apples there that I ever saw in my life. The trees were covered as full as they could be. I think that coarse gravel is the finest stuff for orchards. It is not limestone gravel, it is white gravel.

A Member—The biggest trouble in this country is when a man plants an orchard on a flat piece of ground, the water doesn't get away fast enough and it will drown the young trees unless you ditch between your apple trees. I couldn't raise apples until I made a dead furrow between my rows.

SMALL FRUITS

W. H. Hanchett, Sparta, Wis.



Mr. Hanchett

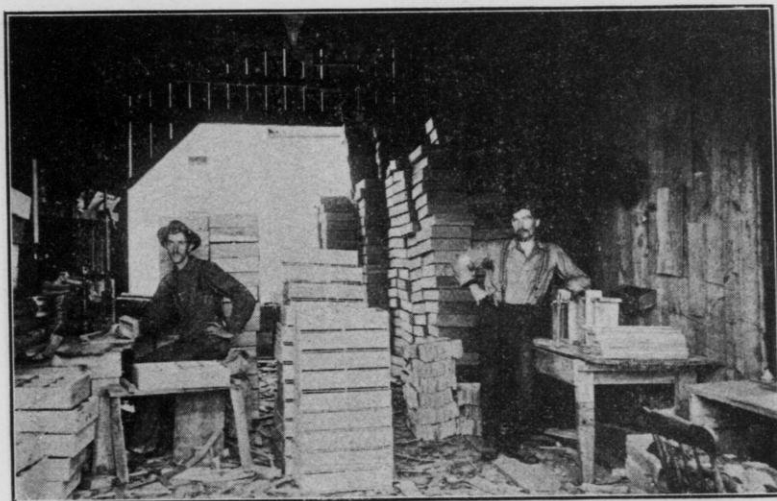
The subject of small fruits conjures before my mental vision scenes of boyhood days and thoughts of inspiring hope implanted in a boyish heart. I see a boy about ten years of age, trudging homeward as the sun is sinking in the west. He is tired, for he has been working hard all day beneath the broiling sun, and yet his eyes are sparkling and his face is wreathed in smiles, for tightly gripped in his boyish hand is a bright silver quarter which he has received in payment for his day's toil in picking eighteen quarts of nice, ripe strawberries, and he is mentally calculating how long that strawberry harvest is going to last, and how many of those quarters he is going to be able to add to this first one before the season is over, and as an approximation is reached, he sees visions of new school books which he knows he is going to

need, and he knows full well that the family finances are in such a state as to make the purchase of them a serious matter, and our boy is happy over the prospect of earning them himself, and he is hoping he may earn enough more to buy a story book as well.

The next evening we see the same boy again trudging homeward. He

care with which he followed the bosses' instruction has been the cause of his discharge, for had he been less conscientious in his work, he might have attained the speed needed to win the approval of the boss.

He is trying to be brave, to hide his disappointment and look unconcerned, but when he reaches home



Getting Berry Boxes Ready for the Harvest.

is again tired from a hard day's work; he has another quarter tightly gripped in his hand, but instead of his face being wreathed in smiles, it is drawn in pain and there are tear drops glistening in his eyes, for his visions of the evening before have been rudely brushed aside and he is now facing the grim reality of having lost his job, for the boss has told him he cannot bother with boys as he has a plentiful supply of faster pickers. His very soul is smarting under the injustice of his discharge, for he had been very painstaking in his work, and now he realizes that the very

his mother, seeing the troubled look in his face, inquires the cause and in a voice choking with sobs he pours out the story of his discharge.

That selfsame evening, however, a new hope is planted in that boyish heart, a hope which he feels is founded upon the rock and beyond the blasting influence of the injustice of any boss, for this time he is to be master of his own destiny. His father in the family council has told him that he can have all the land he can clear of the second growth timber during the summer vacation for a strawberry patch of his own.

The next morning, bright and early, we see him, in company with a brother two years younger, marching forth to this new field of operations, armed with a grubhoe and an ax. His face is again bright with smiles and no fear of bosses troubles him, for he has now taken his place as one of the pioneers in developing an industry which is destined to perform an important

pioneer with a large family of children and few acres of developed land, in that it affords an opportunity of home employment for a considerable number on a small acreage and a large income from a small piece of ground. It also furnishes work for quite small children which they will enjoy and in this way give them an opportunity to help out on the family finances



Clearing the Virgin Soil for Blackberries. Farm of W. H. Hanchett, Sparta.

part in building up and equipping many happy homes in his community. The blood of the pioneer coursing through his veins makes his heart strong for the work and determination shines from every line of his boyish face, for now he is master.

My excuse for indulging in this bit of sentiment is in the hope that I may inspire some other boy to go and do likewise.

Small Fruit Culture Affords Home Employment

Small fruit culture is particularly adapted to the needs of the

without feeling that the rights of childhood are being taken from them.

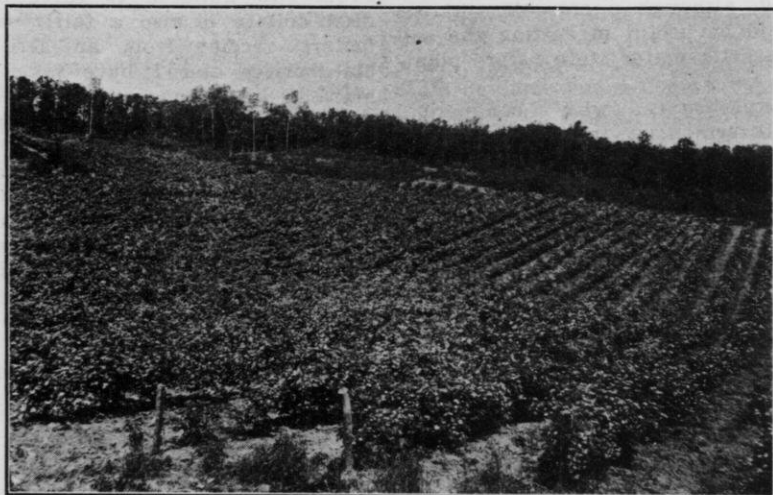
Great small fruit centers are like the empires of old, in that they rise, flourish for a time, then decline and disappear, their places being taken by new centers. Just why this is, the scientist has not yet studied out for us and we can only surmise that it is some soil condition, combined with fungous diseases and insect pests resulting from too frequent planting of small fruits on the same soil, which reduces the yield and quality of fruit below the profitable standard.

Among the small fruits which can be grown at a profit most anywhere in this State are the strawberry, red and black raspberries, blackberries, and in some localities the currant and gooseberry.

I will not take up your time with cultural methods, for most any nurseryman's catalogue which give you full directions. I will, however, drop a word of caution. Con-

and need some of the other varieties I have named planted beside them to insure fertilization. Senator Dunlap, Warfield and Beeder-Wood are the most popular of those named and are the ones most generally planted.

The varieties of red raspberries which have given best results in Wisconsin are Cuthbert, Early King and Miller. Of the black varieties



Blackberries in Blossom. Badger State Fruit Farm.

fine your planting to old and well tried out varieties and try out the new varieties only on a small scale until you have proven their adaptability to your soil and location.

Reliable Varieties

The varieties of strawberries which have proven reliable here in Wisconsin are Senator Dunlap, Warfield, Enhance, Lovett, Crescent, Bubach, Haviland, Beeder-Wood and Pocomoke. Of these Warfield, Crescent, Bubach and Haviland are imperfect in blossom

Kansas, Gregg, Plum Farmer and Cumberland have proven most satisfactory.

Of the blackberries, Ancient Briton, Eldorado and Snyder are the varieties most generally planted.

It has been found necessary in most parts of Wisconsin to give both raspberries and blackberries winter protection, which is best done by bending them to the ground and covering with earth.

Of the currants, Cherry and Perfection seem to be favorites and the Carrie and Downing gooseberry are the varieties most generally plant-

ed. These need no winter protection.

Planting and Fertilizing

In planting strawberries on new soil, it is best to raise a crop of potatoes on the ground first and thus reduce its wild nature somewhat before planting to strawberries. The cane berries, however, may be planted on the raw breaking if desired, although a crop of potatoes would be useful in getting the soil in a little better state before planting.

Experiments with commercial fertilizers on my farm, with one exception, have produced no results. The exception was in the application of two hundred pounds of nitrate of soda and six hundred pounds of acid phosphate per acre on very light soil. This same application on heavier soil gave no results, so we are led to believe that stable manure is the very best form of fertilizer we can use and that small fruit culture can best be carried on in connection with some line of live stock farming, unless one is so located that a large supply of manure is accessible from the city stables.

Financial Returns

The thing which the boys are going to be most interested in in connection with the small fruit subject is, what are the cash returns likely to be. This is a hard question to answer, for the returns from small fruit are a very variable quantity.

In the main, I consider a gross return from an acre of strawberries of less than two hundred dollars rather unsatisfactory and I have taken as high as eight hundred dollars from a single acre in one crop. At the present time, however, our returns per acre have dropped

down to the region of one hundred dollars, which we consider unprofitable and unless we can find some method of shoving it up around the two hundred-dollar mark, we would prefer to grow corn. From two hundred to three hundred dollars is a fairly satisfactory gross receipt from an acre of raspberries and I have taken as high as six hundred dollars per acre from one crop. From two hundred to three hundred dollars is also a fairly satisfactory receipt from an acre of blackberries and I have taken as high as one thousand dollars per acre gross receipts from one crop. These maximum figures seem almost fabulous and yet they are still possibilities toward which any boy can work through high cultural methods, and even though he may not reach them, by close attention to detail in the matter of culture his reward is reasonably sure to be very substantial, and there is always a possibility of setting a new high mark.

DISCUSSION

Mr. Corneliuson—How do you protect your strawberries in the winter?

Mr. Hanchett—By covering them early in November with a mulch, some coarse litter like straw, shredded corn fodder or marsh hay.

Mr. Corneliuson—Which is best?

Mr. Hanchett—I think where you have marsh hay it is the best; it furnishes a splendid protection, and it is free from weed seed. The great trouble with straw is that you generally have quite a supply of weed seeds that will germinate in the spring and choke your strawberries. Shredded corn fodder does fairly well, but it gets down too close to the ground. Rye straw is

a very good covering, it is usually free from weeds, although there may be some.

Mr. Scott—Be careful about timothy seed in rye straw.

Mr. Hanchett—Fresh horse manure, right from the stable, with plenty of straw in it, is good. Heavy cow manure I think is detrimental. Some of the best crops I ever raised came from a heavy mulch of stable manure.

A Member—How do you dispose of your crop?

Mr. Hanchett—At Sparta we dispose of it through a Marketing Association. All we have to do is to haul it to town, get our receipt and go home.

Chairman Imrie—What would you do if you had no Association?

Mr. Hanchett—In that case you would have to find a market.

Mr. Convey—It is the easiest matter in the world to get rid of strawberries. We had an immense crop once and my wife said, "We can't hire help enough to handle them." I went to work and telephoned all around, "We have strawberries you can have at eight cents a quart, we will give you dinner and keep your horses in the barn," and it worked elegantly; they are already trying to find out when we are going to have another good crop.

Mr. Hanchett—That is a natural situation of which a great many boys all over the State can take advantage. Very often a crop raised that way out in the country can be disposed of and sold very likely at a larger profit than the professional grower is getting where he is well situated as to a shipping market.

Mr. Corneliuson—How do you set out a new patch of berries?

Mr. Hanchett—On fertile soil, I put rows four feet apart and plants twenty-four to thirty inches in the row. The strawberry is something

that will respond very rapidly to a large amount of humus. You can get strawberries on most any kind of land, and you can get a far better yield and better berries by putting on plenty of fertilizer.

A Member—When do you set out your plants?

Mr. Hanchett—Early in the spring, as soon as the ground will work without being too heavy.

Mr. Scott—Is there danger of getting too much humus and manure in the soil?

Mr. Hanchett—I suppose that could be done, but not much danger.

Chairman Imrie—About how many loads could you safely apply to the acre?

Mr. Hanchett—Why, if you worked it properly, one hundred loads wouldn't do any harm; but anywhere from ten to twenty will do very well.

Mr. Convey—We use twenty loads to the acre, spread on with a manure spreader so it is even.

Mr. John Imrie—Do you advise the perfect berry?

Mr. Hanchett—I advise a berry that will do the best in your locality, on your farm, under your treatment. I think that the Senator Dunlap, which is a perfect blossom berry, has given pretty general satisfaction throughout this State. It has one fault, it will mat too quickly if you allow it to, if you plant it too closely, so that the plants will choke each other, and you will get very poor results.

A Member—Where do you get your plants and what do they cost?

Mr. Hanchett—The very best plants for you are the plants which you raise yourself. If you have a near neighbor who has varieties that you know are reliable, that is the next best thing, to get them from him, but be sure that you do not get year-old plants, or plants that

have fruited. You want plants that were grown the year previous.

A Member—Do you ever plant in August?

Mr. Hanchett—I have tried that, but with no better results than where they were planted the next spring.

A Member—Would you let them bear fruit the year you plant?

Mr. Hanchett—No, I wouldn't; cut the blossoms off.

A Member—Then how often do you renew your plants?

Mr. Hanchett—I would not attempt to get more than two crops of fruit off of one plant. If you want to be sure of strawberries every year, the best thing is to plant a plot every year.

Mr. Scott—Upon our heavier soils, where the weeds and grass grow, it is impractical to run a patch two years. We plant every year.

Mr. Hanchett—Yes, that is often the case on heavy soil, that the sod will crowd you out, and it is cheaper to raise a new plot than to have to clean out the old one after taking the fruit off of it.

A Member—And where do you get your new plants from; do you raise a bed specially for such plants, or do you get them from the bed which has fruited the year before?

Mr. Hanchett—Never take them from plants which have fruited. Take them from new plants which

have never fruited. We usually put out a propagating plot especially. Of course, in a garden plot you can dig up some plants from the outside of the row. They are perhaps not as strong as if you were going to dig up the whole row, but they are good young plants.

A Member—Can you raise those plants cheaper than you can buy them?

Mr. Hanchett—I think so, yes; the usual price of plants runs from \$3.00 to \$3.50 per thousand, and you can easily raise a couple of hundred on an acre.

Mr. Scott—I think they are higher this year.

Mr. Hanchett—I think most of the catalogues I have seen are slightly higher. The reason why I advise you to raise your own plants is the fact that you can dig them up and immediately transplant them so that they are not exposed to the air, as they are liable to be where you get them from the nurseryman. He will furnish you good plants all right, but their vitality is reduced during the process of being carried some distance, taking quite a long time.

Supt. McKerrow appointed the following named gentlemen as the committee on resolutions: W. H. Hanchett, Sparta; E. W. Campbell, Ellsworth, and George W. Davies, North Freedom.

THE ROAD PROBLEM IN WISCONSIN

A. R. Hirst, State Highway Engineer, Madison, Wis.



Mr. Hirst

What Has Been and Is Being Done to Better the Public Roads of the State

From the beginning of the history of the State up to very recent years, Wisconsin has left road construction and the payment of its cost entirely in the hands of the local units of government, neither the county (except in especial instances) nor the State seemingly taking any interest in the improvement of country roads or paying any share of their cost. There were in the State in the neighborhood of 1,175 towns, and each town was divided into from two to sixty road districts, and over each district there was a

pathmaster or road overseer. The general administration of all the road districts in the town was in the hands of a town board composed of three members who appointed the pathmasters and had general supervision over their work. Road taxes were almost exclusively paid in labor, and whether the results secured in any town were good, bad or indifferent depended almost entirely upon the general desire in that town for good, bad or indifferent roads. In the same town there were often found road districts in which the work was done in an excellent and economical manner, and other districts in which practically no work was done, with consequent almost impassable roads.

There have been many wild statements made as to the amount of money wasted under the old system. As a matter of fact, there was a large amount of money not wisely spent and spent at the wrong time, but probably a larger amount appeared on the tax rolls each year as road taxes supposedly paid that was never actually expended on the highways.

County Aid Laws

With an increase of population and wealth, and a consequent increase in public travel (and before the advent of the automobile) there grew up a realization of the fact that people living in one road district in a town have an interest in the condition of the roads lying in other districts of the same town, that people in a town have an interest in the condition of roads in other towns, and that people in a

county living in the cities and villages in the county have an interest in the conditions of the roads in the towns in that county, or even in an adjoining county.

The first move toward putting this realization into the form of legislation was the passage by the legislature of 1898 of a law which provided that when a town surfaced a piece of road with stone or gravel to the satisfaction of a committee selected by the chairman of the county board, the county should pay one-half the cost of construction and the town one-half. This law in various forms stayed on the statute books for ten years, and during this long period throughout the whole State possibly as many as twenty towns took advantage of it, but the result as to any improvement of the general condition of highways in the State was practically nothing. It is hardly conceivable that anyone would advocate a return to the system above described where the results secured under that system in ten years were practically nil.

The next step toward getting a wider distribution of the cost of highway improvement and increased construction was the passage by the legislature of 1907 of two county aid laws providing that counties must lay out a county system of highways, elect a county highway commissioner, provide the machinery for construction, and pay one-half the cost of all surfaced roads when towns provided the other half. These laws stayed on the statute books from 1908 to 1911, and twenty-two of the seventy-one counties in the State acted under them, either fully or in part. Some of these counties did excellent work, and some of the counties did work which was indefensible.

At the end of four years, as stated above, twenty-two counties were

acting more or less energetically, and in the last year of the operation of this law (1911) in these twenty-two counties there was constructed in the neighborhood of one hundred and twenty-five miles of road, costing about \$300,000. It will be noted that forty-nine counties in the State failed utterly to make any provision for carrying out the provisions of the county aid laws, even though the laws were compulsory and not optional. It is further true that of the twenty-two counties that did act, not more than half secured satisfactory results for the money expended. It is an interesting and remarkable fact that most of the counties advocating a change from the State aid to a county aid system are counties which never acted in any way, shape, or form under the county aid laws, nor constructed one inch of road during the four years they were in effect.

Operations in those counties which acted under the county aid law in an efficient way were so successful that it seemed desirable to remove the constitutional bar which prevented the State from giving aid for internal improvements, so that the State might participate in road construction. An amendment to the constitution was therefore proposed and passed in the fall of 1908. The amendment secured a majority of about 75,000 and carried every county save seven.

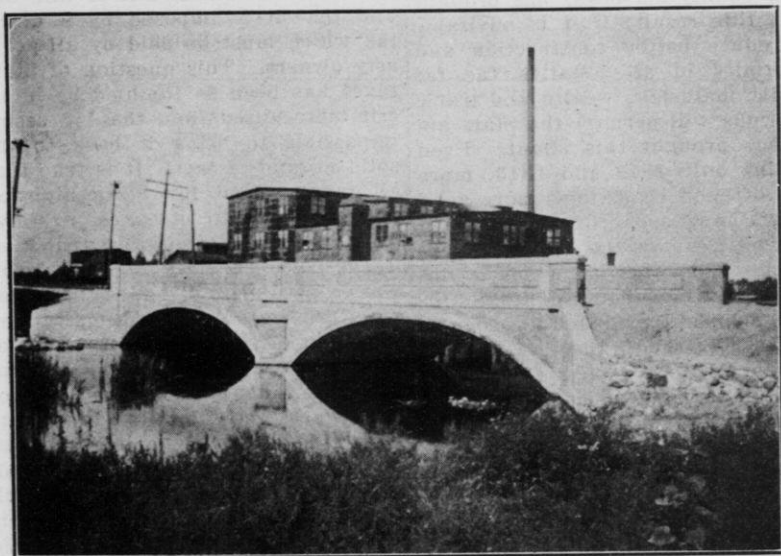
The State Aid Law

The legislature of 1911, realizing that the county aid law was not producing the wide-spread results advisable for the good of the whole State, passed the present State aid law. This law provides that counties should lay out the same kind of a system of highways, appoint a county highway commissioner, and provide the machinery and construct

the roads in much the same way as under the county aid laws which were repealed. A State Highway Commission, serving without salary, was created, and an engineering force sufficient to insure proper plans and uniformity and efficiency in construction was provided for. The law provided that for improvements on the highways laid out by

provided appropriations calling for amounts from the State in excess of the State tax levied upon them.

The intent of this law was plainly to produce an increase in the construction of modern highways through the State, and this intent has certainly been realized. In the first year of the law (1911) 530 towns in sixty-five counties applied



City of Algoma, Kewaunee Co. Reinforced Concrete Bridge,
2-40-ft. spans.

the county board, the town should pay one-third, the county one-third (unless the county board desires to make improvements under the county system, in which case the county pays two-thirds and the State one-third), and the State one-third, and provided for the levy upon all counties of a direct State tax of \$350,000, and further provided that if counties did not make sufficient appropriations, the taxes levied against those counties might go to those other counties which

for \$450,000 in State aid; in the second year (1912) 900 towns in sixty-eight counties acted and asked for \$830,000 State, and in the third year (1913) over 1,200 towns, villages and cities in seventy-one counties asked for \$1,550,000 in State aid. The construction in 1912 amounted to \$1,300,000; in 1913, to \$2,600,000, and in 1914 will amount to \$4,400,000. In 1912 there were constructed 469 miles of all types of roads; in 1913 about 1,000 miles, and in 1914 there will

be constructed about 1,600 miles. In the three years 750 new bridges will have been constructed.

If it is desirable to construct good roads and good bridges, the present State aid law has brought about this result; if it is desirable that construction should be wide-spread rather than confined to a few counties, the State aid law (as opposed to the county aid laws) has brought about this result; if it is advisable to produce better construction and uniformity in all counties (as far as soils, materials, wealth and traffic conditions will permit) the State aid law has brought this about. Even counting only 1912 and 1913, more miles of good roads, and more good culverts and good bridges have been constructed under the State aid law than have been constructed in the whole preceding history of the State.

The legislature of 1913 recognizing the success of the State road work in 1912, and meeting the demand of the towns and counties for a largely increased appropriation, appropriated \$450,000 to provide an additional sum so that the State would pay its full share of the cost of construction in 1913. The fact that this amount was immediately available for construction and was expended with all other moneys in 1913, while the State tax to produce this \$450,000 was not levied until 1914, has produced considerable confusion.

It is due to this fact that the State tax levied for highway improvement in 1914 on many of the counties is in excess of what they received back in 1914 from the State highway fund. It is simply that the counties are paying back into the State treasury their share of the \$450,000 distributed in 1913.

The legislature of 1913 made many amendments to the State aid law which materially strengthen it,

and also provided the sum of \$1,200,000 annually instead of the \$350,000 previously appropriated as the State's share of construction.

Source of State Aid

There is, of course, some criticism of the fact that the money provided by the State for road improvement does not materialize out of thin air, and that it is imposed by a direct tax which must be paid by all property owners. This question of State taxes has been so jumbled by indiscriminate discussion that it seems impossible to bring it back to the solid ground of fact. It is true that all taxes raised for State highway purposes are direct taxes, or have been called so. It is also true that if these direct State highway taxes were not imposed and the money from the State for road construction came out of the indirect revenues of the State, then the money now provided by indirect taxes for some of the other activities of the State would have to come from direct taxes and nothing would be gained.

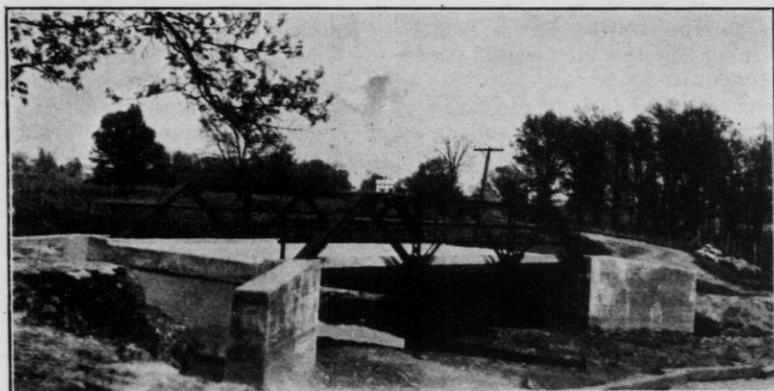
Whether the State highway work (or any other State activity) is worth while or is not worth while does not rest upon the fact that the money for it is raised by direct or indirect taxes, for in the end all taxes, whether direct or indirect, are paid in great part by the citizens of the State. The State aid law must stand or must fall upon its merits or demerits, and upon the results secured. The answers to the following questions will determine largely whether it should stand or should fall:

(1) Has the State Highway Law produced construction, and is the construction on roads that will, when completed, take the farmers and other citizens of the State from somewhere to somewhere?

That the State Highway law has

produced construction is evidenced by the tremendous increase in permanent construction under the State aid law in 1912 and 1913, and the construction contemplated for 1914, over anything heretofore done in Wisconsin. The fact that this construction is only on main traveled highways selected by the county boards which must run continuously from the railway stations and market towns into every town and must connect at the county line with the

cussion as to whether good roads are worth while. Probably, the easiest way to answer this question, without going into too much detail, is to state that every civilized nation has sooner or later found that a system of permanent roads was absolutely essential to its proper development. The movement swept Europe many years ago, until today there is no country in Europe which has not an adequate system of national highways reinforced by a sys-



Husebo Bridge, Town of Windsor, Dane Co.

systems of adjoining counties is sufficient indication that they do go from somewhere to somewhere. When the system of state highways is completed, there will have been constructed practically all of the main traveled highways in the State, and these highways will serve directly and indirectly a larger share of the population of this State than will be served by the completed system of State highways in any other state.

(2) Are there commensurate economic or social advantages produced to offset the expenditure?

It is rather turning the wheels back many years to introduce a dis-

tem of local highways, and still further down the line a system of highways in the smallest units of government. These three classes of highways in almost every European nation correspond quite closely to a system of State roads, a system of county roads, and a system of town roads in this State.

Commencing in 1892, the states in America took up permanent road construction on a State basis, and since that time one by one the states have joined, until today there is state aid in one form or another, or an advisory state highway department in every state save six. I think the fact that nation after na-

tion, and state after state, have found it necessary and advisable to attack their highway problem on a large plan is sufficient indication of the fact that Wisconsin, whose wealth averages well with that of other states, is justified in introducing such an expense. If there were no commercial, economical and social advantages produced sufficient to more than offset the expenditure, the European nations would have ceased building and maintaining their roads years ago, and those states in the United States which have taken up the idea would have abandoned it.

As a matter of fact, to our knowledge, no state which ever took up a state system of road construction has ever abandoned it (except possibly one for a two-year period) and no county which has ever built a large mileage of permanent roads, so that its people could appreciate their advantages, has ever abandoned it. This last statement is true in Wisconsin just as it is true in every other state. The fact that road construction is worth while is further indicated by the very large amounts collected and donated to the various towns to induce or force them to make certain badly needed improvements. At a conservative estimate, at least \$175,000 has been so donated in subscriptions, and if the construction of these roads did not produce material advantages, it would have been impossible to raise these subscriptions.

(3) Are the State roads well constructed?

We believe they are. We have been careful to make surveys and plans for practically all improvements and considered thoroughly the advisability of reducing grades by making cuts and fills, or by making relocations; have produced proper drainage and proper culverts, and

have built proper guard rails where the road was dangerous to travel. Even where the road was to be only a dirt road after completion, care has been taken to so grade the road that when the time comes to place on it stone or other surfacing, no change in the grades will be necessary. In other words, we have made every effort to grade, drain and culvert all roads so that this work need not be done over again, outside of the customary maintenance necessary on all dirt roads.

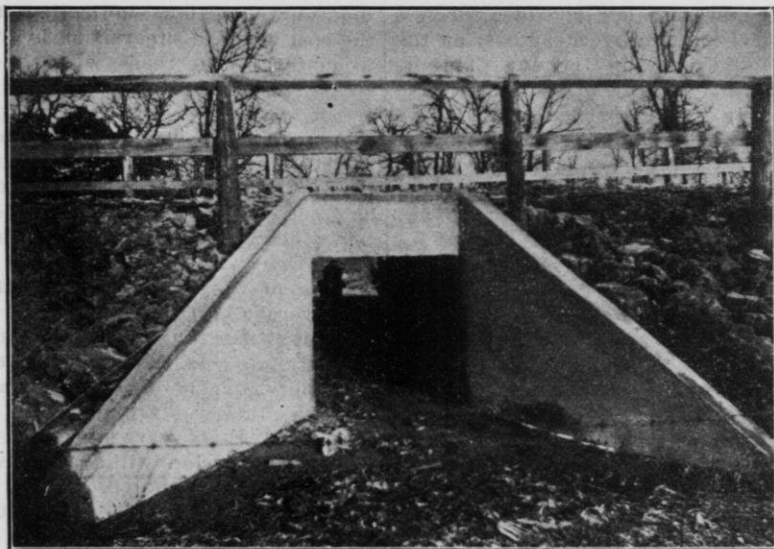
For surfaced roads in most cases the best available local materials have been used; they have been built along the lines approved by highway engineers throughout the world, and surfaces have been produced which will compare favorably with those produced in any other state. The Wisconsin Highway Commission has been careful to utilize local material as far as possible, as this material produced the cheapest road to build and usually the cheapest road to maintain. Outside of an instance of unsuccessful work here and there, which would be bound to happen on the 1,700 different pieces of road built during the last two years, I believe we can confidently say that the character of the work has been high class and adequate to meet the situation at each especial point.

(4) Is the cost of the work excessive?

There seems to be in a few instances a feeling that the cost of certain State road work has been excessive. Quite prominent citizens will make statements to the effect that one-third or one-half of the money available for certain work was wasted, or that they could do the work for one-half the cost, and some of these wild statements have caused considerable inconvenience. We wish to state the following facts: Mile for mile, square yard for

square yard, and cubic yard for cubic yard of dirt moved and material handled, the cost of State road work in Wisconsin has been less than the cost of similar work in any other state in the United States having similar labor conditions. Square yard for square yard of material placed, the cost of the State surfaced roads has averaged con-

is due to the fact that during the past two years there have been over ninety different county highway commissioners in office in sixty-eight counties, and that there have been selected and trained over three hundred foremen, and in this large number of men new to constructing modern roads, it would not be surprising that here and there one would



Town of Kendall, Lafayette County, New 4 ft. by 4 ft. Standard Box Culvert.

siderably less than the cost of similar surfaced roads built at the same time in the cities of the State under the contract system. Cubic yard for cubic yard of dirt moved, our average cost of thirty cents per cubic yard for all excavation, including rock, gravel, hardpan and other soils, compares favorably with the cost of excavation on public work of any character anywhere.

There have been and will be expensive jobs, as any reasonable man would expect there would be. This

be found who was inefficient and who consequently produced inefficient results.

We will be very glad to have, and wish to encourage, some of the people who can build roads in the winter for one-half of our costs put their words into action in the summer. If you have any of these brilliant road builders in your vicinity, you will confer a favor upon the State Highway Commission by persuading them to bid on State highway work and to file a bond for the

performance of their contract. We find that almost any one is willing to do work much cheaper than the county can do it until you try to tie them up to a good contract that will hold water and to give a good bond to perform the contract requirements.

(5) Is the law such that it can be and is economically administered?

The present law provides for less supervision and overhead cost on the part of the State Highway Commission than in any other State, save possibly two or three which have essentially a different system. There is merely enough machinery provided to make the proper surveys and plans for the work, or to see that these are prepared, and to insure enough visits on each piece of construction by a representative of the State Highway Commission to see that these plans are carried into effect. The European and eastern states' system of placing a representative of the State department on each piece of work has been entirely done away with, as its cost is prohibitive on work of the class we do in Wisconsin.

The amount expended by the State Highway Commission up to January 1, 1914, (which includes two and one-half years of its existence) was \$127,600, and this amount included the cost of engineering on all county aid bridges built in Wisconsin during that period, and the cost of 1,600 miles of survey made for work during 1912 and 1913, and 700 miles made in advance for work to be done in 1914. Even disregarding a proper subtraction for the value of the equipment on hand and the cost of surveys made for work not yet completed, the cost of supervision by the State Highway Commission up to that time was slightly less than three per cent of the cost

of the work performed under its direction, and not the thirty-five per cent which has been so handsomely credited to it.

For construction in 1914, which will amount to over \$4,500,000, we have a supervision fund of \$95,000, which is easily to be seen provided only sufficient funds to produce a supervision cost of slightly over two per cent of the money expended under our direction, indicating that the cost of State supervision is going to materially decrease with the increase in expenditures and the increased experience on the part of the county highway commissioners.

The cost of county supervision has varied from as low as one and one-half per cent to as high as eight per cent, decreasing almost in direct proportion with an increase in the amount of work done in the county. The average for the whole State has been less than four per cent, so that up to January 1st last, the total cost of supervision both by the county and the State was around seven per cent, and this year, inasmuch as county supervision will also show a decrease in percentage, it will be less than six per cent. The cost of supervision does not come out of the funds available by taxation or donation for any piece of work. It is payable out of the general funds of the State and out of the general funds of the county, so that every dollar raised by taxes or otherwise for any improvement is paid out for labor or material used in making that improvement.

The State Highway Commission serves without pay, save a small per diem in certain cases and their actual and necessary traveling expenses. The total cost of the Commission itself for three years has been less than \$1,000 per year.

These costs of supervision are again materially less than the cost

of supervision in other States under their plans of State aid, excepting in a few States which give practically no supervision to the plans or construction. Even the railroads, which are often quoted as organizations having a high degree of engineering efficiency, estimate the cost of engineering and supervision on their work as ten per cent of aid system and no figures are available from that State. As to a county aid system producing better results, we believe that we can confidently say that roads built under a county system (where each individual county carries out its own ideas as to types and methods of construction) are not as high a class as those built under the State aid system.



Gravel Road Town Casco, Kewaunee Co. Built 1912-1913.

the cost, and it will be recognized that their work is much more concentrated, and that many items of material are included in the cost of their work on which the supervision cost to them is practically nothing.

(6) Would a county aid system produce better results and at less cost?

This is rather a difficult question to answer, inasmuch as there is no State except Indiana operating in a large way exclusively under a county

This is best evidenced by the fact that when the counties in Wisconsin did operate under the county aid system, the results varied in the various counties from almost complete failure to results which would compare very favorably with our present results. Those last counties operated in accordance with plans and directions furnished by the Highway Division of the Geological and Natural History Survey, which, until the creation of the Highway Com-

mission, furnished free engineering service to the counties. I doubt whether there can be found any county which would not be willing to say that the State aid construction in that county is a better type of construction than that obtained under the county system in the same county.

Outside of the cost imposed upon the counties by the superior, (and we believe necessary) grading and culvert work insisted upon by the State Highway Commission, there could be no item of cost which would be materially changed under a county system as compared to the present State system. The items which go into the work are mainly materials, labor and teams. Their price is not fixed by any State law, but is just as much a local matter under the State system as it would be under a county aid law. The only way in which the cost of work could be materially reduced under a county aid system would be to do poorer work, and we do not believe many will argue that this would be advisable.

The only other place where the cost could be reduced in any possible way would be in the cost of supervision. The cost of surveys might be done away with and the roads built by guess as heretofore. No part of the cost of surveys has up to this year been imposed upon the counties. For 1914 work the State will pay about seventy per cent of the cost of all surveys and the counties thirty per cent. We do not believe it can be argued that the twenty-five or thirty dollars a mile which these surveys cost the county and State together cannot be saved and is not saved on practically every mile of road surveyed. In some cases the saving due to survey and proper relocation reaches into hundreds of dollars per mile.

The State Highway Commission could be done away with and a system of exclusive county control substituted. The cost of county supervision would remain about the same, except that the counties would have to furnish their own bookkeeping, contract and other forms, now furnished by the state, would have to furnish the surveys, plans and specifications now furnished in greater part by the State; would have to pay the full commercial freight on material shipped by railroads, which rate on material has been materially reduced, due to action by this Commission; the county highway commissioners would be deprived entirely of any consulting services, which most of them will state is invaluable to them; private engineers would have to be retained to design the bridges now built under the county aid and State aid laws, or they would be designed by the bridge companies, as was the case ten years ago with results with which everyone is familiar.

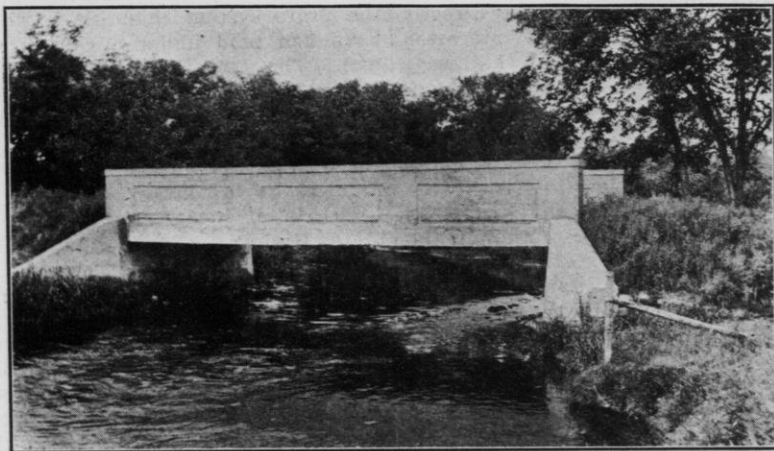
The saving which the Commission effected in freight alone for the years 1912 and 1913 has been over \$75,000, and will be about an equal amount in 1914.

(7) Should town boards be given more authority to direct the work?

A large part of the objections from county boards as to the State aid law has its origin in the fact that the town board in each town has very little power to dictate to the county highway commissioner, or the State Highway Commission, the exact character of the work to be done in their town, or to change methods of procedure without their consent. It is sometimes claimed that if the town chairman and town boards had a larger share of control, the work would be more efficient, but it is never claimed that it would be better. I think the best answer

to this objection is to be found in each man's candid answer to the following questions: How many town chairmen and how many town boards with which you are familiar have any especial qualifications as road builders, or have spent any great amount of time in the study of the subject, or have constructed any considerable amount of roads which have been of permanent value to the community?

consulted and given every possible opportunity to put their knowledge into service. I think it can be truthfully stated that few town boards which took an intelligent interest in State highway work in their towns can be found who were not consulted as fully as they desired about the work in their town, and I know that there is not a town chairman in this State who has not been requested by us to offer



The Kragh Bridge, Town of Waupaca, Waupaca Co. A clear span of 36 ft., 16ft. roadway, cost \$1,365. During the floods last spring a bridge about one mile up stream, consisting of three 12 ft. arches, was washed out because ice lodged against the arches, turning the water down against the foundations. This bridge passed the water without difficulty.

Our experience has been that town chairmen and town boards are for the greater part a much higher class of men than anyone would expect considering the amount of kicks and small compensation given to the office, but at the same time they are in few cases experienced road builders or even practical road builders and in these few cases where they are experienced road builders, they have been fully

suggestions and advice in regard to the plans for improvements in his town sent out by the State Highway Commission.

(8) Is the distribution of the cost as between towns, counties and the State a fair distribution?

I think the answer to this question is No. There has never been worked out in any State a proper system of distribution of the cost of highway improvement. It has

mainly been decided by distributing it in some guess-work fashion and keeping this distribution as long as the units affected would stand for it. Assessment of benefits to the abutting property and others directly benefited has never been successfully tried owing to legal and other difficulties.

The distribution of the cost in Wisconsin is as fair as has been devised in any state. It has always been assumed to be a fact that cities and villages, while not directly interested, are indirectly interested in the improvement of highways leading into them, and that it is entirely fair to have them pay a part of their cost. It is certainly true that in the case of villages and the smaller cities especially, it is the surrounding country that supports the cities and villages and not the cities and villages that support the surrounding country. They have grown up because the surrounding country was rich enough to support a trading center at that point. If the surrounding country were not rich enough to support a trading center, they would not have been founded, or when founded could not have continued to exist. The success or failure of the small cities and villages depends invariably upon the success or failure of the farmers in the adjoining country, and on this ground we believe that the assessment of a part of the cost of country highways against cities and villages is entirely fair. As a matter of fact, this distribution of cost has been recognized as advisable in every state, and it is a fact that very few villages or cities object to paying taxes for country roads construction, provided the money is well spent.

It might be well to point out that the State aid law provides practically for the imposing of a tax of

two-thirds of the cost of construction as a county tax, and for one-third the cost of construction against the local units of government, while the county aid laws in effect in the State heretofore provided for a county tax of one-half the cost of construction and a town tax of one-half, so that in those counties which have a large valuation outside of the towns, the towns have had a larger share of the cost of the work paid by others under the State system than they would have had paid under a county system. The fact that the legislature of 1913 included all villages and cities under five thousand as eligible for State aid has materially reduced this advantage, except in counties having large cities.

(9) Is it necessary to have a State Highway Commission to supervise the work?

This question has been answered quite fully under question (6). It can be demonstrated that the presence in the State of a consulting body with wide experience in road work and bridge work is of value to every unit of government in the State. We know that the work done under the State Highway Commission is superior to that done under any system of county supervision in effect in the United States, except where high grade civil engineers were employed as county superintendents. The engineer is just as much a necessity in road construction as he is in railroad construction. Counties, as a general thing, cannot afford to hire high-class engineering talent for work exclusively in one county, but by co-operating as units of the State, they can afford to hire high-class engineering talent who give the results of their education, ideas and experience to every county.

The one fact alone, that the em-

ployees of the State Highway Commission see work in many counties and distribute the knowledge gained and improvements made by the various county highway commissioners to other county highway commissioners, is in itself a sufficient reason to justify the existence of a State Highway Commission. In other words, the State Highway

community, will work out to the satisfaction of all the people in the State, whose nature permits them to be satisfied with anything; that the results secured so far have been efficient; that the cost of supervision has been reasonable; that if road improvement is desirable, then the law is desirable, and that any steps backward toward a county



Whitewater and Fort Atkinson Road, Town of Koshkonong, Jefferson County. Crushed Limestone from quarry, 1913. R. D. Royce, County Highway Commissioner.

Commission acts as a clearing house by which every new method in road construction is examined, and if found good, is distributed to every other county; while if there were no central organization, this distribution would not occur, or it would occur very slowly.

We believe that a careful reading of our answers to the ten questions above stated will convince any reasonable man that the present State aid law, if only given a fair oppor-

system of road construction or a town system of road construction without the standardization of ideas and methods produced by a central head, would be extremely inadvisable.

Other Roads

The State highway law, it is true, reached only the main traveled highways in the State, amounting to something less than twenty per

cent of the total mileage in the State. The problem on the other eighty per cent is just as acute as it was twenty years ago. There has been a general change from the labor tax to the cash system. Where this change in systems was not accompanied by a real desire for road improvement and by the formation of an organization in the town competent to properly plan and execute the work, the change from the labor tax to the cash tax system has produced results little, if any, superior to the old labor tax system, except that it has made every man pay his road tax.

It behooves the towns in the State to take up energetically the maintenance of the dirt roads in the town, which must remain dirt roads for a long period of years.

The only program that will accomplish any results in a program of raising a reasonable mill tax each year, taking a portion of this mill tax for permanent grading work on the worst places in the town's roads, a portion of the tax for permanent bridges and culverts, and a portion of the tax for the ordinary maintenance which must be carried on. Each year with some permanent improvement made as to grading and some permanent culverts installed, the problem of maintenance will become less and less until at the end of a series of years the problem will come down to keeping the culverts and ditches cleaned out and dragging the road with split log drags.

We have preached the use of the split log drag in this State for six years. Here and there we find a community which has taken up its use intelligently and persistently and that community today invariably has better dirt roads than the communities that have not used it.

If the persistent use of this drag

could be made legally obligatory in every town, the dirt roads in the towns could and would be kept in good condition for practically every month in the year, but as long as towns insist upon confining their road construction to a day or two of work each year on every mile of road, and as long as this day's work consists of running over the road in the dry season with a road machine and spoiling an otherwise fairly good center surface, nothing will be accomplished. Before the road drag will accomplish the desired purpose, roads must have a slope from the center of the road into each ditch; the ditches must be so dug that they will carry water into some culvert or other point where it can get away from the road, and the surface of the road must be kept smooth by the use of some smoothing tool so that deep ruts do not form to hold and carry water.

These few rules are simple, but we will guarantee that if they are carried into effect in any town having a soil suitable for the use of the split log drag, the general condition of the roads in that town will be astoundingly good and satisfactory, even to those who have been used to throwing up their hands and saying that any system of maintaining dirt roads would be a failure.

Conclusion

If there is one topic in the world that every man deems himself able to discuss intelligently it is the topic of road improvement. In so much discussion there is bound to occur wide differences of opinion as to how best to proceed to get the best results. We believe that there is a practically united view that if anything permanent is to be achieved it must be achieved along

the general lines now pursued in Wisconsin. Those who really favor road construction may have honest differences as to less important details, as to procedure and construction, but it is necessary for each and every one to yield some of his pet hobbies for the good of the whole proposition. We believe that if every man who honestly desires road improvement will co-operate with the State Highway Commission and the County Highway Commissioner in his county to secure proper and permanent and economical results, the present law will work out to the satisfaction of all concerned—as far as it is possible for any one law to suit diversified conditions in a State and the diversified ideas of its citizens.

DISCUSSION

Mr. Brown—I am not going to attack the State Aid Law, though I have criticized our State Highway Commission, but I will not do that when the Chief Engineer is around. There are two things I have criticized, not the theory, the theory is perfect. The first point is that our State Highway Commission has forced too high an ideal upon us, and the second point is, that they have enforced too great a task, a greater task than they need to have undertaken.

Mr. Hirst—Do you mean by your first criticism that we are trying to build too high a class of roads; which means essentially that we are doing too much grading, too much culvert work and doing generally too good a class of work?

Mr. Brown—That you are trying to do so much at the start.

A Member—That the work is too expensive.

Mr. Hirst—These are two differ-

ent ideas. As I understand the gentleman who spoke first, we are designing too high a class of roads for some of the counties, while the other gentleman says that the work as planned is too expensive.

Mr. Brown—We are not able to do as expensive work as is laid out by the Commission.

Mr. Hirst—We send out to every town chairman in this State a plan for the work in his town, showing the present road, the new grades and the culverts. We send out with those plans a request to each town chairman that if for any reason he has any objection to those plans, he take it up with us before the work is started and if any alterations should be made we would be glad to make them. We have sent out plans for seventeen hundred miles and we have had objections from only three town chairmen before the work was started. We gave every town chairman—the County Highway Commissioner is glad to give any man an opportunity to look over the plans for the work, and if they are excessive, if they can be modified, we are glad to modify them, but we will insist upon reasonable grades, on reasonably safe hills and on good culverts, and you will have to drive us out of business to drive us away from those three points.

A Member—I would like to ask what you would consider a reasonable grade?

Mr. Hirst—A reasonable grade is just what the term implies; a reasonable grade considering the topography of the country we are in and the conditions of that particular piece of road. We consider in Milwaukee county, for instance, a reasonable grade is a four per cent grade, and in Pierce county, I would say in general that a reasonable grade was an eight per cent

grade, though in some cases we have to take even ten or, in extreme cases, twelve feet per hundred. It is absurd to attempt to set any standard grade for any one State or county, or even for any one town. It depends entirely upon the conditions in the town, its valuation, the travel on the road, and other things.

Mr. Thomas—In your opening statement, you stated that universally the opposition apparently came from the politicians. Isn't it true that it comes from the taxpayers?

Mr. Hirst—I made the statement, not exactly as you state it, that it was surprising the uniformity with which everybody, as well as the politicians, tried to blame all the increase in the taxes upon the State highway work. For instance, we have had quite a prominent gentleman stating that the greatest increase in the State taxes was due to the increase in the State highway tax. It is true; the greatest one increase in the items levied for State taxes is in the State highway tax, but the State highway tax does not form the greatest part of the total increase in State taxes. That is a different proposition. The increase in State taxes this year for the State highway purposes accounts for over twenty-five per cent

of the total increase in State taxes. The seventy-five per cent is due to other causes.

Mr. Thomas—Mr. Hirst made a sort of challenge in the matter of doing the work by contract. He says that any one that thinks he can do the work cheaper than it is done at the present time may submit bids. I think I know of cases where that has not worked.

Mr. Hirst—If we let contracts, it has to be done in either of two ways. As you all know, there is always a definite amount of money for the improvement and never a definite amount of road to be built, so that in making a formal contract, we have to draw up plans and specifications for the work and advertise the work for letting, and let it either on a basis of so much per cubic yard for moving the dirt, or we let the job of grading the road from here to here for a lump sum to be paid when the work is done according to the specifications. If any of you gentlemen want to take contracts this year, just report to Mr. Crownhart, who will be glad to furnish you with plans and specifications for any road and let you the work if the bid is satisfactory.

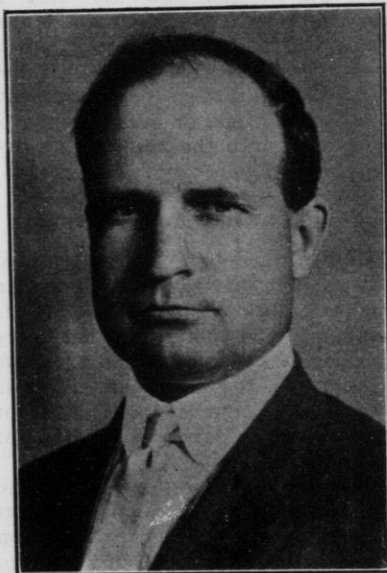
Recess until 1:00 o'clock same day.

WEDNESDAY AFTERNOON SESSION, MARCH 18, 1914

The convention met at 1:00 o'clock P. M., Supt. McKerrow in the chair.

FARMERS' CLUBS

**A. D. Wilson, Director Agricultural Extension and Farmers' Institutes,
St. Paul, Minn.**



Mr. Wilson

We believe in the farmers' club because it develops the people. It tends to bring out the best there is in a community, and to get people ready to act concertedly for their own betterment. It is an ever-ready means of taking up and studying independently any matter of importance to the community. It makes the work of the unscrupulous promoter unprofitable and aids in

any movement that is for the real interest of the community. It makes any new movement undertaken the work of all the people, rather than something to be forced on them by someone from the outside. A farmers' club is needed in every community.

What a Farmers' Club Is

A farmers' club is an organization of the people in any community for the improvement of themselves, their homes, and their community. It should include in its membership the whole family, men, women and children. Two or more families may constitute a successful farmers' club, but it is best, wherever possible, to include all of the people in the community. A rural school district is a suitable territory to be covered by a farmers' club. Meetings are held in the homes of the members, in town halls, or schoolhouses. There are many advantages in having the meetings at the homes of the members wherever it is practical to do so. The territory should be small enough so that all of its members can conveniently get together.

Advantages of a Farmers' Club

A good, active farmers' club will do for a rural community just what

a good, active commercial club will do for a village or city, namely, it will tend to secure the united influence of the community to bring about any desired improvement, and further, it will unite the community to oppose anything that is not for its best interests. We can conceive of no way in which a farmers' club can be detrimental to a community, while we believe that there are at least three ways in which it may be helpful, (1) socially, (2) educationally, and (3) financially.

Social Advantages

People are essentially social beings. They are not usually happy when isolated, and do not develop properly except in groups. Life on the farm tends to keep people too much to themselves. A farmers' club that will bring the people together monthly or semi-monthly furnishes a very desirable change from the ordinary routine of farm life. Everyone is interested in making the most of himself and his life. An important part of one's pleasure and development comes from meeting people and gaining the ability to mingle with them freely, without which one cannot appear at his best or get the most out of life, either socially or in a business way.

One needs to get away from his own work and home and get an opportunity to see it from a different angle. As a rule, one is better satisfied with his own conditions when he sees how others live and do. A better acquaintance with people usually results in more tolerance for their shortcomings. Many times when left to ourselves we begin to think unkindly of our neighbors and really believe they are not what they should be. Usually a

closer acquaintance and a clearer knowledge of their trials and struggles shows us that they are really better than we had thought them to be. A community in which people are interested in each other, know each other, and are boosting for each other and for the community, is a much better place in which to live than in a community in which there is mutual distrust. As a rule, knowledge of one another increases confidence. Play is an important part of one's life. One cannot do his best if every minute is devoted to work. Relaxation and pleasure are absolutely essential to good living. Clubs that will bring some entertainment, social gatherings, or other means of amusement into the community, are very important.

Educational Advantages

A good farmers' club may be of the greatest possible influence in broadening the knowledge of its members. The community has more information than any one of its farmers, and the club meeting tends to give each member the benefit of the knowledge and experience of every other member.

Another valuable feature of the club and club programs is the fact that the members when called upon to speak are put on record, and to maintain their dignity in that community they must live up to that record. For example: if a farmer is asked to tell how he has succeeded in raising the best calves in the community, he will certainly state the very best method he knows of raising calves. After going on record as standing for the best methods known in calf-growing, he certainly cannot consistently do less than put into practice on his own farm the system he has advo-

cated. He has established his own standard, and must live up to it.

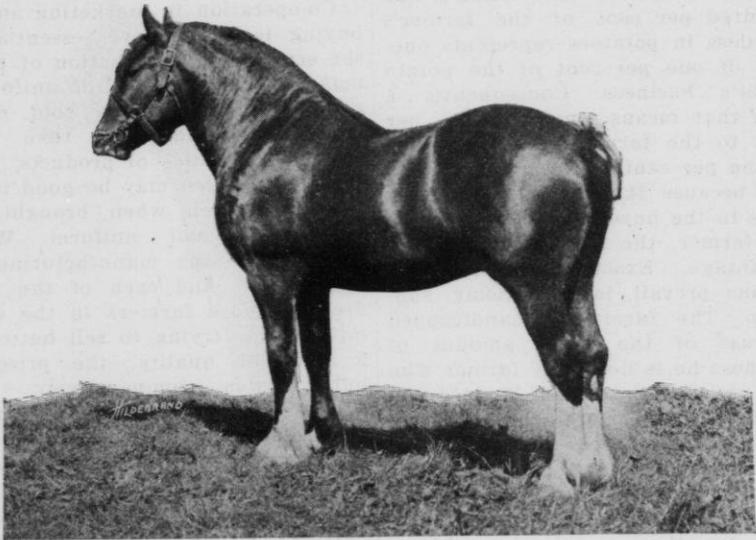
Club Work a Stimulant to Study

Being called upon to present various topics at club meetings stimulates study. No one farm or community has in it all that is good along all lines and being forced to study and look into what is being done in other places increases the

occasionally to bring in outside ideas and inspiration.

Community Problems

A discussion of the various problems of interest to the community always tend to stimulate every good, live citizen to desire better things, and to make a greater effort to secure them. Any one who has confidence in people and in his com-



Champion Clyde Stallion, Wisconsin State Fair, 1914, owned by Jas. Van Etta, Lima Center, Wis.

general knowledge of the community and of each individual therein.

Outside Talent in the Meeting

A farmers' club may increase the general knowledge of its members by bringing in outside talent. Business and professional men from the nearby towns or villages can be prevailed upon to address the club. Speakers from the University or the College of Agriculture and other public institutions may be secured

community believes that almost all good things are possible if the necessary effort and determination are put forth to secure them. If a club can succeed in arousing in its members a desire and determination for improvement in the community, better schools, better roads, better homes, better live stock, better farms, and better people are all possible.

Financial Advantages

Business is now done in this country on a large scale. Millions

of dollars and thousands of people are used in great enterprises. A farmer usually deals with people representing business interests larger than his own. As a rule, in business enterprises he deals with men who have the advantage, simply because the transaction means more to the farmer than to the other fellow with his wider field. For example, a potato buyer in a community may buy potatoes from two hundred farmers. What is one hundred per cent of the farmer's business in potatoes represents one-half of one per cent of the potato buyer's business. Consequently a deal that means one hundred per cent to the farmer means one-half of one per cent to the potato buyer, and because the deal means very little to the buyer and very much to the farmer, the farmer is at a disadvantage. Exactly the same conditions prevail in purchasing supplies. The farmer is handicapped because of the small amount of business he is doing. A farmer who can use two dozen self-binders can purchase them more cheaply than the man who uses but one. The farmer who can sell many carloads of farm products of one class can get a better price for his products than can the one who has only a wagonload or less to market.

Co-operation or Peasantry

There seems to be but two solutions to the problem of putting the farmer on an equal business basis with those with whom he has business outside of the farm. One is to increase the size of the average farm; the other is to unite the interests of several farmers owning farms of ordinary size for purposes of outside contact, in both buying and selling. The latter plan is decidedly preferable, because it does not involve the landlord and tenant

or landlord and hired-help system, but makes possible the maintenance of the family-sized farm, which is probably one of our most important American institutions. Co-operation will help to make possible the maintenance of the family-sized farm, operated by its owner, longer than it can be maintained in any other way.

Economy in Co-operation

Co-operation in marketing and in buying is, we believe, essential to the economical distribution of products. Large quantities of uniformly good products can be sold much more advantageously than can smaller quantities of products, each sample of which may be good in itself but which when brought together are not uniform. When every farm was manufacturing its own butter, and each of the hundred or more farmers in the community was trying to sell butter of a different quality, the price of butter was comparatively low. Where butter is manufactured in one plant, the manager of the creamery has at his disposal large quantities of a uniform product and can sell at the best possible price.

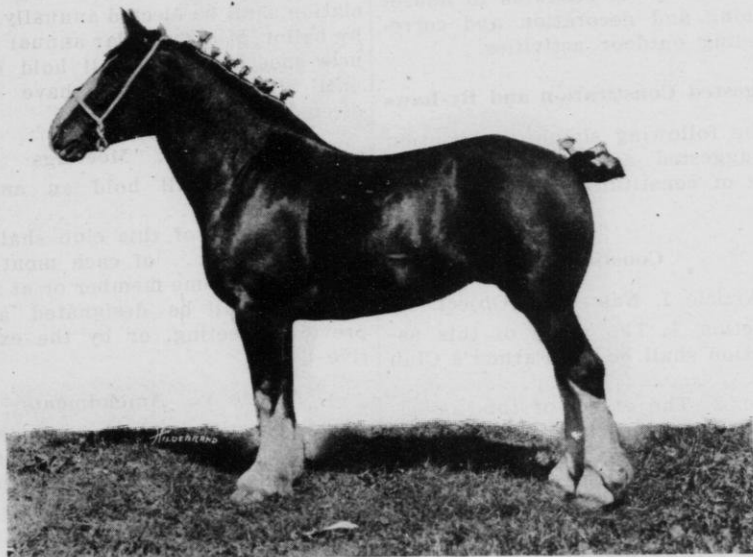
If the products of a community, such as grain, potatoes and live stock, can be made uniform by co-operation among the members of the community in production, and then these larger quantities of uniform products can be sold by one man, the same advantages that come to the large farmer, or have come to the dairy industry can be secured in other enterprises on the farm.

Club Promotes Co-operation

A farmers' club is the logical forerunner of co-operation. In the first place, it gets the people of a community acquainted and in-

creases the confidence of each in the other. This is absolutely essential to successful co-operation. In the second place, it provides a logical means for studying carefully any enterprise that it is proposed to undertake co-operatively, so that impractical undertakings are likely to be avoided. We believe the farmers' club is a vital factor in promoting co-operation for efficiency,

his neighbors to meet at his home or some other suitable place. If an interesting program, including singing and speaking by the young people can be arranged, so much the better. A dinner or supper should be provided, as eating together does more than any other one thing to break down reserve, formality and distrust. It is much easier to carry out a movement of



Champion Clyde Mare, Wisconsin State Fair, 1914, owned by McLay Bros., Janesville, Wis.

because it is not organized to defeat any particular class of people but to study intelligently any problem that may come up, and to take the action necessary to put any plan decided upon into effective operation.

How to Organize a Club

The organization of a club is not complicated or difficult. A good way to start the movement is for someone in a community who is interested to invite two or more of

this kind after a good meal has been served. The proposition should be talked over, and it is well if a considerable proportion of those present have discussed the matter beforehand, in private conversation. No one need have any fear of joining the club, because there is no stock sold and no possibility of loss. It is simply a mutual understanding that the people in the community will take up collectively questions of interest to the community, instead of struggling with them individually.

Meetings

Meetings should be held once or twice a month during the winter and as frequently as possible during the summer. Meetings in the homes of the members have at least two advantages: (1) attendance is stimulated by the feeling of obligation to the host and hostess, and (2) the knowledge that the club is soon to meet on a given farm or in its home is a great stimulus to housecleaning and decoration and corresponding outdoor activities.

Suggested Constitution and By-Laws

The following simple constitution is suggested as suitable, but the form of constitution is not important:

Constitution

Article I. Name and Object.

Section 1. The name of this association shall be the Farmer's Club of

Sec. 2. The object of this association shall be to improve its members, their farms, and their community.

Article II. Membership

Sec. 1. Any one in good standing may become a member of this club by paying the annual fee of \$.....

Sec. 2. When the head of a family joins the club any member of his family may become an active member without paying additional fees.

Sec. 3. One-third of the active members shall constitute a quorum for doing business at any regular meeting.

Article III. Officers

Sec. 1. The officers of this association shall consist of a president, a vice-president, a secretary, and a

treasurer. They shall be chosen because of their business ability rather than their popularity.

Sec. 2. The officers of the club become the executive board and shall constitute the program committee.

Sec. 3. The executive board may call a special meeting at any time by giving three days' written notice.

Sec. 4. The officers of this association shall be elected annually, and by ballot, at the regular annual business meeting, and shall hold office until their successors have been elected and qualified.

Article IV. Meetings

The club shall hold an annual meeting the Regular meetings of this club shall be held on the of each month at the home of some member or at such place as shall be designated at a previous meeting, or by the executive board.

Article V. Amendments

This constitution may be amended at any regular meeting by a two-thirds vote of the active members.

By-Laws

Section 1. The duties of each officer named in the constitution shall be such as usually pertain to his position.

Sec. 2. All other duties shall be performed by the executive and program committees.

Sec. 3. The club shall aid and further business associations among its members; particularly such associations as pertain to the purchase of necessary supplies, and the purchase and management of live stock and agricultural and garden products.

Sec. 4. From time to time the club shall give entertainments and

hold meetings under direction of the program committee, for the benefit of its members and of those whom they may invite to attend.

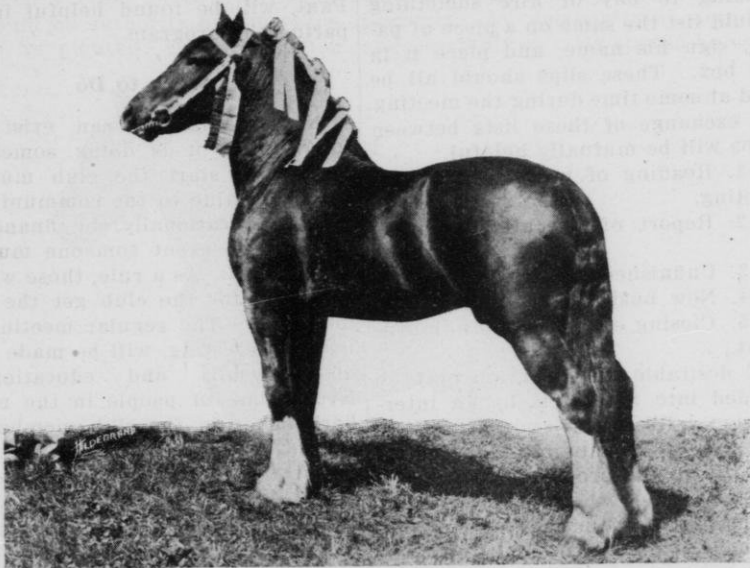
Sec. 5. Any members, after due hearing, may be expelled from the club by a majority vote of active members at any meeting, without a refund of dues.

Sec. 6. These by-laws may be

ident should previously designate the topic for response for roll call. The responses should be entertaining and instructive, but not too long. The following topic may be suggestive:

What I Have Done for the Club Since the Last Meeting.

How I Have Added to the Value of my Farm This Season.



Champion Shire Stallion, Wisconsin State Fair, 1914, owned by J. J. Mitchell, Lake Geneva, Wis.

amended at any regular meeting by a majority vote of active members upon one month's written notice.

Form of Program and Order of Business

1. Meeting called to order by presiding officer.
2. Instrumental music or a song by the club.
3. Roll call of members by the secretary.

Responses should take some other form than the mere word "present." The program committee or the pres-

ident should previously designate the topic for response for roll call. The responses should be entertaining and instructive, but not too long. The following topic may be suggestive:

What I Consider my Most Profitable Crop.

4. Reading and approval of the minutes of the last meeting.

5. Recitation by one of the younger members.

6. Discussion of timely farm topics led by a club member or some other speaker, followed by questions and a general discussion.

7. Reading or music.

8. Discussion of another farm or household topic illustrated by a demonstration if possible.

9. Question box. Timely and

practical questions should be previously prepared by members and placed in the question box. Each question should be read and answered separately, the president calling upon some member or members to answer them.

10. A "For Sale" and "Wanted" box may also be provided. A member having something for sale or wishing to buy or hire something should list the same on a piece of paper, sign his name, and place it in the box. These slips should all be read at some time during the meeting. An exchange of these lists between clubs will be mutually helpful.

11. Reading of program for next meeting.

12. Report of executive committee.

13. Unfinished business.

14. New business.

15. Closing exercises and adjournment.

If desirable, the program may be divided into two parts by an intermission. Readings and recitations may be of a humorous nature to add life to the program. Variety is essential, and whenever possible a discussion of woman's work should be made a prominent feature of the program.

It may frequently be advisable to limit the time devoted to the discussion of each topic, especially if speakers are likely to waste a great deal of time. Matters pertaining to the welfare of the club and the mutual benefit of the members should be given constant thought. Debates may be held occasionally to interest the young people. Where clubs include the entire family in the membership, a basket lunch will add to the interest in the meeting, but it should be simple so as not to be a burden to the housewives.

The main point is that there should be a good, live, snappy meet-

ing. Short, pointed talks followed by general discussions are very much better than long talks. Music, humorous recitations or readings, and topics of general interest, as well as the more serious problems of the community, should be given a place on the program. The monthly topics furnished by the Agricultural Extension Division, University Farm, St. Paul, will be found helpful in preparing the program.

Work to Do

No organization can exist very long unless it is doing something. From the start the club must be made of value to the community socially, educationally, or financially, and in any event someone must do some work. As a rule, those who do the most for the club get the most out of it. The regular meetings, if made interesting, will be made valuable socially and educationally. Every class of people in the neighborhood or in the club membership should be considered on the program. Wholesome entertainment is often as important as profitable business.

Pacemakers

A few clubs have adopted a plan of appointing pacemakers or specialists along the various lines of interest in the community. The following list is suggestive as to lines of work and methods of procedure:

Road Builder—When chosen, it shall be the duty of the road builder to spread the gospel of good roads in as many ways as possible. He should be prepared to answer all road questions that may come up at club meetings or at other times. He should endeavor to set a good example by attention to all highways adjacent to his farm.

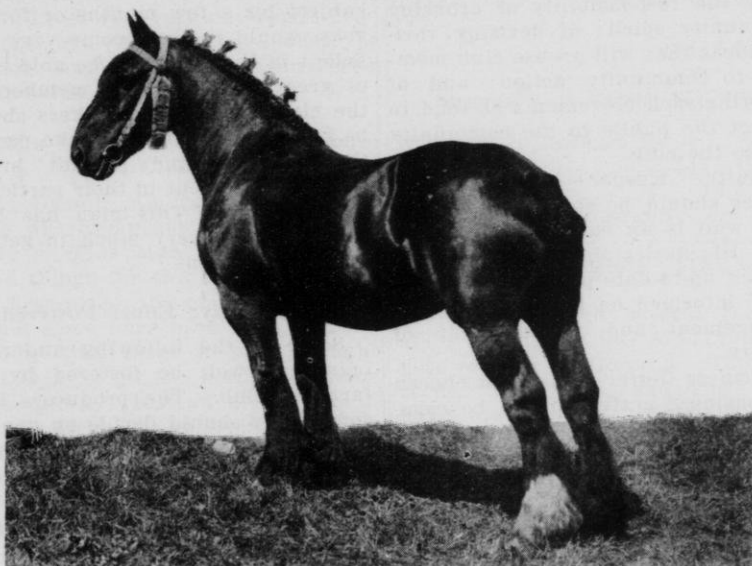
It is suggested that he, in conjunc-

tion with the other club members, designate two or three miles of adjacent highways for demonstration purposes, and endeavor to make it as good as possible.

Corn Crank—The selection of the corn crank should be made with a view to getting someone who is enthusiastic for corn, and who has made a marked success in corn growing. He should be authority on the varieties to be planted; the preparation

flower culture. She should be capable of giving advice as to varieties practical for farm growing, and easy to grow. She should also be able to advise regarding the purchase of seed, and might well arrange to get up club orders for seeds.

Dairy Wizard—The man selected for dairy wizard should be a man who has a dairy herd and ample opportunity to demonstrate methods and possibilities. He should be very



Champion Shire Mare, Wisconsin State Fair, 1914, owned by J. J. Mitchell, Lake Geneva, Wis.

of the seed and the land; the planting; and the subsequent cultivation. He should have a corn breeding plat. or a least a seed corn plat. His field of corn should be a model in every way, and a tribute to the locality.

Flower Queen—The selection of a flower queen should be made with a view of having some one well informed in the culture of flowers. She should be qualified to answer questions concerning this work and to make her home flower garden a demonstration of the possibilities in

well informed about dairy practices, and if possible should arrange to keep a dairy record of each cow in his herd.

Alfalfa Shark—The alfalfa shark should grow a field of alfalfa, should encourage its growth by others, and should make himself an authority on its culture, curing and use in his community. He should adopt the slogan "An acre or more of alfalfa on every farm," and should preach alfalfa in season and out of season.

Potato King—When elected, the potato king is expected to set the pace as to varieties to plant, preparation of the land, storing and preparation of the seed, time of planting, cultivating, harvesting and marketing. In fact, he is to be the club's source of potato information, and his field should be a demonstration of what may be done with potatoes in the locality.

The Booster—The booster should carry the responsibility of arousing community spirit; of devising various ideas that will arouse club members to community action; and of fostering such movements as tend to attract the public to the community and to the club.

Poultry Keeper—The poultry keeper should be some man or woman who is an enthusiast on poultry. His duties should be to maintain an up-to-date poultry plant, and to be informed on the general care, management and improvement of poultry.

Business Getter—The man chosen for business getter should be especially qualified along business lines. His duties should be to look after the marketing problems of the club, and to see what steps could be taken to enable the club members to get their supplies most economically.

Home-Maker—The position of home-maker should be filled by some woman in the club who is a successful home-maker and who can spend some time in promoting the idea of better homes in the community.

It is proposed that each club arrange to select several pacemakers, and that each pacemaker plans to carry on some demonstration along his line of work. The Agricultural Extension Division will assist each pacemaker in planning his duties and his demonstration work. It is suggested further that the club arrange for a demonstration day, at

which time the Extension Division will furnish speakers, the pacemakers will present reports, and a general inspection will be made of the demonstration and the club work.

It would be entirely practical to choose as many pacemakers as there are members of the club, assigning to each one some particular phase of the community activity in which he is especially qualified. Each of these pacemakers, by specializing on one subject for a few months or for the year, would really become very proficient in that line and be able to be of great help to other members of the club. These pacemakers should be ready at all times to take part in the program and present briefly some development in their particular line of work. This plan has been found to help very much in getting up live programs.

Co-operative Effort Fostered

Some of the following undertakings may well be fostered by the farmers' club. The producers in a community should decide on one variety of potatoes or other market crop to produce, and then find some way of marketing it jointly. One or two leading breeds of each kind of live stock should be adopted by the club. Pure bred sires may be purchased and used co-operatively, to the advantage of everyone. Feed, flour, cement and other supplies that can be handled in large lots may be purchased co-operatively, usually at a considerable saving.

The question of organizing a live stock shipping association is worth considering where live stock is an important factor. Home conveniences and a beef club for supplying fresh meat should be considered. When dairying is important, the organization of a cow testing association is valuable. In any neighborhood, community effort along the

line of road improvement is worth very careful consideration. Such matters as organizing a creamery, cheese factory, or farmers' elevator, the purchase of a stallion, or the introduction of a general drainage system for the community, should be considered by the club, and acted upon only after all the facts in the case are known. One of the latest attempts of a farmers' club is to organize a co-operative laundry in connection with a co-operative creamery. In short, every enterprise connected with the farms, homes, or schools may be profitably considered by the club.

Results Accomplished by Farmers' Clubs

At Dassel, Minnesota, a farmers' club was organized in the spring of 1908. This club has done many good things for the community. In the first place, the members decided to get some pure bred sires, but before getting them it was thought best to have all the herds tested for tuberculosis. Instead of each individual hiring a veterinarian independently, the club hired a veterinarian to test some three hundred head of cattle, thus systematizing the work and reducing the cost. For several years they have conducted work in testing their herds for milk production. This work has resulted in doubling the production in some cases without increasing the size of the herds. They have taken up and successfully carried out a plan of marketing their eggs in cartoons, through which system they have received considerably more for them than they would have received under the old system of marketing. Two years ago they reorganized as a farmers' corporation, and since then have conducted four lines of work: cow testing, egg marketing, live stock shipping, and seed grain marketing.

A farmers' club organized at Litchfield in 1908 took up live stock shipping. The following statements show their growth:

Summary for Five Years

Year	Carloads	Gross Receipts
1908	14	\$11,599 25
1909	35	39,569 27
1910	81	102,163 35
1911	104	114,764 56
1912	146	181,544 10
		<hr/>
		\$449,640 53

Summary of Report for 1912

Net paid to farmers for stock	\$171,190 59
Total expense	10,318 77
Increase of sinking fund	34 74
	<hr/>
Gross receipts	..\$181,544 10

At Deer Creek several farmers' clubs united last fall (1912) to dispose of their potato crop. They succeeded admirably, and since then have organized a potato shippers' association, have built a warehouse, and have also organized a live stock shippers' association. Both organizations are progressing successfully.

At Erskine a farmers' club combined the feed orders of its members, buying over one hundred tons, and thus saving over two hundred and fifty dollars.

At Chatfield, the farmers' club was an active agent in bringing about the organization of a co-operative laundry in connection with the co-operative creamery.

There are now in Minnesota more than three hundred farmers' clubs, alive and active, and the Agricultural Extension Division and Farmers' Institute Department are attempting to secure the organization of a farmers' club in every agricul-

tural township in the State. The social, educational and financial results from these clubs are very great. There should be a farmers' club in every rural school district in Minnesota.

I am sorry I haven't any more time before my train goes, but I certainly appreciate the interest you have shown, and want to assure you that while we feel very kindly toward Wisconsin, we have our heart set on beating you at the game of growing corn, dairy cows and hogs, and we are going to keep right at it until we do. I see I am on the wrong side of the line for talking that way, so I

will close with thanking you for your attention.

DISCUSSION

Mr. Campbell—How many of these shipping associations have you in the State of Minnesota?

Mr. Wilson—About one hundred and thirty.

Mr. Campbell—Were they all formed by the farmers' clubs?

Mr. Wilson—No, several of them have been formed by the American Society of Equity.

Mr. Martiny in the chair.

DAIRY DEVELOPMENT OF WISCONSIN AS A RAILROAD MAN SEES IT

Ford J. Allen, Chicago, Ill.



Mr. Allen

By thy lakes and streams are growing,

Wisconsin, Wisconsin,
Beautiful Jerseys, Holsteins, Guernseys,

Brown Swiss, Ayrshires,

Wisconsin, Wisconsin,
May they ever, ever grow and the
real milk flow and flow, and
make all states and countries go
to keep your pace,

Wisconsin, Wisconsin.

It has been my pleasure in days gone by to travel with the Live Stock Breeders' Association of the State of Wisconsin in co-operation with the University in the interest of more and better live stock, and in this way I visited your town, I think about two years ago, with some of these gentlemen, when as usual Mr. McKerrow was leading these meetings. He put me on the platform after the horse demonstration, knowing that I would run

down in about five minutes, and would then be out of the way for the cow demonstration to follow, but today I am following the topic "Farmers' Clubs", not the kind of club you used to apply when you thought of the railroads. You know that in former days the farmers had the idea that every railroad man had horns, but after we bumped up together and rubbed shoulders in this work, the horns are knocked off, and so the club spoken of has no further use.

It is that spirit of co-operation that is so essentially necessary among people,—among railroad people as well as farmers,—that brings about the better understanding. We recognize the fact that the railroads are dependent upon the farmers for freight to haul. You are the producers who furnish the freight which makes the railroad prosper. On the other hand, it is the railroads that develop the country. They furnish the means to place your produce upon the markets of the world. Thus it is seen that your interests and our interests are mutual. In the old days, if you could secure a free ride upon the trains, you felt it was a good thing, but now you pay your fare, not wishing to get something for nothing. You make us railroad men feel ashamed of ourselves when the ordinary course of our business, which takes us all over the country, makes us deadheads.

In these days, one of the most popular subjects under discussion in the State of Wisconsin seems to be dairying. Everybody's doing it, and that is why a railroad man is talking to you today.

What can be said that has not already been said? That is the question. It is, however, a subject never exhausted and never will be. It is as diversified as the interests of the State of Wisconsin itself. As

we look back over the years and reminisce, our thoughts naturally turn to a few men, who, seeing something of the necessities and possibilities of the future if certain lines were followed, got together. It has become a habit to refer to the year 1872, when Ex-Governor Hoard and several other "Old Wheel Horses" started something.

You know, my friends, that is the way to do things in this world, get together, co-operate. There is nothing that makes for success as does the pulling together with one common object. That is why today the people from other states and countries are looking to Wisconsin for pure bred Holsteins, Guernseys, Jerseys, and don't forget that the time is not far distant when it will be Ayrshires. She will some day be all the fashion, for fashions appear to change as to popularity of dairy cows the same as ladies' clothes, and Lord knows, it keeps us pretty busy to keep up-to-date with them.

Beginnings of the Dairy Movement

Well, as I was saying, the "Old Wheel Horses" started something. About that time the milch cow population was less than 400,000. They started to talk about pure bred sires and an effort was soon made to find out whether the cows were paying their board or not, and a little later along came Dean Henry and the "Cow College" so called. Farmers shook their heads and talked about "Book Farmers," etc. "Why not let well enough alone, father and grandfather got along all right. Their way was pretty good, in fact good enough for us," forgetting that father and grandfather had the virgin soil to deal with, that "Old Dame Nature" had stored up that which was necessary to raise large crops. But they soon began to draw from the soil larger

drafts than they were making deposits. What happened? "Old Dame Nature" wouldn't stand for it any more than the bank president stands for overdrafts upon the bank account and you know there is where you always aim to keep a goodly balance on hand. So Mr. Farmer soon learned that the Gospel Dean Henry and his associates were preaching was worth giving attention to. Main strength and awkwardness on the farm will not bring the results forever. Education is as necessary there as in every other business, hence the time has passed when mention is made of the "Cow College." Today much use is made of the knowledge obtained at one of the greatest colleges of the kind in the world. No more shaking of heads, no more talking about book farming. Dean Henry is no longer there, but Dean Russell is, and the great work moves on for the benefit of the whole people, and when people from other states are making pilgrimages to Wisconsin, as did a party of about sixty farmers from North Dakota last month, Dean Russell and his splendid corps of co-workers bent every effort to give them even more than they expected, in fact, the unselfishness of these men will never be forgotten by those North Dakota farmers.

Speaking of unselfishness, makes one think of Dr. Babcock, who, in the year 1890, gave to the world the Babcock test, a method of ascertaining the amount of butter fat contained in the milk; a machine that might have made the Doctor a multi-millionaire, but which he so unselfishly gave to mankind and which will ever keep his name before the world. By the use of this little machine today, every farmer ought to, and many do, know about the cows in his barn; whether they pay a profit for their keep, or are

mere boarders. This, if handled by the boy on the farm, with the little scales, ought to be a means of interesting and keeping him there.

Results of the Movement

But let us get back again and look at the milch cow population of today, which has now grown to something like 1,600,000. Do you realize that there was not a county in Wisconsin in the year 1913 that did not purchase pure bred stock?

Thus we see the results of a movement started forty years ago; all honor to those worthy seven men and others, who met in the year 1872 and organized the Wisconsin Dairymen's Association.

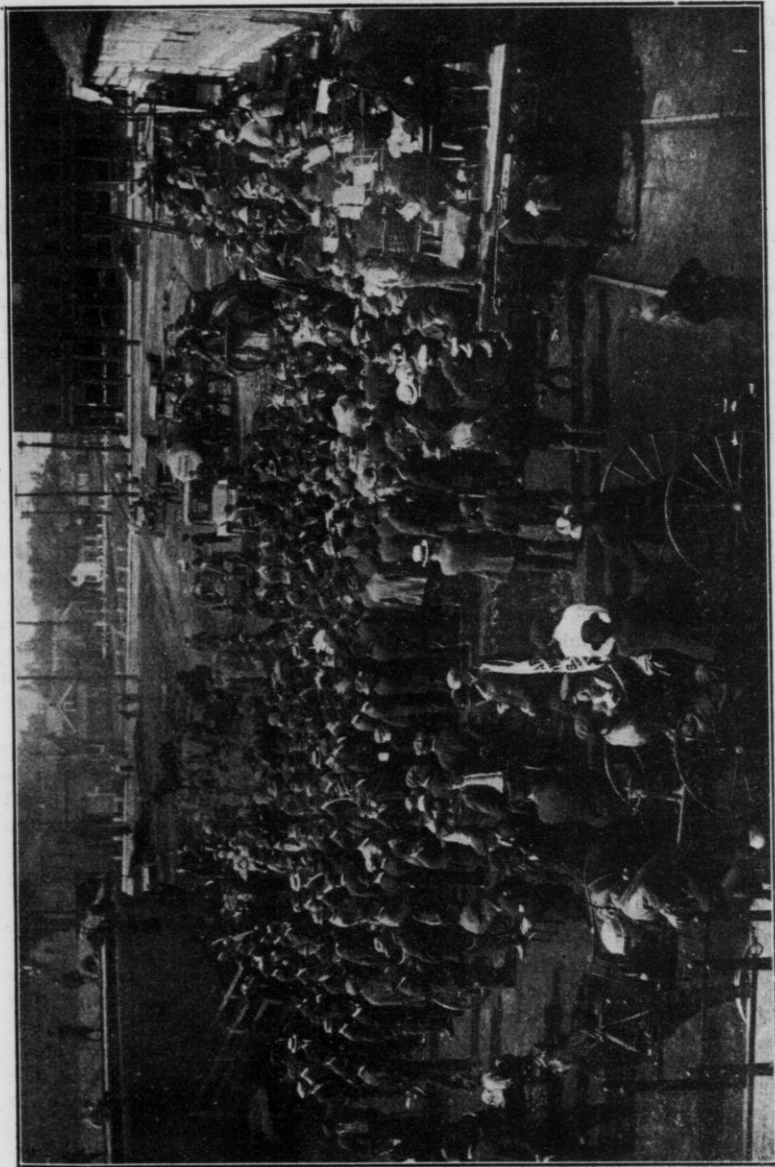
Now let us look at some statistics showing the value of dairy products. In the year 1890, in round numbers, the figure was about \$21,000,000. In 1910 this had grown to \$79,000,000. In 1912, the figure was around \$85,000,000, and it is estimated that in 1913 the value of dairy products in Wisconsin reached \$100,000,000, which, reduced to carloads, represents upwards of 15,000 cars, or a train over one hundred miles in length.

The Quality of the Product

So much for quantity, but what about quality?

In the Yearbook of the Department of Agriculture of the United States for the year 1911, we find that Wisconsin leads all her sister states by from one to three cents per pound for every month in the year in the price paid to farmers.

This would indicate that some potent force has been at work and that seed sown years ago is bringing about good results. In this connection I cannot refrain from mentioning the fact that the three largest co-operative creameries in Wisconsin during 1913 made 990,834 pounds, 948,540 pounds



Live Stock Special, Marinette, Wis., June 6, 1913

and 933,069 pounds of butter respectively, West Salem being the largest producer, next coming Baldwin and third Barron, and that three smaller co-operative creameries within a distance of fifteen miles along our railway produced a total of 1,132,092 pounds.

A Glimpse into the Future

One cannot help thinking, however, while thinking of what has been accomplished, of what the future has in store. You have built up your herds of dairy cattle to a high standard, but there are conditions facing us today that have never before stared the farmer in the face, and it is well to think of them.

Owing to the reduction in our tariff laws, butter is being sold in this country that was manufactured in Denmark, Siberia, Australia, New Zealand and other countries, and I am told that some of this butter scores well with that made in Wisconsin and other states.

I quote from an eastern paper, February issue: "The first lot of foreign butter that arrived in New York this season was 507 casks of cold stored Siberian from London. It was placed in bonded warehouse until the new duty went into effect. Since then numerous lots have come forward until the total imports to date aggregate 6,930 casks and 10,967 boxes. The total weight, figuring the casks at an average of 125 pounds and the boxes at 56 pounds, is 1,481,522 pounds. It is also interesting to note that of the imports thus far 5,837 casks were Siberian butter, mostly last summer's make, and of low grade. 7,969 boxes were cold stored Australian, bought on the London market, 1,004 boxes fresh from New Zealand, 1,085 casks fresh Danish, 2,014 boxes fresh Argentine,

and 23 packages from Southern Europe."

Now, friends, what does this mean to you? Direct competition with your Brother Farmers in foreign countries, and we have all heard a great deal about Denmark making the best butter of any country in the world.

Therefore, let this be the motto of every Wisconsin farmer from now on, "I will produce milk of the very best quality, in the very best manner possible, and by so doing give the buttermaker an opportunity to make the best butter produced anywhere in the known world."

Wisconsin has the record of furnishing over one-half of the cheese produced in the United States and of producing one-sixth of all the butter.

There is no question about the future. Wisconsin is only partially developed and there is great opportunity for growth. Quantity is all right, but be zealous about the quality. Make it your business to know that both quantity and quality are right.

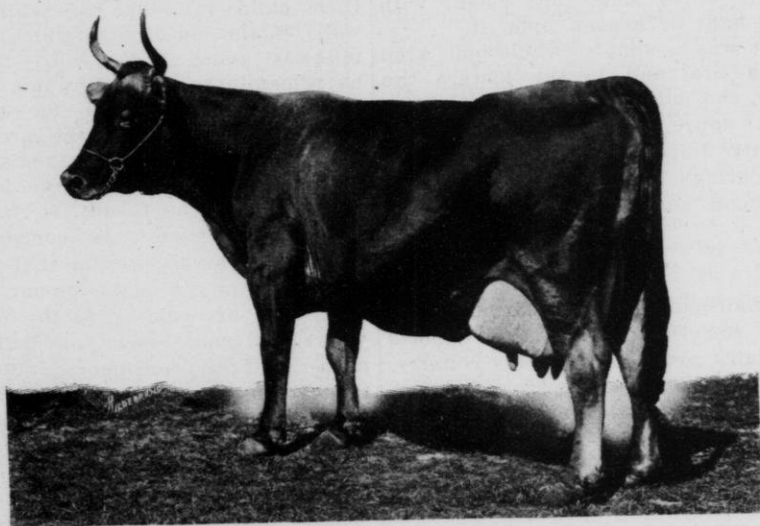
In closing I am going to repeat something that will not be new to you, but it is one of the finest things I have heard. It originated with the late Honorable H. C. Adams and was read by Mr. Emery at a banquet in Madison recently. "A Toast to the Queens of the Dairy."

"The civilized world pays tribute to the cow. She is one thing that men can always get something out of. She is one of the few stock concerns of the country that the bondholders have little chance to milk.

When she kicks, we can kill her.—a blessed privilege, which might have a larger range. She owns a business college and teaches men to keep accounts and figure profit and



Champion Brown Swiss Bull, Wisconsin State Fair, 1914, owned by J. P. Allyn, Delavan, Wis.



Champion Brown Swiss Cow, Wisconsin State Fair, 1914, owned by J. P. Allyn, Delavan, Wis.

loss. She is the symbol of contentment, the one thing needful in American life.

She is life itself to countless children stranded upon the barren bosoms and hollow hearts of a degenerate modern motherhood.

She comes in at evening, bringing with her the sweet breath of the meadows whose velvet and crimson clover mingled their fragrance in the dear old summer days.

You lean over the fence as she comes into the yard and stands quietly chewing her cud in the afterglow of the sunset which touches lightly the hills, and suddenly you drop out of yourself, your pains, your disappointments, your hopes, your pride, and become a boy again, barefooted, with the chores to do. You hear the faint tinkle of the cow bell upon a neighbor's farm. It is the keynote of memories of days of steady work, of nights of rest, of pleasure that had no sting of a world small but clean, with the light of heaven upon it.

It was a simple, wholesome kind of a life, and in the picture the cow, the mother of men, was a central figure, and always, whether dainty Jersey or lordly Shorthorn she brings back the golden days of boyhood and girlhood."

DISCUSSION

Chairman Martiny—Mr. Allen has said something about the imports of dairy products into this country. I would like to ask your opinion a little farther in regard to that. Is this matter going to seriously handicap the dairy interests of Wisconsin?

Mr. Allen—No, and for this reason; Wisconsin is going to wake up and have her butter score up around 100. The butter that ome

from foreign countries scores, I am told, as high as 94 and is laid down in the New York market fresh and fine, but I am not afraid of this country going back because the tariff has been cut down on dairy products. I do not think there is any reason to worry. We are all right and do not need a Chinese wall around us to keep us so, but what we want to do is to make it our business never to let any poor stuff which is to be fed to the people go out. The man who makes dairy goods should put them on the market in first-class shape.

The milk supply of the city of Chicago requires something like 35,000 eight-gallon cans per day, a large portion of which is shipped in bottles, bottled in the country. You farmers up here, who are right near the Twin Cities, want to make it your business when you are pulling those cows' teats to think for a minute of the cleanliness that is so necessary for the health of the little child (and the big child as well) in the big city, to which your milk is going. Let your motto be Cleanliness, Healthfulness and Thoughtfulness, as well for those who are going to eat the product that you are helping to furnish as for those about you. There is no danger about the future, so far as the dairy business is concerned. You are going to lead in that field and are going to make money, because you are coming to the point where, in some way, you will be nearer to the consumer, and the talk about the high cost of living will be heard no more in the land; the producer receiving a larger sum for his products, thus cheapening the cost to the consumer. My own idea of this cry is that it is due to the extravagance of the people rather than the cost of food we consume.

A Member—Mr. Allen, don't you think the rate on butter to Chicago is high?

Mr. Allen—My friend, I do not know just what that rate is. Do you? I think whatever it is, it is not high. If you will take the pains to figure out this rate in the cost of the product to the consumer, you will discover that the freight rate is the smallest item, infinitesimal in fact, and cuts no figure. You want your railroads to be kept in such condition that when you step in a train to travel you are going to reach your destination in safety and not be left in the ditch. I once heard Dean Henry say, "I never find any fault with the rail-

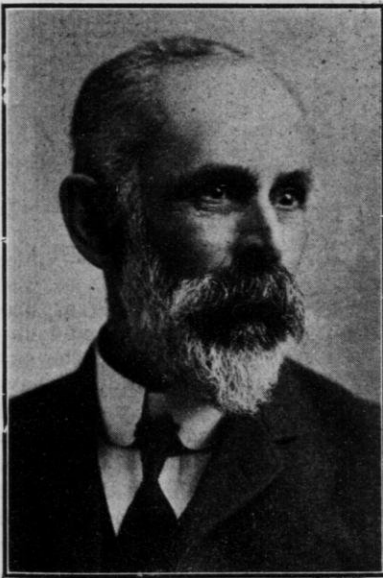
road rate per mile. I believe in giving them enough money to enable them to keep their road in first-class shape, so that when I get into a train I may feel that I am going to reach my destination in safety." You must remember, my friends, that it costs money to run a railroad and keep the roadbed and equipment in proper condition.

Mr. Aderhold—I am not kicking on the freight rate, but I do think they ought to keep their passenger coaches clean.

Mr. Allen—That is right. I can get out from under that question by saying that I am not in the car cleaning department.

THE DAIRY SIRE

H. D. Griswold, West Salem, Wis.



Mr. Griswold

Every thinking dairyman worthy the name of dairyman knows that through the sire comes the improvement to his herd. Today it is not so much a question of breeds as of individuals in the breed. To be sure, a man has to choose his breed and stick to it, he must study the breeds carefully, also the markets and the surrounding conditions. If your neighbors are keeping a certain breed and your locality has a reputation for that breed, it will be better for you to take that particular breed, unless you are very much opposed to it.

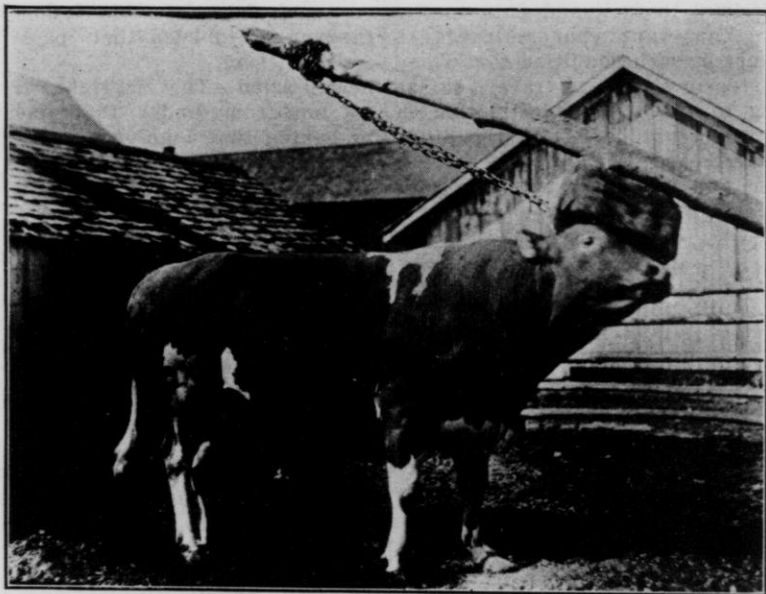
The full blood sire costs more, but his care and keep are the same and the increased value of his offspring above the common or the grade sire will pay his extra cost in an ordinary herd in three years.

Cows are now valuable property and the price is gauged more on

the ability to produce than ever before.

Full blood stock in any of the breeds is stock that has been carefully bred for many years by the best breeders in the business for that particular type and production. The best dairymen and breeders are working with pure bred stock, but sometimes pure

no matter how well she may be shaped and marked, she is worthless, therefore, the first thing we look for in the sire is that he comes from a line of profitable producers. How many pounds of milk did his mother give last year and what did that milk test? How much did she produce the year before? What did her mother produce and her



Bull exercising with punching block on H. D. Griswold's farm.

bred stock falls into the hands of poor dairymen, who, by careless breeding and poor feeding, eliminate the good qualities and then offer to the public worthless animals, although registered in the herd books. So we need to be careful in our selections.

Choose Sire from Line of Profitable Production

The first function of a cow is to give milk. If she cannot do that,

grandmother? Is the line of production on both sides good and uniform? Was the mother of the sire a regular breeder and did she have a good udder and well placed teats, a good handler and an easy milker? Is the line of stock of good size and color? Is the animal himself of good dairy type, of good size for the breed, a good feeder and a strong, healthy, vigorous, bright, active animal? Even then you may be fooled. Watch the

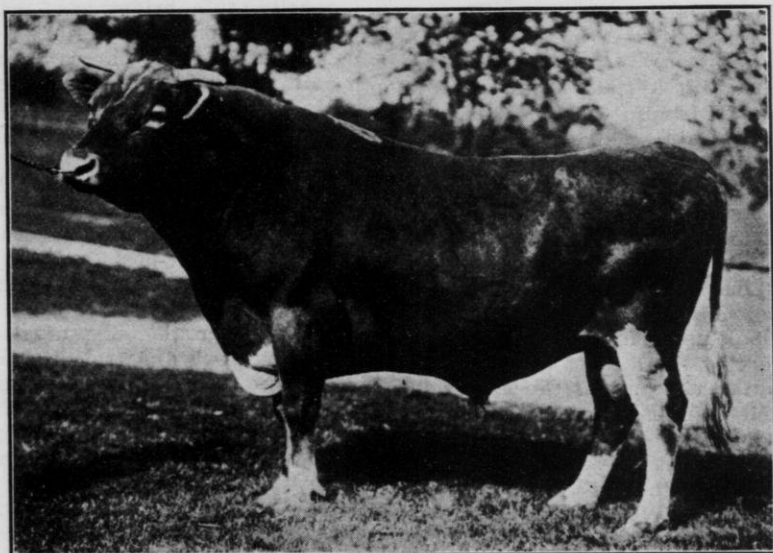
stock he gets. If you can get one old enough so that he has progeny of his own, then you can judge of his ability to produce the stock you wish.

Building up the Herd

Cows making large records are being watched, their pedigrees

year's crop of heifers and soon you will have a herd to be proud of.

Do not inbreed. It is not wise to do so, as the tendency is for animals to get finer and smaller and weaker in constitution. Sell your sire and buy again, or exchange with some one who has one as good or better.



Imp. Holden IV 12179 A. R., Sire of Miranda Edgewater 730.3 lbs. butter fat.

traced and their offspring bought up more quickly and at higher prices than ever before, but beware of seven-day records and fair premiums, they count for very little.

In the first cross on a common or mixed herd, the half bloods will not all be uniform or all equally good, but save them all if possible and grow them with care until two years old, when they freshen. Then by weighing and testing, select the ones you wish to keep in the herd. Repeat this process with each

Care of the Sire

Do not use a sire too young, never under a year, and preferably from one to two years. Feed him well to make him grow out and develop fully. Feed him alfalfa, clover, corn fodder, silage and a small grain ration of bran or ground oats, but do not feed fattening feeds, he does not want to be fat but in good, healthy condition.

Never let him run with the herd. Keep him in a box stall, if possible,

in the stable where he can see the other cattle. He is always more content if he has company.

Give him exercise of some kind; work him if you can; use him in the tread power, or have a pen for him with a punching block, so he can keep busy.

Keep a record of every cow, so you know when she is due to freshen and not have to guess at it.

Never trust a bull. Always keep a good ring in his nose and handle him with a staff. The same man should handle the bull, one who is not afraid and will handle him kindly but firmly, and no one should ever be allowed to fool with him.

A bull is a necessary evil, but we should use just as much care in his selection as we do in the selection of our seed grains, or of the best tools for our work.

Solomon says in Proverbs: "I went by the field of the slothful and by the vineyard of the man void of understanding, and, lo, it was all grown over with thorns and nettles had covered the face thereof and the stone wall thereof was broken down." If he had lived at this time he would have added: And he kept a scrub bull in his pasture.

DISCUSSION

Mr. Campbell—Won't you specify the good points of a dairy sire?

Mr. Griswold (Referring to sketch)—We see that that dairy sire has a good depth of body, well sprung ribs and a good length of body, because he must have room for feed. We look to see that he has a strong back line; that he comes up a little bit sharp on the shoulders, not too thick on the shoulders but coming up a little bit sharp. Of course, in the male, you have a heavier shoulder, but not too wide there right on

top. He must be thick through here, lower down, so he has room for his heart and lungs. Look out that he does not drop back of his shoulders too much and that he has a good length of neck. Of course he has a heavier neck, but not a short neck, a good length of neck and good, clean cut intelligent head; wide nose and large nostrils, indicating good lung capacity, full, bright eye, and does not carry too much flesh. You do not want beef on your dairy animal.

Mr. Nordman—How do you provide exercise for your bulls?

Mr. Griswold—We have a pen that is made large enough, twenty by thirty feet, that is high enough, say six feet, and made strong enough so he cannot get out, it is made of 2x6's, with high posts and the posts set near together, and we put him out there every pleasant day. Running up over the side of the pen is a long stick and from the end of this there comes down a big block of wood, hanging just above the ground. We put him in there and he goes at that block of wood and fights by the hour, and in that way he gets exercise.

A Member—Hasn't that a tendency to make him ugly?

Mr. Griswold—No, it has the opposite effect. If a bull is healthy, he is full of life, he wants to do something, and he does it working hard at that block. It is his playing thing. We go after him to take him in and he seems like a different animal, he has had his exercise and he is all right. In making this pen, be sure to make the door open into the pen, do not make it open out. If you do, when you go there after him and unfasten that gate, he will push up against it and you cannot hold him. He will simply shove you away and after he has found out he can do it once, he will do it again sure. Have the door open in, then

you can open it and reach in and take the ring,—some herdsmen have a heavy wire with the end turned up. We have that and we reach in with that wire and catch the ring and then bring it up to where we can put the pole in.

Mr. Jacobs—Do you ever drive this fellow?

Mr. Griswold—How do you mean, hitch him up?

Mr. Jacobs—No, drive him loose, as you drive your cows?

Mr. Griswold—No, that is a very foolish thing to do.

Mr. Jacobs—Yes, lots of people find that out too late.

Mr. Griswold—Yes, I often hear people say, "My bull is gentle, he never did any harm. My little boy leads my bull." Now, that is a very foolish thing, because it is always those gentle bulls that make the trouble. The first thing you know, that spirit of the devil that most of them have gets into him and a lot of harm is done in an instant.

Chairman Martiny—Which do you prefer; young sires or old ones?

Mr. Griswold—The best age is from three to eight. At five or six they are right in their prime. They

are fully grown then, fully developed, and that is really the best age. A lot of bulls are sold just in the prime of life. Many of them have gone to the butcher, but I notice there are not as many going as there used to be. Most of the good ones somebody wants nowadays.

Mr. Corneliuson—These animals that have lots of spunk in them are generally the best, aren't they?

Mr. Griswold—Yes, but they have not been handled right if you mean ugly. There is a great deal in the way they are handled. We have kept those fellows now for over twenty years and we never sawed the horns off of one or had a bit of trouble yet, and we have had some that weighed pretty nearly a ton.

Mr. Corneliuson—Isn't it a good idea to saw the horns off?

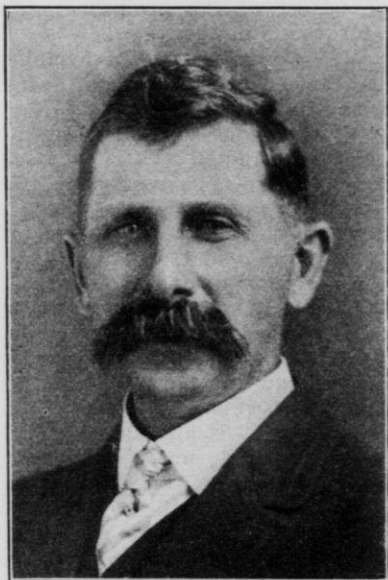
Mr. Griswold—I should if I had one that showed himself ugly, but as long as they do not, I do not think it is necessary.

Chairman Martiny—Have you found that by hanging two blocks in the pen they will take twice as much exercise as if there was only one?

Mr. Griswold—No, one seems to be enough.

GOOD COWS

W. H. Clark, Rice Lake, Wis.



Mr. Clark

To obtain a herd of good cows, we must breed them. To do this, we start with our native or grade stock, just what we have on hand, for our foundation, then test out and cull out the poor and unprofitable ones, and use the balance for the foundation of our future herd.

Selection of Breed

With this foundation, we will mate a pure bred sire, but before we ever start to select this sire, we must make up our minds to the breed we will take the most interest in and the one that will fit our conditions best, then we are ready to select the sire.

Selection of the Sire

It is not enough that he be simply registered, but he must be of good conformation good size, strong and vigorous, and from producing ancestry. His dam should be a producer, and if several generations on both dam's and sire's side are producers, so much the better, for from such a sire as this we can reasonably expect something good.

You will say such a sire will cost too much, we cannot afford to buy him, but I think we can afford to buy a good sire if we look at the investment in the right way.

In our experience, we have found that our first purchase price of a sire has kept us in sires ever since, even better than that, we have sold proven sires for more than we paid for them and have not only been kept in sires, but still have money in this fund.

Another way of looking at this question is that when grade cows are selling from seventy-five to one hundred and seventy-five dollars, it won't take long for the difference in the selling price of common and grade stock, to say nothing of the difference in production, to pay for a good sire, for it is to the sire that the difference must be credited.

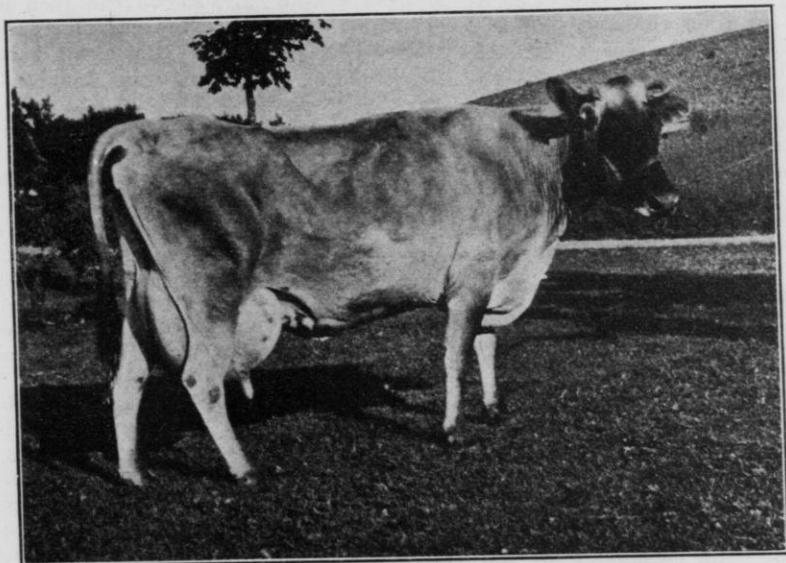
When a sire is found to be a getter of high producing daughters, by all means buy him in preference to a young or untried sire.

Very much depends on the selection of the sire, for after mating him with your herd, it takes nearly a year before the calf is born, then it takes two years more to develop the calf into a cow, then another year to test her to see what she is good for. If your selection has been a bad one,

four years have been wasted, but if your selection has been a good one, you are well on your way to a successful herd.

The first cross of this sire will be fifty per cent of his blood, and should be both better producers and worth more on the market than their dams, and each succeeding cross should improve them for several generations,

heifers too should be well bred, for we should have a good foundation for our pure bred herd. By starting in a small way, it will not require a large sum of money for our foundation stock and by growing up with our herd, we will gradually acquire a knowledge of feeding and caring for a herd of pure bred cattle and more readily dispose of our surplus



Jersey Cow, Madame Thuya, at 17½ years of age. She made an authenticated test, at 12½ years of 520 lbs., 15 oz. of butter in a year and entered class AA in Registry of Merit. She is still a good producer. Owned by W. H. Clark, Rice Lake, Wis.

when they will be nearly as good as pure breds for production.

Building up a Pure Bred Herd

While we are building up our grade herd, we may just as well be building up a pure bred herd at the same time by purchasing one or two pure bred heifers. The same sire will do for these pure breds that we are using in our grade herd. These

breeding stock at good prices without as expensive advertising as would be necessary with a large herd to start with.

Why should we breed pure breds? Because there is no line of live stock breeding that offers such profits, field for thought, study and scientific research as does the developing of the dairy cow.

Now here again comes the expense of purchasing these heifers. Can

we afford it? I was interested in a local advertisement printed in a program of one of our Farmers' Institutes in Sheboygan county not long ago. I began to make inquiry in regard to this advertisement and found a young man had invested seventy-five dollars in a young cow. He had kept all the heifer calves and at the end of nine years had about forty head of cattle. As he had bought no females other than one, all were related to this one cow, and he had refused twelve thousand dollars for the herd. Twelve thousand dollars for a seventy-five-dollar investment in nine years is no mean proposition.

We happened to be near Elkhorn this winter where a dispersal sale was held and over one hundred head of cattle were sold at an average price of over three hundred dollars per head. Could these results have been obtained from common or grade stock? Not by any means.

A man may breed scrubs for forty years and be no further along at the end of that time than when he commenced. He may breed grade stock for a life-time and breed stock of great producing quality, and this stock will sell for good prices, and still he will be unable to sell the male stock for much else than meat prices, but with pure bred cattle there seems to be no limit to either production or sale prices.

A record is made that would seem the limit, but in a short time it is exceeded by some cow almost unheard of. The record of a few years ago that seemed almost unapproachable is today among the common ones, and all the pure bred males that are fit for sires can be sold for good prices. A man can well afford to invest in a few head of pure bred cattle for a foundation, if he is a person that understands the feeding, development and care of high-class stuff.

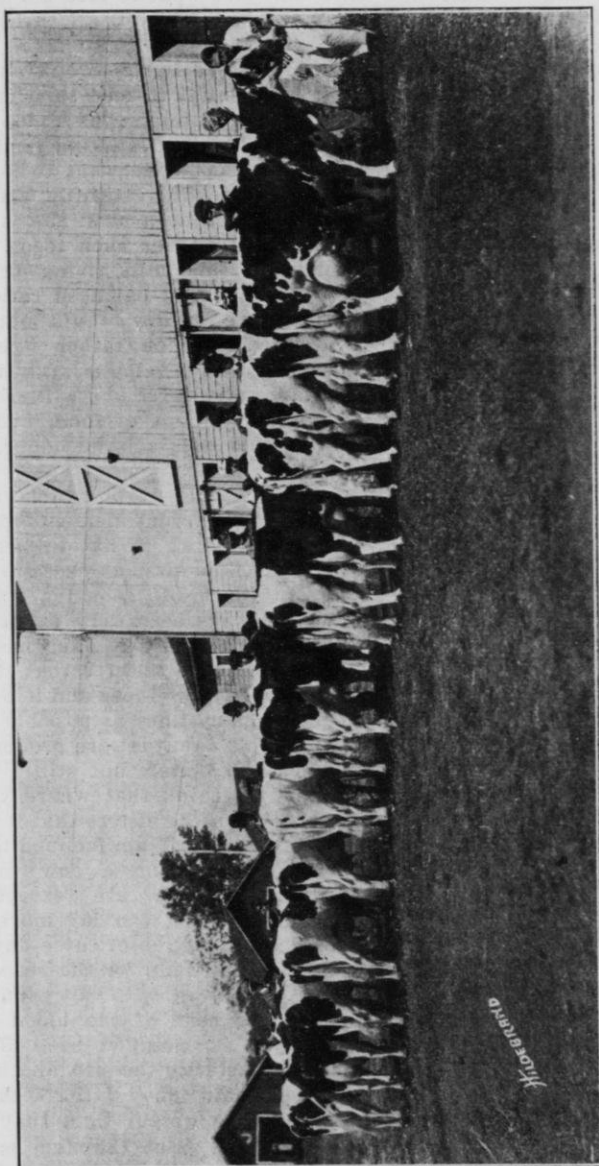
Care of the Calf

The feeding of the calf takes a very important place in the development of good cows. She should be born of good, vigorous parents, in a clean, dry stall. We leave the calf with its mother a day or two, then feed carefully, being careful not to overfeed. All the milk is weighed out to the calf, so we can feed an even quantity as the calf demands. As the calf gets to eating grain good, we gradually change to skim milk and feed about all the grain and good, bright hay and silage the calf will eat up clean.

We keep the calf growing and in good condition from the time it is born until it is a cow, which should be about two years old, or possibly a little later with the larger breeds. Then we should continue to feed her right along as she grows older to develop in her that which her Creator intended her to be.

Who can tell by looking at a wabbling, little calf a few hours old if it will develop into a cow worth fifty, five hundred or five thousand dollars? They all look alike, let us then take good care of the calf, develop it right, then if it does not bring the five hundred or more it will not be our fault.

There are three things that must be considered to build up a herd of good cows. First, breed, then feed, then care. No matter how well bred a cow may be, unless she is properly fed, fed according to her requirements and individuality, she will not do as she should. Then if she is well bred and well fed and not properly cared for, she is still a failure. She must be kept comfortable, quiet and contented. She needs good light, good air, plenty of water and kind treatment. Good cows are not developed by harsh treatment. If she expects a whack by a milk stool or fork handle when she is ap-



Aged Holstein Cow Class, Wisconsin State Fair, 1914.

Hubbard

proached is it any wonder she is nervous and kicks? If, on the contrary, she never knows fear and as you sit down to milk her she tries to lick your shoulder and thinks you are the best calf she ever had, you can figure that kind treatment pays in dollars and cents, or from any point of view.

Testing the Cows

Now that we have our herd well bred, well developed, well fed and cared for, there is one thing that yet remains for us to do. That is to test our cows to determine what they are capable of doing. It is not enough to know that they are good, but, how good? It is the record that really puts the value on our stock. It has been demonstrated time and again that an animal will sell for two, three or many times more with a record than without. Buyers are demanding records and at the present prices of good cattle, they have a right to demand them. It is the record that places the animal in the four figure list. Let us remember this and place our animals on the highest standard possible consistent with good health and the future usefulness of the cow.

DISCUSSION

Mr. Griswold—Don't you think it makes a great difference with the after usefulness of the animal, how the heifer is grown and how she is handled during her first milking period?

Mr. Clark—Yes, I think it makes a great difference. I would milk the heifer for a considerable length of time during the first milking period, nearly or quite twelve months. If she is not milked in that way, she forms the bad habit of drying off too

soon. We want to feed her well and have her milk well all through this first year.

Mr. David Imrie—Don't you think it is essential to feed this heifer before freshening so as to develop a large udder and milking tendencies?

Mr. Clark—We want to keep this heifer growing steadily from the time she is born until she is a cow, and we feed her such feeds as will develop this milk-giving tendency. We feed her a balanced ration just the same as we would our cows. We feed her on rather light feed, such as will develop a large capacity, a large middle, so she will assimilate a large amount of food, and along with this goes a large udder, if she is well bred.

Mr. Wyatt—How would you balance the different elements in selecting your sire? What things would you consider first as necessary?

Mr. Clark—In selecting a sire, we have always been very particular to find out what the dam has done. First we have insisted that the dam should be a producer and if we could get as many lines as possible closely up to this dam that are producers, so much the better, but still I am inclined to think that where you can judge from the sisters that it is even a better way. I am inclined to think that a sire from a cow that has daughters that are exceptionally good, that you can lay more stress on the production of these daughters than on the dam, for the reason that the daughters will carry one hundred per cent of the blood of the sire you are going to use. She will be full sister to the sire, and if she is exceptionally good I think that will carry more weight than that of the dam alone. But the dam must be a producer.

Chairman Martiny—Don't you think the tendency at the present time is to weigh those things a little

too heavily? Now, that sister of that sire, she is producing milk, and what they want the sire to do is to beget cows that will be producers. Don't you think there is a relationship between the amount of milk that this heifer is producing and the progeny that he will sire?

Mr. Clark—Yes, I do think that. In the matter of the sire and the dam that produced this heifer, it shows a particular nick there, that gives production, and by selecting a sire of the same breeding as the full sister, I think you will be more apt to get that same quality. You are getting one hundred per cent of the same blood as this sister.

Mr. Wyatt—This ideal does not really conform with mine, nor do I think it conforms with the principles of what we call the Mendell theory of breeding. These are points we can all study. According to his theory of breeding, the male offspring takes from the dam and the female offspring tends to take from the sire. Now, using that basis in selecting your young stock, it means that this young male calf has taken his powers of prepotency, or his breed individuality, more from his dam, then, if his dam is a very strong producer, with individuality, you follow it up on that same line and you have got that point of ability in the sire. Now, this full sister first has taken her breed element from her sire, so then this sire we are going to use is going to have the minor part of his breeding or power of prepotency taken from that sire.

Mr. Clark—I do not think you understand me. I recognize first the dam as being all important. Then, if we can get this sister that is a producer right on top of that production, we have still better things than to rely on the dam alone.

Mr. Wyatt—My point is this. I would rather see that dam be excep-

tionally strong than to see the extra strength in the sister and a little deficiency in the dam. I would want the strongest point in the dam and then have it followed up by good daughters.

Mr. John Imrie—This is the idea of Mr. Clark, as I take it, that really he sire would have just half of his producing qualities from the dam and the other half from the sire. And that you would rather have him from one that you knew had good sisters.

Mr. Clark—Yes. If this sister is a large producer, there is a positive example of a good nick between the sire and the dam, and you could reasonably expect more from the sire with this example than you could without it. Of course the dam must be a good producer.

Chairman Martiny—Have you any instances to prove that theory?

Mr. Clark—I have not, except some that have not been carried through official test. We have some of this kind coming in milk that are showing exceptionally well, though they have not been proven out. We have some heifers coming in milk that are showing up better than anything we have had for some time. I might say that the dam of this sire is also the dam of several daughters that are producing exceptionally well.

Mr. Jacobs—Right at this time, when we are making so much insistence upon records and the necessity of having great records in the dam of this sire, we do not want to lose sight of the fact that that is not all that is necessary. We must realize that this cow breeds from her blood and not through the udder, it is what she has inherited, and what the sire has inherited, from not only his near parents, but his grandparents, and so on back, that is what makes him a producer. I believe we want to have that thor-

oughly in mind, that it is not only necessary to have the records nearby to prove that that is a good nick in the blood, but we need to know that it is good blood way back, and then, what is more important, to test them out and see where we fail, because we are going to fail many times, even with the best selections we may make.

Mr. Pearce—You feed the same feed when your cows are dry as when they are giving milk, do you? You do not change the quality of the feed, but simply the quantity?

Mr. Clark—Very much the same. We would feed the heifer just about the same quality as we are feeding the cow that is giving milk, but lighter.

Mr. Pearce—Do you change the feed at all, is what I want to know?

Mr. Clark—As a matter of fact, we do change it some. We do not feed as heavy, nor quite as wide a ration when they are dry as when they are giving milk. We do not feed very heavily at this time anyway, because we feed our cows in such a manner that they are in good physical condition all the time. We feed them all they want all the time, summer or winter, when milking, then they are in good condition when dry.

Mr. Pearce—Several years ago we got the impression that when they are dry and just before coming to milk, that we better give them a lot of bran. We have changed our opinion somewhat since then, more, however, in the matter of cutting down the amount.

Mr. Clark—I feed a very little grain feed at this time, just before freshening.

Mr. David Imrie—I think we have gotten past the idea that we used to have of the danger of a cow having too much flesh at the time of freshening. When they are only dry six weeks or two months at the longest,

I never have found there was any danger. It is hard to get enough on to hurt them before they freshen.

Mr. Clark—There are a few cows that we feed any grain at all when dry. If we do, it is just a little to balance up the silage.

Mr. Jacobs—The cow that is dry has only her own carcass to support and she will do all right on a ration of about one-tenth protein, whereas when she is giving a goodly number of pounds of butter fat, she wants a ratio of one-sixth.

Mr. Clark—We keep our cows fed up so they are in good condition all the time. I have a theory that a cow that is giving a large amount of butter fat cannot get enough grass into her skin to keep her in good condition without some concentrated feed, and so we give that feed, no matter whether she is on good pasture or whether she is in the barn. We give the feed when she is producing heavily and in that way we keep her in good condition all the time. Then when they are dry, we do not have to go through the process of building them up to get them in good condition before they come in again, because they are already in good condition.

Mr. Scott—Do you ever have any difficulty in getting them to eat much grain when they are on fresh pasture?

Mr. Clark—Why, no, our cows will eat any time when producing heavily.

Mr. Scott—What kind of grain do they relish best?

Mr. Clark—We feed considerable bran. When we are feeding on pasture, then we feed more oats and corn than we would in the winter with silage, but we feed a little heavier feed in the summer, feed that contains more corn, or something of that sort, than we would in the winter when we are feeding silage.

A Member—Doesn't your silo contain corn enough to give the necessary grain in summer, or don't you raise corn up in your country?

Mr. Clark—We raise lots of corn. I am not quite as far along as you think I am. I have not been feeding silage in the summer, but I am going to hereafter. I consider sil-

age one of the cheapest feeds we can supply for summer feeding.

Mr. Griswold—With our pasture grass, we use, or used to use ground feed, but for the last few years we have fed silage with the pasture instead of the ground feed, and we get just as good results and get them cheaper.

THE BEST CALVES

David Imrie, Roberts, Wis.

If I could have Mr. Griswold's dairy sire and Mr. Clark's good cows, I would have little trouble in raising the best calves.

The Foundation Stock

Every animal should be well born, of healthy, vigorous parents, one at least (the sire) a pure bred. Don't use scrub bulls. I cannot emphasize this too strongly. Don't use scrub bulls.

The dams of the best calves are our best cows and the only way to find out which are our best cows is to weigh and test the milk.

Now we have something to begin with and we will have something that will pay us for our trouble when it is raised.

The New Born Calf

I like to leave the calf with its mother for two or three days, then it is taken away and fed new milk until it begins to eat grain (this will be from four to six weeks), when skimmed milk is gradually substituted for the whole milk.

The amount of milk fed to young calves will vary, according to their size and vigor, from three to five

pounds at a feed twice a day, or, better, feed the same amount in three feeds, always feeding the milk warm.

When substituting skimmed milk for whole milk, do not increase the quantity. You can increase the amount as the calf grows and is making good use of it. We have fed fifteen pounds of skimmed milk at a feed to good big calves six or eight months old with good results.

We feed whole oats for grain, feeding all they will eat up clean twice a day, fed immediately after the milk is given.

Give all the silage the calf will eat and the best of hay (second cutting of clover or third of alfalfa if you have it.)

Give it water to drink and if it is a spring calf, keep it in the stable through the summer, or, if you should let it out, have a barn where it can go at will to get away from the flies. Feed it grain and hay; green grass, skimmed milk and flies do not make a very good combination on which to grow a calf.

The fall calf, if well grown, can go to pasture in the spring when pasture is good, taking the grain and milk away after it has gotten used to the pasture.

Winter Care

When they are put in the stable in the fall for winter, see that they are well fed, don't try to winter them without grain. We feed them the same grain mixture that we feed the cows, feeding enough to keep them growing and in good thrift, because we want big, strong calves, well grown, before they drop their first calf.

DISCUSSION

Mr. Jacobs—Do you find it necessary to taper off from whole milk to skim milk gradually?

Mr. David Imrie—Yes.

Mr. Jacobs—I shouldn't think there would be much of a change with your cows.

Mr. David Imrie—The calves think there is. We do not put them on skim milk until they are getting



Ayrshire Calves, owned by Thos. Barr, Ayr, Scotland, on the wonderful Scotch pastures covered with the many permanent pasture grasses of Scotland.

Be sure to have all the box stalls and calf pens clean, give plenty of bedding and do not keep too many in one pen. I would like to keep only one in a place, but in practice we are obliged to have more usually. A good plan is to have stanchions in which to shut them when they are drinking their milk and eating their oats. After that they will not bother sucking each other much.

By keeping a few of these details in mind, you can all raise the best calves.

We want to grow these calves and grow them fast and keep them healthy. If you ever stunt a calf, it is a job to start it again.

Mr. Convey—Did you say whole milk or Holstein milk?

Mr. David Imrie—I said both.

Mr. Jacobs—We have a little different way to prevent our calves from sucking than you suggested. We have little pens which will accommodate four or five in which we keep the small calves, and they are alone until they begin to eat some grain and hay; then they are put

into a larger pen where there are little stanchions along one side in which the calves can be confined until the time of feeding.

Mr. David Imrie—When the cows begin to freshen in the fall, there is usually first one in each pen and then there are two and sometimes three, and they get thicker there as the cows freshen through the winter.

Mr. Pearce—How early do you think calves should have water?

Mr. David Imrie—As soon as they will drink it. It would be a good plan to have a drinking fountain in each pen.

Mr. Nordman—Of late years we have put about a pint of water in the calves' milk, good, hot water. Our calves, of course, are dropped in the fall of the year, and this helps to warm up the milk, and besides that, I believe it helps very materially in preventing the scours. We feed our skim milk rather sooner than you do, and we have noticed that where we have just a little good hot water put into it that the calves like it, and I believe it is a good thing. Ours is high testing Guernsey milk and it helps in that respect. Besides that, they have all the water they want to drink, and I can tell you a calf will drink a lot of water at this time of the year.

A Member—How many pounds of whole milk do you recommend feeding up until the time you begin to feed skim milk?

Mr. David Imrie—That will depend on the size and vigor of the calf. Ours are Holstein cows and

the calves are good, big, healthy fellows when they come, and they will take a good deal more milk than a little Guernsey or Jersey calf would. If it is a heifer's calf and small, four pounds is as little as we ever feed. Some of them are getting five pounds at a feed twice a day; five or even six pounds to good big calves does them no harm, fed twice a day. That will be ten or twelve pounds of milk in a day.

A Member—Do I understand you that you keep them in during the first summer—spring calves?

Mr. David Imrie—Yes; I will qualify that a little. We have a little yard, or a little pasture you might call it, there are probably two acres with not much grass, but we have a barn that they can get into from that yard any time and you will not see them out in that pasture day-times at all. We hang gunny sacks over the window and they stay in most of the time and eat their hay and get their milk. I do not believe they ought to be kept in a little pen in the stable all summer, but they do not get their living from grass.

A Member—Wouldn't it be an advantage to divide the feeds into three feeds instead of two?

Mr. David Imrie—I think it might, but we do not do it because it makes extra work.

Mr. Griswold—How soon do you take a calf from a cow?

Mr. David Imrie—We leave it about two or three days. Of course we feed it that cow's milk after it is taken away.

SHEEP AND THE NEW FARM

Mr. E. Nordman, Polar, Wis.

I believe that, notwithstanding the fact that the tariff has been taken off of wool, this is a pretty good time to go into sheep husbandry, especially in the northern part of the State. That is, if you have some way of handling the dog question; you will have to settle that

balance of the country not enough sheep are being grown to take the place of those that were formerly grown on these ranges.

The same conditions exist in other countries, there is a shortage in sheep production all over the world. This naturally results in higher



Sheep clearing land on Ashland Branch Station.

part of it yourself, and it is a pretty serious question.

Supt. McKerrow—Better put a tariff on dogs.

Mr. Nordman—Yes. The reason for this being a good time, as I say, is that in the western part of the country, where the greater portion of our sheep have been grown heretofore on these large ranges, conditions have changed, the large ranges have been cut up and used for other purposes, and over the

prices, and, as I say, I believe that now is just as good a time to go into sheep raising as any. My talk deals more especially with sheep growing on new farms.

Northern Wisconsin has all the conditions that are necessary to make sheep husbandry a success. It has the near-by markets, the climate, the feed and the water. With all these natural advantages, all that is required of the personal ele-

ments is to go ahead and grow sheep.

I believe the most successful sheep husbandry will be carried on by the settlers who are developing small farms. Sheep can be made to produce a substantial income on a new farm and at the same time required to assist in clearing the land. Another way of putting it is

grass grows. In this way the uncleared land is made to supply as much sheep feed as the land that has been cleared.

Fences, Shelter and Feed

The settler who expects to get sheep should have good, tight fences around his farm and also around his clearing. He should



Sheep on brushed-over land, Ashland Branch Station, 1914.

to say that with the help of the sheep, the new settler can make his undeveloped land yield substantially as much of an income as his cleared land. This is true, because most of the slashings that have been made in recent years are open enough so that considerable blue grass and white clover grow in them. Sheep will thrive on this grass and the small brush, and by killing the latter they will gradually increase the area on which the

have a shelter for his sheep that at all times is dry underneath and affords a protection from wind and storm overhead.

The settler should bear in mind that a sheep's digestive apparatus is not capable of making good use of any but the most palatable and digestible of feeds. Such feeds should be produced and fed if good results are expected.

The feeds of this character that are produced the cheapest in north-

ern Wisconsin are rutabagas and clover. Clover, to make good hay for sheep, should be cut early and cured in cocks. If it gets too old before it is cut, it becomes woody and indigestible and the sheep will not thrive on it. If the roots and the clover are grown intelligently, they will produce large quantities of excellent feed from a small plat of land. One acre of rutabagas and four acres of clover will ordinarily provide the feed for wintering fifty ewes. The ewes should average six dollars annually for lambs and wool.

Now, if these ewes get their pasture on the uncleared portion of the farm, as they should, it gives some idea of the help which a flock of sheep can be to a beginner on a new farm when conditions are right.

Starting the Flock

The new settler should get the best flock of ewes he can afford to start with. The main thing is to have them strong, vigorous and in good health. He should be careful in the beginning and afterwards not to stock up with any more sheep than he has room and feed for. The average settler should not try to winter more than fifty ewes at any time, unless he expects to make sheep husbandry his main business and fixes up for it.

A pure bred ram of strong constitution, good form and of some mutton producing breed, should be selected to head the flock. Ram and ewes should be fed judiciously on the clover hay and roots. They should have access to water and salt and be so handled as to get plenty of exercise.

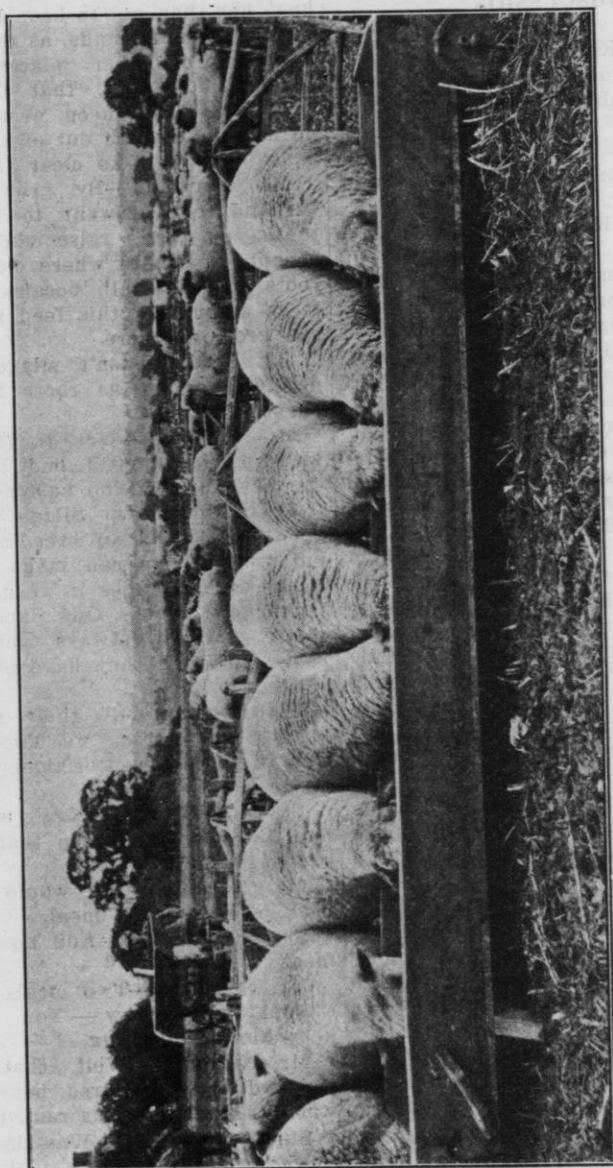
Care of the Breeding Stock

Two important periods in the life of the ewe each year are just be-

fore breeding time and just previous to the lambing season. The ewes should be fed extra well at these times to get them in the pink of condition. A little grain for them at these periods will be well paid for in a larger crop of stronger lambs than can be expected from ewes that get no extra attention from their owners.

If the settler on new land has not the means to erect a stable, the temperature of which can be controlled, he had better have his ewes drop their lambs the latter part of April. The weather will then be warm and lambing will not require the watchfulness that would be necessary earlier in the spring when the nights are colder. However, during the time that the lambs are arriving, the shepherd should visit his flock every two or three hours, day and night, to assist any of the lambs that may be too weak at birth to help themselves, or whose mothers do not seem disposed to own their young. It is much easier to correct any little irregularities soon after birth than to wait several hours after the lamb has been dropped.

I do not wish to be understood as advising north Wisconsin settlers to engage in sheep husbandry in preference to dairying. I am of the opinion that the latter industry offers the best opportunity for the farmers of this section to acquire the means by which to secure a competency. I do say, however, that sheep husbandry can also be made to yield a profit if the business is handled along the lines that I have indicated. There is plenty of room in northern Wisconsin for both sheep and cows.



Group of 7 Shropshire Ewes at Feed Box.

DISCUSSION

Supt. McKerrow—Have you any idea as to about what it costs to bring a lamb up to eighty pounds weight, we will say, in northern Wisconsin?

Mr. Nordman—It doesn't cost me anything.

Supt. McKerrow—I guess you will have to explain that.

Mr. Nordman—Well, I cannot raise any more than I want myself. The way I figure it, and the way a new settler I think may figure it, is that these sheep are usually a benefit to his land, especially new lands, rather than a detriment. They assist very materially in helping to clear up these new lands and the food they get in that way is practically all that the lambs get, that is, the pasture carries them until they are sold. Our lambs are dropped a short time previous to the opening of the pasture season, and then before winter sets in they are disposed of. I put the case a little strong, perhaps, when I state that they do not cost anything, but they certainly do not cost very much under those conditions, because we figure we get a double benefit, there is the improvement on the land and the money for the lambs.

Mr. Jacobs—Does it cost you anything to raise a lamb, Mr. Bradley?

Mr. Bradley—Just a little more than it costs Mr. Nordman. In a five-year investigation that was made of the cost of keeping cattle in the state of Minnesota, it was found on the dairy side butter fat had been sold for thirty cents a pound and it cost forty cents a pound to make it, and yet it was figured that it could be made at a profit because it was figured that even if a cow does lose eight dollars a year, it would be better to

keep her than not to keep her. And so Mr. Nordman finds, as they do in hundreds of other places where sheep can be kept, that they had better have the sheep, even if they do not make much out of them, because they help to clear the farm.

Mr. Nordman—By growing clover and roots, I want to tell you that you can raise sheep very cheaply anywhere where clover and roots will do well, because of the large amount of this feed that you can grow per acre.

Mr. Bradley—Isn't silage pretty nearly as good as roots for that purpose?

Mr. Nordman—Yes, they will do well on silage, but I had in mind the new farmer who hasn't a silo.

Supt. McKerrow—Silage is quite good for a flock of breeding ewes, but we find we can make heavier lambs at early ages if we are feeding a few roots. Our lambs and their mothers always get some roots, although they have plenty of silage too.

Mr. Nordman—If their appetite is any indication, we know that sheep like roots better than they do silage.

Supt. McKerrow—How much a day did your big sheep that I saw eat of roots?

Mr. Nordman—He would eat a peck of roots at a meal.

Supt. McKerrow—And how many meals a day?

Mr. Nordman—Two meals a day.

Supt. McKerrow—You didn't keep him for nothing.

Mr. Nordman—Well, that sheep weighed three hundred pounds. It wasn't a lamb, it was a ram.

Supt. McKerrow—Was he dead the next day?

Mr. Nordman—Well, I guess not. He was ready for another half bushel the next day.

Mr. Brown—I want to ask Mr.

Nordman two questions; first, whether he raises cows at the same time he is raising sheep; and if he says he does not, I want to know whether he expects to raise sheep after he begins to raise cows?

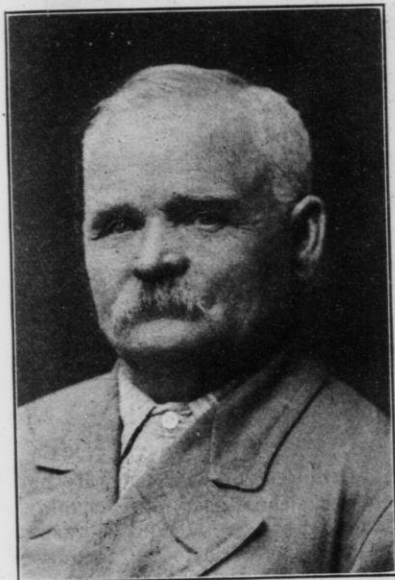
Mr. Nordman—We have been raising sheep and cows for a great many years at the same time, and

we let them run on the same pasture. I want to explain, however, that we have an unlimited pasture, reaching from my back fence to Shawano, a distance of forty miles.

Mr. Jacobs—There is no use of the rest of us trying to compete with that.

SWINE FOR PROFIT

Thos. Convey, Ridgeway, Wis.



Mr. Convey

The fact that swine are grown so extensively ought to be sufficient evidence that there is profit in the business. To say that any one has reached the maximum of profit would be presumption, that many do not get fifty per cent of the possible profit would be more likely.

My business here is to call attention to some of the better methods. I do not assume they are the best. The discussion will develop many things that may be much better.

Hogs Most Economical Meat Producers

It is not generally known that pigs produce meat with a more economical use of food than any other animal. They also shrink less in dressing and contain more edible food in dressed carcass. The only animal that excels them as an economical food producer is the good dairy cow. If money is not made on a farm where those classes of animals are kept, there is something wrong with the management.

Northern Wisconsin Suitable to Pork Raising

Wisconsin is favorably situated for the production of high-class pork, and northern Wisconsin is not at any disadvantage. I am inclined to think it is even favored in many conditions. I will be more specific and tell why.

Barley, clover, peas, oats and grass of all kinds grow better there and these are all splendid hog food.

Before long everybody will grow alfalfa, and there is nothing better calculated to produce profitable pork.

It is now quite generally known that meat of best quality can only be obtained where mixed foods are given, or rather a variety. It is also true that the best growth and health are produced in this way. Grazing should be depended on as a

for breeding stock when poorly developed and dwindle in size very rapidly. The breed is changed with no better results. The fault is in the system.

Animal food of some kind is of great advantage in hog feeding. Milk in good condition is the best. Where milk is not available, tankage gives good satisfaction. Where it has been fed in connection with



Farm Home of Thos. Convey, Ridgeway.

foundation, and the greater the variety the better the results. Each kind has its season and everything is food for the hogs. An old pasture, if small, becomes foul and hogs are subject to stomach and lung worms.

Grain should be fed in connection with pasture. Better results are obtained from grain; better grown young stock and old stock ready for market in half the time it would take if they are allowed to get poor. Here is where many allow stock to degenerate. Young stock are not well grown, they are used

corn, although high-priced, it has cheapened the cost surprisingly. Milk may be sour without reducing its value, but too often it is putrefaction instead of lactic fermentation. I have known several cases of hogs being poisoned with decayed milk and the parties supposed they had genuine cholera.

Water is rarely furnished in right condition and in sufficient quantity. Swill once a day during the winter season is not enough, and where it is partly ice it is very much worse. Stock kept in this way will have rainbow backs and

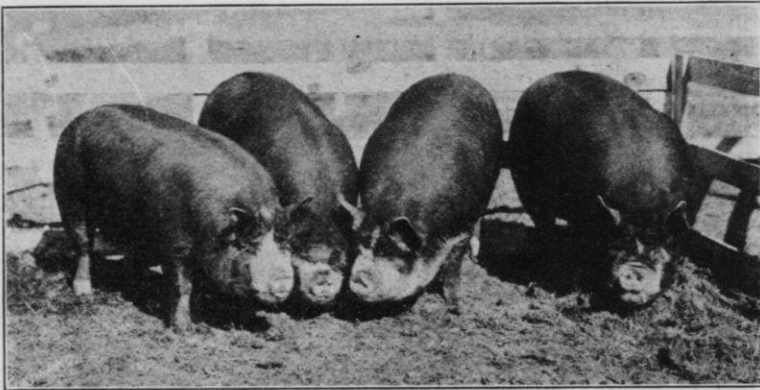
their stomachs will follow a parallel line. Next to air, water is the most essential element to thrift. As it is both cheap and abundant in Wisconsin, make use of it.

Keep the stock growing. Remember you can produce a pound of gain on young stock with about half the feed it takes a mature animal, and a stunted young animal never makes a profitable feeder. A day lost means more than a day's

winter conditions a central house is a big advantage. Feed, water and bedding can be kept there and much labor will be saved, and if profit is considered, this means something.

Pasture, salt, water, skim milk, buttermilk, middlings and corn are fed to our stock, and in the winter some ashes are fed in the swill. We have been in the business forty-five years with no sick hogs.

We prefer mature stock for



Champion Berkshire Herd at the Wisconsin State Fair, 1914.
Owned by Geo. Kelley, Mineral Point, Wis.

feed lost, it means an abnormal appetite and injured digestion.

The Brood Sow

Good sized litters are necessary to get a profit. Have young sows from a good mother, a large milk producer and prolific. There is just as much difference in sows as in cows, and the good milker is usually a kind mother and has large litters. She will not look as well as the one with a small litter and a spoiled udder, but she is the sow to carry over.

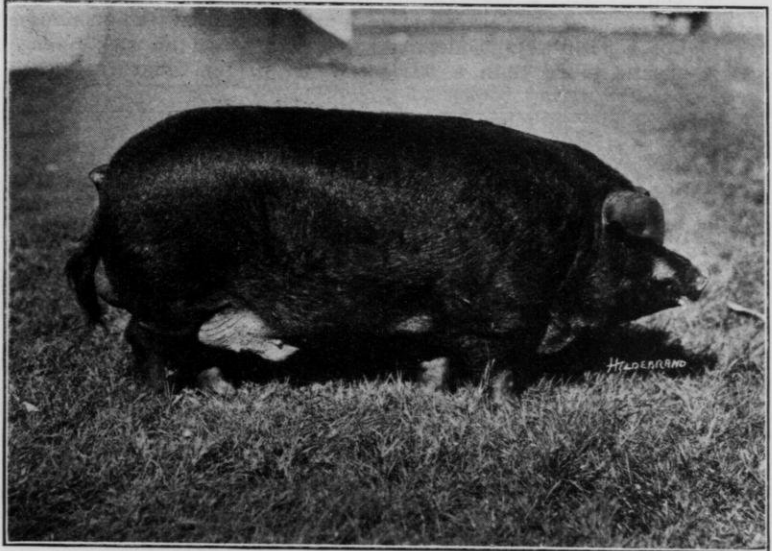
The individual house at farrowing time is no doubt the best, but where many hogs are kept under

breeding, as we get larger, more growthy stock, and more of them. If young are used, they should be well grown.

Type means a lot in profitable feeding, breeding not so much. A wide face of medium length, a long, smooth body, of good depth, good heart girth, thick fleshed and a set of limbs that have quality rather than coarseness, constitute my idea of a good hog. Many think that a thick fleshed hog does not make desirable meat, but I know by experience that it does. Thick sheep make the best mutton and thick fleshed cattle the best beef, and if a hog is fed right, especially

on pasture, and this is kept up for several generations, there will be the same results with the hog. We have cured and sold meat for several years from this type of hogs and know what we are talking about. This type feeds better, ships

avoid an over-crowded market. This occurs at certain times of the season. The feeder can always avoid this. I have known feeders to carry hogs one or two months in the fall and have them shrink in value every day.



Champion Duroc Boar at Wisconsin State Fair, 1914. Owned by L. F. Atwater, Bangor, Wis.

better, sells better and shrinks less in dressing.

Marketing

Market conditions are very favorable, as cholera has kept the business from being overdone; with an increasing demand, there are less than formerly. Inoculation appears to be the only thing worth resorting to. Nostrums are only good for the venders. Of course they stimulate hope, but end in disappointment.

In marketing it is always well to

DISCUSSION

A Member—You said you had not lost a hog in forty-five years from contagious diseases. Have your neighbors had the cholera?

Mr. Convey—There have been few or no cases of cholera in our county. There was one case this year, where a drove was lost. They thought it was cholera, but I think it was poisoning.

A Member—What would you do if cholera did develop there?

Mr. Convey—Get a veterinary surgeon and inoculate. I would

get the serum from somebody on whom I could depend. It is much safer to get a thing of that kind from the State authorities and if they charge you anything at all it will be a very low price for what they send out.

A Member—Where there was no cholera at all, would you recommend going to the expense of vaccinating?

Mr. Convey—No, unless it was in the neighborhood and I was afraid of its being carried. It is easily carried, dogs will carry it and it is carried in many ways. It is liable to come to your place if it is anywhere near, and you had better vaccinate and do it promptly, because vaccination is not a cure, it is only a preventive.

A Member—What conditions produce hog cholera.

Mr. Convey—It is now considered an infectious disease, a communicable disease. Of course some crank will ask where the first germ started. That is probably beyond our memory, certainly our knowledge, but it has to start from the germ.

Mr. Martiny—Some people have the idea that it comes from feeding green corn; that that will produce cholera.

Mr. Convey—The only reason that unseasonable feed would be apt to help it along is because the animal is already out of condition. They simply get their system out of condition and that lowers their resistance to the workings of the germ.

Mr. Brown—I am not quite satisfied with that method of preventing hog cholera that Mr. Convey has given us. I want to ask Mr. Convey if there isn't some other way advocated, such as proper care, etc.?

Mr. Convey—If you can discover

any other way than that your fortune will be made. They have been trying, recommending all kinds of cures for forty or fifty years anyway, and every cure fails. The only thing you can do is to keep your hogs in just as healthy and clean a condition as possible, and they are not so liable to take the disease in that case, but after trying everything it has been found that vaccination or inoculation is the only remedy; and that is not an infallible prevention in every case. About eighty or ninety per cent of the stock will survive, but in the other case, without the use of this treatment, only about five per cent will survive.

A Member—Have you had any actual experience with hog cholera?

Mr. Convey—No, but I keep read up on the topic and know of cases in many places. I never had any experience, nor do I want any.

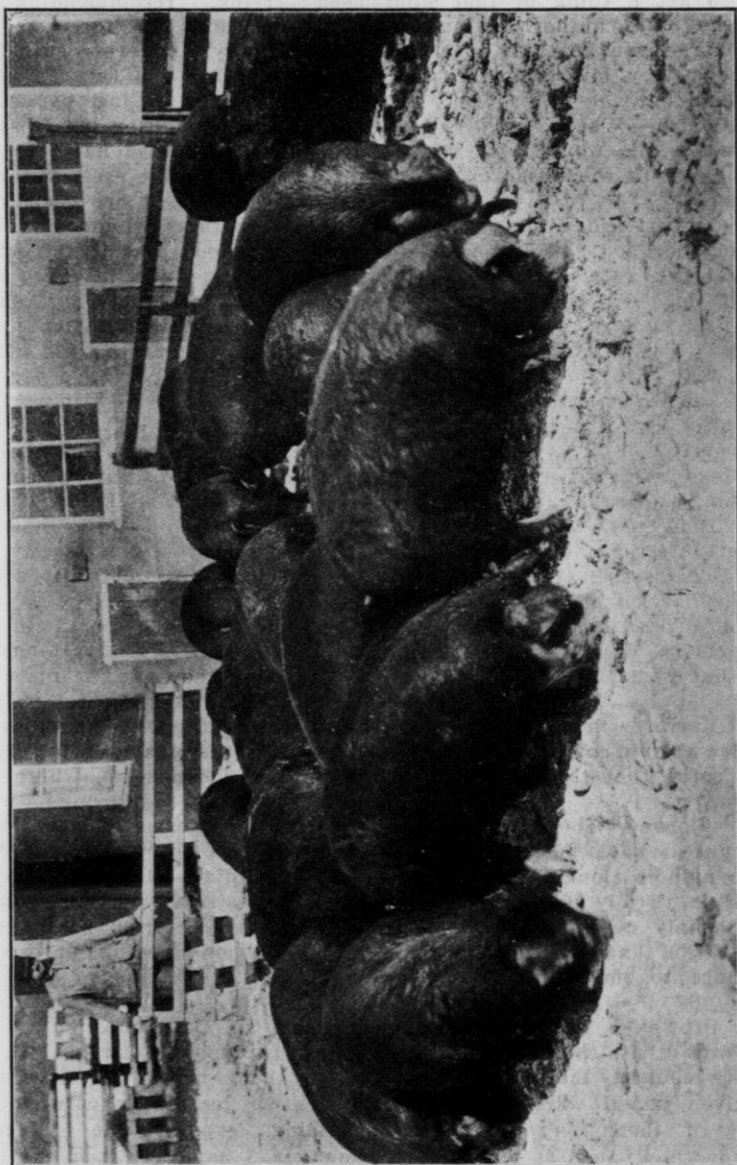
A Member—Would you feed charcoal to your hogs?

Mr. Convey—Charcoal is all right, and a good many things are good, and if they are run on a pasture they are more liable to keep in good condition. Where they are housed up, they may get out of condition; on the pasture, where they have access to the ground, where they can get worms and everything else, they do not need tonics.

Mr. Bradley—Mr. Brown, have you any way that you think you can prevent the hog from having cholera, by special feeding, or care, or anything of that kind?

Mr. Brown—I think Mr. Convey touched on that question of improper feeding and care, which will make them resist the disease. I prevent it by proper care and by avoiding exposure to infection; however, I have had it in my herd.

Mr. Bradley—Then you do not know of anything that we can do to



Young bred Gilts on farm of L. P. Martiny.

keep it out of our herds if the hog cholera gets into the neighborhood?

Mr. Brown—I do not know of anything except good care.

Mr. Convey—If he said he had any special method, you wouldn't believe it.

A Member—Will Sal-Vet cure it?

Mr. Convey—Sal-Vet is nearly all salt, with probably some vermifuge in it that will kill worms. They will not thrive when they are in that condition, so that Sal-Vet may have some value. Some parties recommend it, others condemn it. I have never tried it.

A Member—Can you get lye and mix it with the feed to kill worms?

Mr. Convey—You will have to be very careful, or you will do mischief. Some people mix in turpentine, and if they are inexperienced and the hog gets more than it ought to, it will do more damage than good. It is all right to put wood ashes in a trough, mortar is good.

Chairman Jacobs—What is Sal-Vet, Mr. Bradley?

Mr. Bradley—You will find this Sal-Vet advertised in every agricultural paper. Sal-Vet has been analyzed down at our Station and they found it was nearly all salt, with a little sulphate of iron, common copperas, and if you buy it you will pay \$1.25 for stuff that costs about six cents.

Mr. Convey—A. J. Lovejoy recommended it at Madison. I never made a study of what it contains, but everybody knows there is a large amount of salt, and it makes an enormous price for salt, and copperas is nearly as cheap as salt. Some animals will get too much; it isn't safe to use.

A Member—Hasn't the cleanliness of the animal something to do with it?

Mr. Convey—The matter of letting your hogs be born in a filthy

pen, where there is a bad atmosphere, will certainly help to get their systems out of condition, and they will get the scours. Another thing that is bad for the hog is to let him eat off the floor where filth has accumulated and dried. He sucks that dust up into his nostrils and there is more or less danger. You have to watch all these things. It is bad for them to run on old pastures, as they do sometimes, and get dry coughs. They do not get really sick, perhaps, but they do not thrive as they should. I think in nearly every case this is due to stomach and lung worms. You know lambs and old sheep are subject to stomach and lung worms and so are hogs, and so are cattle and horses that run on old pasture.

Mr. Campbell—There was a cough that ran through this country this fall such as I never noticed before. All through this neighborhood hogs and pigs had that cough. They would have spells of coughing so hard that they could hardly stand up.

Mr. John Imrie—The question was asked here in regard to feeding ashes. I always mix a double handful of salt with a bushel of ashes, and I am sure from my experience that it is a good thing, one of the best we ever did. It is better than salting through the swill barrel, because some days one animal might eat ten times as much as the next one and one get too much and the other not enough, but by mixing with the ashes, they can get it any time and eat all they want to eat. Many times when we are fattening in the fall, we will notice as many as six or seven of them working at the same time at the ashes and salt.

Mr. Convey—It is the safest way to do it, because, if a hog doesn't want it, he won't take it. In our

case, we manufacture butter and they get lots of salt through the butter milk, and they must have salt. I would not object to putting pulverized copperas in that mixture. Copperas is sulphate of iron and has a beneficial effect on the stomach.

Supt. McKerrow—A good many of us old men remember the time when Prof. Henry, in a swine feeding experiment at Madison, showed that ashes doubled the strength of the bone. That was when they were being fed on a one-sided grain ration.

Mr. Convey—Yes, if they have an appetite for it, it is a good thing to give it to them.

Mr. Campbell—You spoke of large litters. What do you consider a good litter?

Mr. Convey—We do not care to have more than about six with a young sow, and about eight with older sows. If you get a large litter, there are sure to be some runts.

A Member—What particular hog would you recommend?

Mr. Convey—I will not recommend any particular kind of breeds. I have been breeding the same class of hogs for thirty-five or six years, but my neighbors have succeeded just as well as I have with other kinds. Get a good feeding type. The man who is buying stock wants a good type, a uniform type, and he wants to breed right along, do not think of mixing breeds. The first cross will give you good success, but after that it is a failure. Pick out a hog that is not so dainty that he will not eat on pasture or grass, but get a hog that will hustle around without being too nervous, nor too active, one that will put on meat. I am not going to tell you what kind of hogs I like, because we do not do any advertising in this kind of work.

Mr. Brown—I want to find out some more about this inoculation. Mr. Convey recommends us to inoculate, but he has not inoculated himself. I was asked by Mr. Bradley whether I knew of any other method of prevention, except avoiding exposure. Now, I would like to ask Mr. Bradley, or any other Institute conductor who has had any actual experience in inoculation and knows that it is a success.

Mr. Bradley—We had it up in St. Croix county all along the lake shore, and in our town of Hudson, all the way down towards River Falls, an epidemic of hog cholera. the first we ever had. It got over up in my particular neighborhood, and my brother first suggested that we send to Madison and get some serum and inoculate his pigs and three other herds. I sent down for the serum and we waited just three weeks before it came. They were over-run with orders and couldn't make it fast enough. By the time we got the serum, my brother's hogs had been dying with the cholera about a week. I lived a mile away, and so far as I knew my hogs did not show any signs of the disease at all; I never saw a thriftier, healthier bunch of pigs than we had on my farm this fall, and the reason I asked if you knew of any particular condition that affected this matter was that my hogs were in such fine condition. This fall our hogs did have a splendid chance. They had at least eighty acres to run through. There was an alfalfa field they ran in, and there were six acres that had been sown to rye early in the fall, and they pastured on that. There were about ten acres of oak woods, where the acorns were very thick, and a further six or seven acres. Then they had about thirty gallons of skim milk a day, fed to about

fifty hogs, so they had skim milk on alfalfa pasture, acorns and grain. They were on nice, clean ground all the time; I never saw pigs look better than mine did at that time. The serum finally came, I sent for one of the assistant veterinarians and he came. About this time my brother's hogs were dying so it was no use to vaccinate them at all. This young man came and vaccinated mine, and the veterinarian said he never saw a better bunch of hogs, but he did not take the temperature of any of those hogs. Every one of them was lively. Three days after vaccination my hogs began to die. I had an idea at the time that they were all right and that perhaps the vaccination had started them dying—a good many of the neighbors said, "If you vaccinate your hogs that starts them to dying." Well, we lost twelve of them, some of them died within two or three days, that is, they began dying about three days after the vaccination and they strung along for about two weeks. Another neighbor sent and got serum; his farm was between my brother's and mine, and there was no reason why his hogs should not have the cholera, because we were going back and forth between the farms. Well, he vaccinated his hogs, some fifty of them, the same day that I vaccinated mine, and he didn't lose a pig. Having a lot of serum left, we went about four miles to another herd and vaccinated a large herd there, and there were hogs dying all around that man's place, on four farms adjoining him the hogs all died, or nearly all of them, with cholera, but every hog that was vaccinated on that farm lived; that is, they didn't any of them get sick, and they lived until they sold them.

Now, it was a question in my

mind about my hogs. You see they had begun to die. I went and talked with Dr. Beach and Dr. Hadley at Madison, and saw them doing the work of treating pigs, and Dr. Hadley said to me, "You go home and in two weeks more you give a second dose of serum and the virus at that time to any hogs that are not sick." Well, I got a second dose of serum and the virus and was going to vaccinate those hogs the second time, but I had the same veterinarian come back to do the work and he absolutely refused to go near my place at all, because he said all of them had the cholera, and "they will all die quicker if I give them the virus than if I do not." So we did not vaccinate mine the second time. A month or so later, after I had got rid of all of those, except four brood sows that we kept, we went to work and vaccinated them.

One of my neighbors fed carbolic acid to thirty-four pigs. He did not have any sick hogs and that was right alongside of my brother's field where his hogs ran on one side of the fence and the other man's on the other, and sometimes they got mixed, and yet that man's hogs did not die. Now, whether it was the carbolic acid or not, I do not know, but after feeding this lot of carbolic acid and after selling his fattening stock, he said to me, "Send and get some virus and we will vaccinate those hogs." So in December I gave them two treatments, the vaccination with the serum first, and then two weeks later the vaccination with the serum first and then with the virus, and only one hog died where they were vaccinated the second time.

They tell us that the hog cholera will not show the disease until about ten days or two weeks after they have contracted it. The

trouble with mine was, probably, that they had already contracted the disease and I did not know it.

Mr. Convey—In what I said, I meant vaccination rather than inoculation. Vaccination is what should be used in a herd that is not already affected. If they are already affected with the disease, you had better use both.

Mr. Bradley—They tell us at the Station that it is not very much use to use the serum alone, excepting for about four weeks. You have to vaccinate the second time, and at the same time use the virus.

Mr. Convey—Dr. Detmers, of Missouri, twenty-five years ago recommended carbolic acid to prevent cholera, but they soon discovered that it was no security, no cure. It might prevent its coming on if used in time.

Dr. Lamley—I am not a breeder of hogs, but I can see by the questions asked here this afternoon that there is some skepticism in regard to the serum treatment. Now, the very fact that the serum seems to have an effect in the prevention of disease in the hog, or any other animal, means that it is an infectious disease, that it is a germ disease. I will say for the benefit of the farmers that the serum is not put on the market to sell as a cure, it is put on the market to prevent the disease.

Now, as to the effect of feeding or care as a help in preventing this infectious disease, just consider a moment the disease of diphtheria, for instance. How would you go to work to feed or care for your children to keep them from having diphtheria? You couldn't very well feed them enough carbolic acid to keep them from having diphtheria. You will give them fresh air and good food and a good place to sleep. On the other hand, you

cannot have the diphtheria without the germ being present any more than you can have corn without seed. You must have the seed, the germ. You cannot have hog cholera without germs in your neighborhood any more than you can have diphtheria if the germs are not in your family. I just say these few words in defense of the serum treatment. I know nothing about the use of it in hog cholera, but I do know something in general about it as a medical man. Of course, the hog is harder to handle than a patient in bed.

Mr. Bradley—Those who next year will be treating their hogs with this serum treatment should be careful in the manner of making the treatment. Remember, there has been more trouble through carelessness in the treatment than in the use of the virus or the serum itself. Now, what I mean by not taking proper care is in not properly cleansing the spot where you are inserting the syringe and not having that syringe thoroughly clean by dipping it in carbolic acid, or some other solution, to sterilize the instrument thoroughly. If the spot on the animal's body is cleaned up good and the man is careful in handling the instrument, there will be no danger. I heard one man down in Rock county say that out of nineteen he treated, sows that had been vaccinated, every one of them died, because of blood poisoning; great swellings came and pus formed and they died, but that was not because of the serum, but because of the way it was administered, so we have to be careful in doing the work.

Mr. Convey—I think it is the safest thing to recommend that they have a professional man. It is hard to make people understand how necessary it is to be careful.

It needs a little study of how to guard against doing mischief. It is not a safe proposition, if you can get a medical man within a reasonable distance and cost.

Mr. David Imrie—The State authorities will not send out virus to any one to handle, because that is just the same as sending out hog cholera. I believe Dr. Hadley said they would have to send an experienced man to handle it.

Mr. Bradley—You can buy virus from Parke, Davis, or any of the big druggist firms, and there is no law to prevent any one from doing the work, but any one doing it must understand that the virus is simply hog cholera and you have got to be very careful not to spill it around, or anything of that kind. However, there isn't anything about the work that any man with good common sense could not do, and sometimes a farmer will be just as careful, and perhaps a little more so, than some veterinarians,—the veterinarian may be in a hurry, you know. We have had trouble in the State of Wisconsin with veterinarians administering the tuberculin test. What I want to get at is this, that it is not a very serious matter to do the thing right. Any one can measure a quantity, put it into the syringe and administer it. The State of Minnesota is telling us to do it one way and the State of Wisconsin is telling us another way to do it. That controversy ought to be wiped out. The State of Minnesota says to give two treatments at once. The Wisconsin way of doing it is to put in half the quantity of serum in the first place and wait two weeks and then put in another dose of serum and the virus at the same time.

Mr. Corneliison—Aren't they losing a lot of hogs up in Minnesota on that treatment?

Mr. Bradley—Some authorities say they are; I do not know.

Mr. Convey—We know that where this double treatment has been used in Wisconsin and used right there has been scarcely any loss at all by the vaccine treatment.

A Member—Would you consider it profitable to raise hogs, ordinary commercial hogs, if you had to vaccinate them every year to prevent hog cholera?

Mr. Bradley—It doesn't cost so much to vaccinate. Perhaps from fifty to seventy-five cents would vaccinate a hog that weighs less than a hundred pounds and it ought to last for a year or a year and a half, where you give them the full treatment. I say if there is no hog cholera in the country, do not vaccinate, but if it comes into the country, then get busy.

A Member—There has been hog cholera around Ellsworth and next year we expect a taste of it.

Mr. Bradley—Then you had better vaccinate. One of my neighbors told me he was going to vaccinate his brood sows so they will be immune. That will not make the pigs immune. But do not vaccinate pigs that weigh less than fifty pounds. From fifty to a hundred pounds is a good time to vaccinate those pigs.

Mr. Convey—I think where you have no disease in the neighborhood it is a mistake to introduce new stock into the country for feeders. I presume that practice has caused millions of dollars worth of damage this last season, and that is the reason hogs are worth nine cents a pound, because the cholera has been everywhere, and it has been spread so as to be everywhere by the contagion being introduced through buying stock from parties who have it, or perhaps you do not know where they came from.

MEAT PRODUCTION IN WISCONSIN

Supt. Geo. McKerrow, Madison, Wis.

For several years we have not discussed meat production very much in the Wisconsin Institutes, and especially beef production. We have discussed swine, pork production in connection with the dairy; we have discussed sheep a little. And why

animals, and then, besides, save the fertility value of that feed on his farm. And so in that sense there is some encouragement in discussing meat production in Wisconsin.

Now, do not misunderstand the purpose of this. It is not to substi-



Champion Steer, Wisconsin State Fair, 1914. Owned by G. B. Arnold, Galesville, Wis.

should we put this subject on the programs for this winter?

Well, in the first place, like any other topic, it is put there simply to set us thinking. We discuss it for the purpose of letting every farmer think for himself after he hears the viewpoint of the man who discusses it.

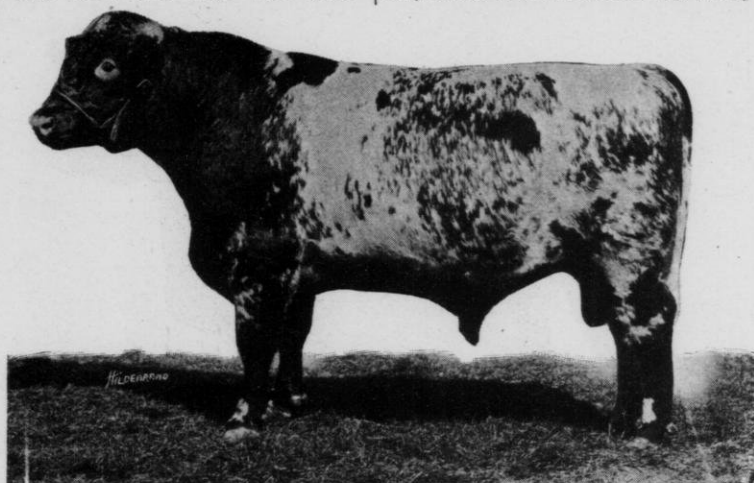
Another reason is that meats are comparatively high-priced, that is, as compared with several years ago they are high enough so that today the Wisconsin farmer can get paid for the feed that he puts into these

tute beef production or mutton production or pork production for the dairy cow. Dairying has its place, and will continue to have it here in the State of Wisconsin, and there is no spot on the American continent, or, for that matter, I think, in the world, that has much advantage, if any, over the State of Wisconsin for dairy purposes. Our lakes, our soil, our water, our climate, everything, is favorable to the development of the dairy interest.

But there are farmers in Wisconsin not like my friend Nordman in

one sense, and yet like him in another, who have more land than they can handle well with a lot of dairy cows. Now, Nordman's pasture, you know, extends from Shawano to the North Pole—to Polar, I guess it is. If you noticed, when he was giving us a census of his live stock, he admitted he had a flock of sheep, and that means meat production, so we even find him, the man who advo-

duce meat as part of the business of our farms here in the State of Wisconsin, and the first thing is to do it the best we know how. The man who produces meat as a side issue, even in a slipshod manner, will not get any money out of it. Some of our would-be statesmen, on account of the high price of meats and the high cost of living in our cities, have been introducing bills, and



Champion Shorthorn Bull, Wisconsin State Fair, 1914. Owned by Herr Bros., Lodi, Wis.

cates the small, intensive farm, right in that line. He sees there is some money in that meat production side of farming for him and he also sees that the right thing for him to do is to feed out what he produces on that sixty-acre clearing and save this fertility to put into that sixty acres, to grow more corn to fill more silos, to grow more clover, and I think, while he may be a little off in some respects, he is pretty sensible in that respect.

Quality the First Consideration

There are a few things though that we must consider if we are going to

there is one that went into our United States Congress and some very much of the same kind into the Legislature of some of the states, within the last year or two, bills demanding that farmers keep all the male calves until they are three years old, to rear them and feed them to reduce the cost of living in the cities.

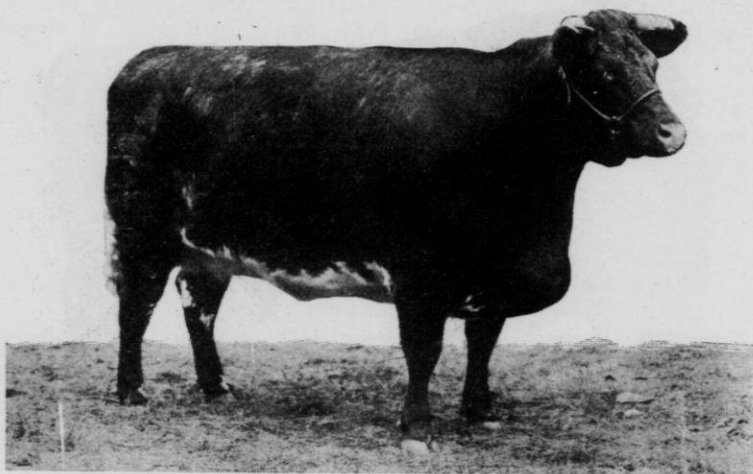
Well, now, you and I who are farmers and stock feeders, know that those are fool bills which do not show much statesmanship, because we know that a great many of these male calves, bred on dairy farms, from dairy breeds, where only dairy

breeds are being used, will not pay for feeding until they are three years old, so we say those fellows, instead of being statesmen, are fools. We occasionally, you know, do send a fool to the Legislature, we generally find it out when it is too late.

The Wisconsin farmer who is going to produce meat must formulate his ideas, and if he is going to produce beef, then he wants an early

breeds as the Shorthorn, the Hereford, the Angus, or the Galloway.

On the other side, he must make up his mind that he must have a pure bred sire of some of these breeds, in order to get the best results; and not only a pure bred sire, but a sire that has the conformation and quick growing quality that will make his produce mature young, mature early. Now, that matter of



Champion Shorthorn Cow, Wisconsin State Fair, 1914. Owned by Anoka Farms, Waukesha, Wis.

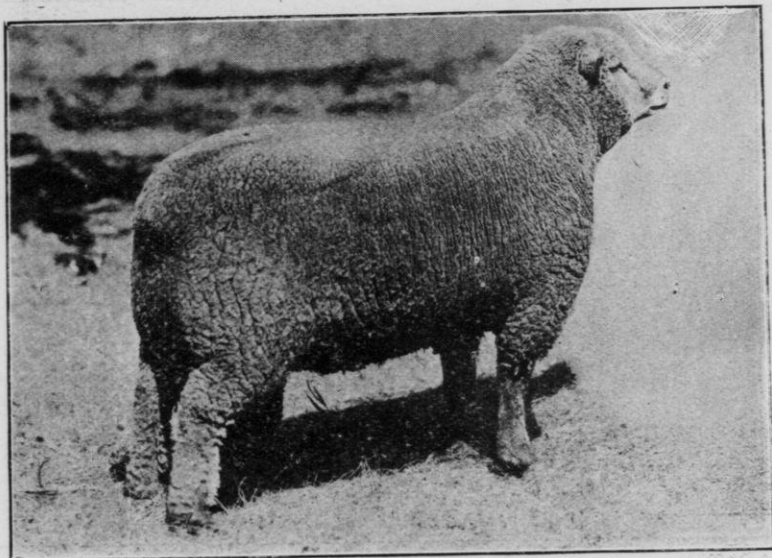
maturing, good quality animal for that purpose. Whether he goes into the market and buys him, or whether he raises him, he cannot raise him from his specifically bred dairy cows, because they are not built that way. Now, he must settle that question for himself, whether he goes into the market and buys his beef animals or whether he raises them. If he is going to raise them, he must make up his mind that they must be of an ideal beef conformation,—any animal which he uses,—which means that he must have, or should have at least grade beef cows of such

early maturity does not all depend on the blood, nor on the breed, but it also depends at least fifty per cent on the feed, and so this farmer has got to study the feed question, as well as the breed question.

Here in the State of Wisconsin some people say we cannot produce beef, pork or mutton, in competition with the corn-growing states, but I am just foolish enough to say I believe we can, and we can produce a better quality,—we are producing a better quality of pork. At the little packing house down at Cudahy they are producing a better quality of

meat than they are at the Chicago packing houses, because, if you will follow the records of the last year, you will find that the Cudahy Packing Company have obtained a little higher price in the foreign markets for their output than the Chicago packing houses, although the Chicago packing houses are better institutions and presumably in better

and in alfalfa, and even in the kind of corn that we grow to put in our silos, cheaper than they can in the corn belt, because the soil and climatic conditions favor the growth of protein elements better than their conditions do farther south. That kind of feed, the protein muscle-makers, and ash, the bone-builders, are more plentiful in our feeds



Champion Southdown Ram, Wisconsin State Fair, 1914. Owned by Alex. Arnold, Galesville, Wis.

shape to sell. I find this by inquiry in the foreign markets.

Now, why is this? Because up here in Wisconsin we have the feeds that produce a little better quality than the feeds in the corn belt. That is true in the production of pork, and that is true in the production of beef. Of course it means that we will have to provide more shelter from the cold than they have to provide farther south, and that is all. We can produce protein feeds, such as we get in the clovers

grown here, and that class of feed is what is needed to push an animal ahead for early maturity, to grow this muscle, this lean meat, and develop bone.

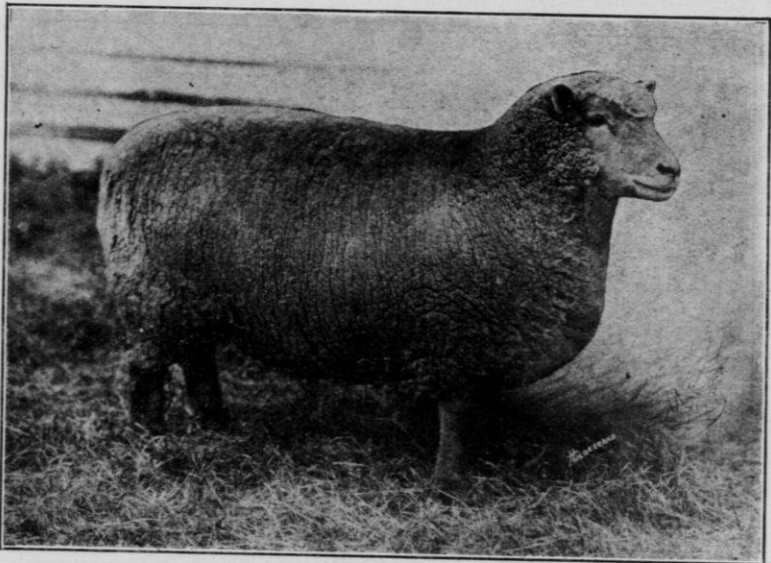
Then we can grow starch in our corn crop, and thus balance up the feed we give to our stock.

Years ago, when silos were first introduced into Wisconsin, the two men who had then got far enough ahead to be making baby beef and were making money out of it, sold some of the highest-priced baby beef

on the Milwaukee market that was sent into that market and produced under Wisconsin conditions. Those two men lived in southern Wisconsin, Mr. Hays and Mr. Bloor. They were among the first men in the State to put lots of money into silos, and, as I say, they made money every year in producing baby beef. I have

in his yards today worth eighty dollars apiece at the same age. But this man studies the problem of breed, feed and early maturity, and every one of those calves is kept growing until he goes into the Chicago market as baby beef.

The same reasoning will apply to your lambs and your pigs.

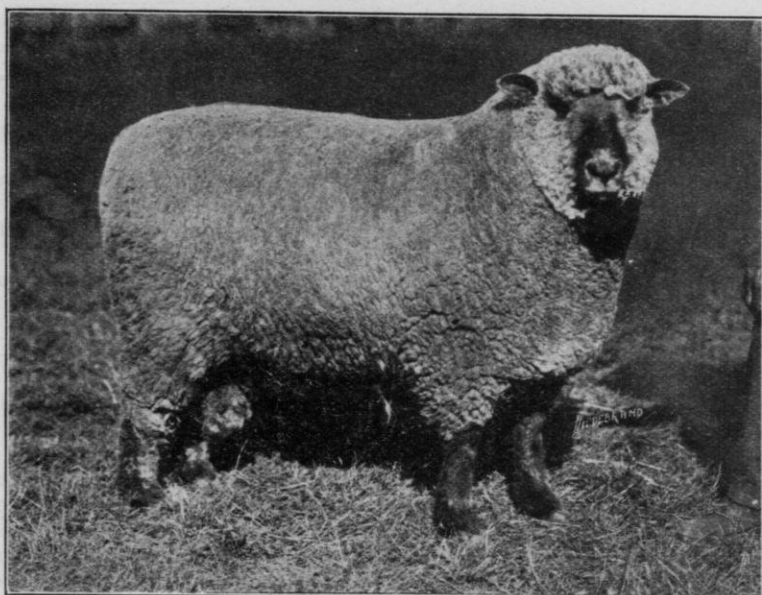


Champion Southdown Ewe, Wisconsin State Fair, 1914. Owned by Geo. Phillippi, Welcome, Wis.

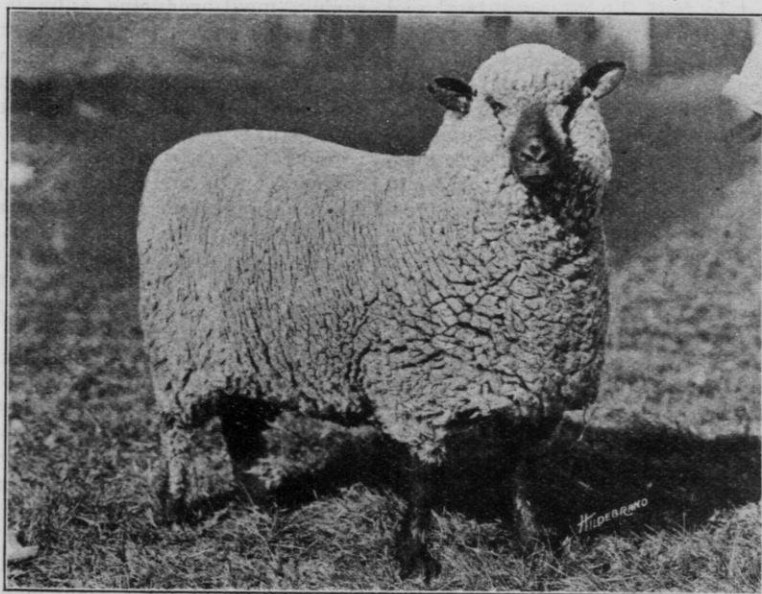
done a little of that myself, and I know there is some money in it if you will only push right along to early maturity, that is the first consideration. That means that every one of these calves must be kept growing steadily every day of their life until they are ready to put on the market. I know of a little bunch of calves raised in Dane county last year that, at a few days less than a year old, brought seventy-four dollars apiece in the Chicago market. They were raised by Mr. Caldwell, and he has another bunch

The Financial Side of the Question

There is another reason, and that is the fact that it will pay us to raise this baby beef, lamb, mutton and small porkers that bring a good price on the market. You can make it cheaply. The first food that the animal takes out of the feed we give him is the food of support. If we have a lamb or a steer it takes a certain amount of feed to keep them at their weight. If we have an animal in our barn and beside him in the same barn we have one that weighs



Champion Oxford Ram, Wisconsin State Fair, owned by N. W. Harris, Lake Geneva, Wis.



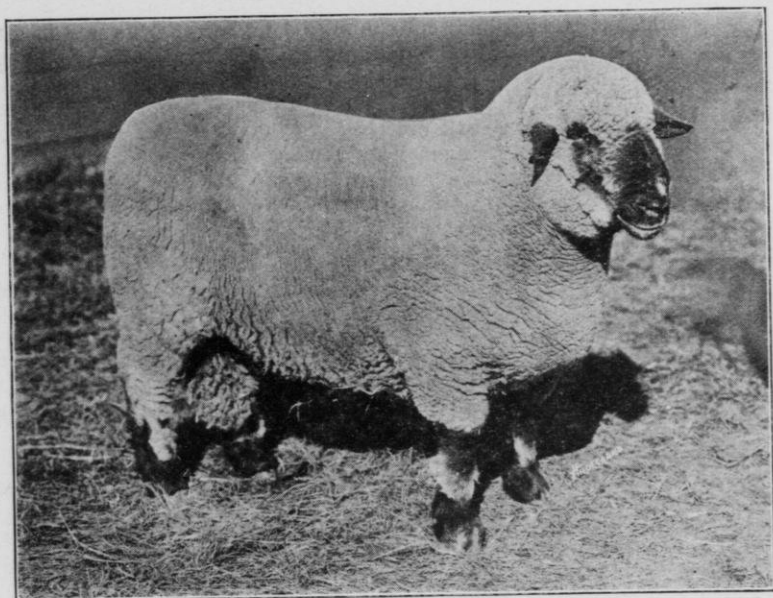
Champion Oxford Ewe, Wisconsin State Fair, 1914, owned by Geo. McKerrow & Sons Co., Pewaukee, Wis.

twice as much, it takes practically twice as much to maintain him as it does to maintain the one at half the weight. Now, you can plainly see if you only feed this animal which weighs a hundred or a thousand pounds enough to keep him just at the one hundred or thousand pounds, that feed is wasted so far as profit is concerned. If you feed to the smaller the same amount fed as food of support to the larger one every day, there will be a gain, where, in the other case, there would be no gain. So it is a sensible thing to feed that amount of food to the lighter weight animal.

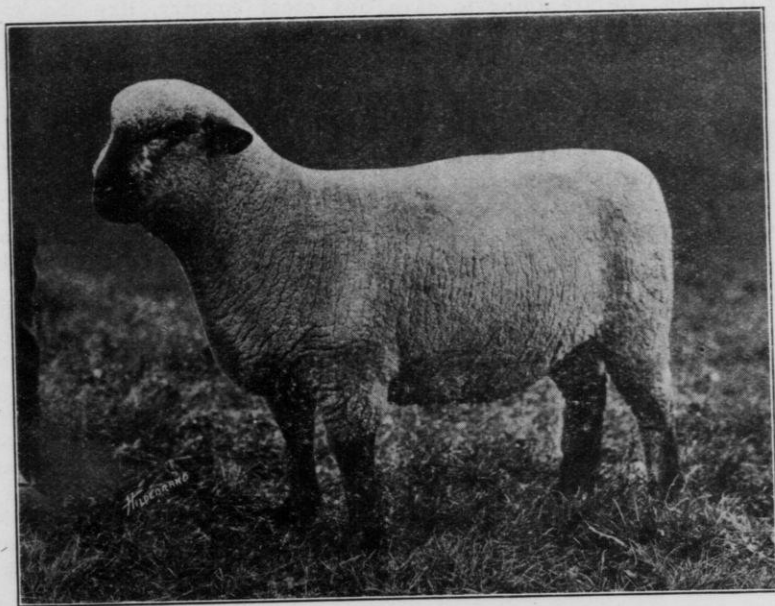
Then there is another principle involved there, recognized by feeders all over the world, that the younger the animal, the more active the digestion. That doesn't cut a great figure, but it has been proven out time and time again by experiment that they will take just a little more of the nutrients and digest them a little better, and for that reason we ought to feed the young animal and not let him stop, because the minute he stops, he strikes that principle which covers the food of support, and then every time he stops his digestion gets out of order to some extent, he is not getting enough to keep the life machinery moving right and healthful, and every time the digestive organs are deranged, there is not only a loss of weight, but there is a loss in the health of the digestive apparatus, and it takes time to bring that back to health again.

We have got to keep all these things in mind. Now, when the grain markets go up and we can sell our oats at fifty cents a bushel, we think that is a pretty good price, a little too high to use the oats for feeding profitably; but if you have high-class stock, you can feed fifty-cent oats nowadays and get your fifty cents back. I have done it, and

I know it can be done. I do not doubt there are other men in this audience who have done it. I wish I had the other fellows that do not do it to talk to today, the trouble is the other fellows aren't here. The fellows that have not thought about feeding for profit and the active digestions of young animals and early maturity, well bred, and all of those things, are not here, and there isn't much use of my wasting my time on you fellows. Of course, if you sell oats at fifty cents a bushel, that is very nice; you can deposit the fifty cents in the bank and it will be ready to pay taxes with next year. But suppose you feed those oats to a good dairy cow that is bringing in something like one hundred and twenty or one hundred and fifty dollars a year, as some of the cows are doing in Wisconsin, several of the best third of them. Won't you be paid back your fifty cents for those oats? Feed it to some of these early-maturing, meat-producing animals and they will pay you back fifty cents, if they are good ones. Then what have you got besides? You can deposit that fifty cents in the bank—and bankers are getting so they would rather take the fifty cents that comes from a good cow or a good steer, because they are thinking a little bit about these things too; they know that a man who gets fifty cents from an animal through feeding his oats, is keeping up his farm and he is going to make a better customer for that bank as he goes on; while the other fellow who is selling his oats is going to make both a poorer depositor and a borrower. When you feed that fifty cents' worth of oats on the farm, you have saved at least seventy-five per cent of the fertility to your farm, and so you have deposited in two banks. It would be better for a good many of



**Champion Hampshire Ram, Wisconsin State Fair, 1914, owned by
Cooper Nephews' Co., Chicago, Ill.**



**Champion Hampshire Ewe, Wisconsin State Fair, 1914, owned by
F. W. Harding, Waukesha, Wis.**

us if we would put more money into our farms and farm homes and improvements and not try to get so much into the bank. It is deposited in that farm and that farm will not "bust" when financial stringency comes; you will be right there and you can draw it out at any time. Maybe some of our banks will "bust," and we will lose it, and it is a sensible thing to make two deposits instead of one, fifty cents in the bank over here and thirty-seven and a half cents in the farm, thus getting eighty-seven and a half cents. That is the way we get profit by feeding, that is the way we ought to think about turning all our food stuffs which we can grow on our farms, and as much more as we can buy at a profit, putting them all into the animal and getting the profits in dairy production or meat production and added fertility.

A good many people who are touched a little with political partisanship say, "Oh, they have taken the tariff off; we are going to have cheaper meat, a whole lot of meat will come flooding into this country from foreign lands." Well, it is true it may go down somewhat; that is a matter that will have to be tried out, to see how it will work. In Canada, the cattle speculators hustled around and bought up all the cattle they could buy; they gathered in everything they could put their hands on, and the first week they knocked the Buffalo market down below Chicago; and the second week they kept it down, and the third week it came up a little, the fourth week it came up more until it reached the Chicago level, and the fifth week it went back to its normal condition above Chicago. By the eighth week there was nothing that came across, they sent it to Toronto, and why? Because the Toronto market for beef was fifty cents a

hundred higher than it was in either Chicago or Buffalo. The same thing happened with sheep, the supply was soon exhausted; in fact, it was so badly exhausted that two trainloads of lambs were shipped from Chicago to Toronto to help them out over there. We had to help them out.

Now, I do not doubt that the result will be the same with South American beef, and possibly Australian mutton will come into this market if it has a better market, a higher-priced market than the European market. But I doubt if it will be a better market. I do not believe that is going to cut much figure, because those people in Great Britain and other countries are not going to quit eating meat, so that we can get this cheap surplus to come this way.

Then again, as Mr. Martiny showed you the other evening, the gap between the population and the meat production has been rapidly widening within the last few years. Nothing has been seen like it in this or any other country, like the widening between the meat producing population and the number of people who eat meat.

In 1900 there were about eighty-five cattle to every one hundred people in the United States. Today it is down to less than sixty-five; the gap has widened nearly twenty-five per cent. With sheep, it is still worse, because our flockmasters have been frightened on both sides, with the tariff taken off of wool and off of meat, and so the flocks have been practically cut in two in the last thirteen years, and where there were eighty-three sheep to every one hundred people in 1900, there are only about forty-two now to every one hundred people.

These are some of the reasons why I would like the farmers of Wisconsin to set their thinkers to work on this question of meat production and

decide that sooner than sell off the grains and the grasses that we grow on Wisconsin farms by the bushel and the ton, we had better feed them there to keep up the fertility of our farms.

DISCUSSION

Mr. John Imrie—Lately I picked up a little pamphlet treating of matters along this line which gave some figures in regard to the decrease in the supply of food animals in the United States and Canada during the past thirteen years. The actual decrease in hogs is 16,900,000; cattle, 14,400,000; sheep, 10,300,000, making a total of 37,600,000 decrease, while the increase in population during the same period has been 28,000,000.

Mr. Nordman—Does the importation of those South American meats here that have previously gone over to Europe, affect the markets in those countries?

Supt. McKerrow—The meat market has been very good over there; the English farmers are feeling pretty good about the effect it has had there, because their meat market has been better than for the last six or seven years, better than ever before, I think. But when those markets are better than ours, that meat will turn that way again.

Mr. Convey—Haven't we exported our surplus to Europe and come in contact with that very meat before this?

Supt. McKerrow—Yes, our surplus meats have been competing with those meats, although in the last ten years we have been so short on beef and mutton that we have not exported much, but we have been sending pork there. Another point, the population

of those countries that are producing this meat is growing. They are at present shipping corn into our markets and they are supplying a large part of the European markets with corn, and yet our corn is keeping up in price. That means they are cutting down their meat growing to produce corn.

Mr. Nordman—Last year I got twenty cents a pound for my wool. I had been shipping it to Milwaukee. This spring, while I was down there, I went to see a man to whom I shipped my wool heretofore, and I asked what he was going to do on the price of wool this year, being we had free trade conditions in wool, and he said to me, "I will give you from two to three cents more for your wool clip this year than last year when you get ready to ship it."

A Member—You spoke about the price we would get for our oats in feeding to high class stock. I know of some cows that paid between seventy and eighty cents for oats this year, and other feeds in proportion. Another point, we are told that in sending a ton of butter off from our farms, it only carries forty-two cents' worth of fertility, while in selling off your oats, it will rob your farm of nearer forty dollars to the ton.

Mr. Convey—Do you think this corn importation is going to hurt us?

Supt. McKerrow—I do not have any fear of this South American corn doing us much harm up here in Wisconsin. It will probably drive some of those men who are robbing their farms down in Illinois and Iowa into meat production, but we can stand it, I think.

Recess till 7:30 p. m. in the evening.

WEDNESDAY EVENING SESSION, MARCH 18, 1914.

The convention met at 7:30 p. m. Supt. McKerrow in the chair.

Music, Girls' Glee Club.

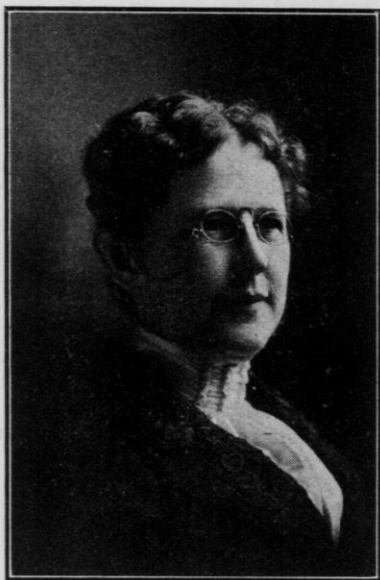
Selection by Johnson Nimlost.

Selection by Teddy Reed.

Music, Boys' Glee Club.

WOMAN'S BIRTHRIGHT.

Mrs. Nellie Kedzie Jones, Auburndale, Wis.



Mrs. Jones

Some years ago there sailed out from our eastern coast a ship, she sailed in silence. There were no passengers, only the crew, and as she passed out of sight of land, she sailed in silence through daylight and through darkness, she passed the great rock of Gibraltar and sailed up the Mediterranean, until she reached the shores of Italy.

There they carried on board that ship a long box, over the top of which was folded "Old Glory." Then the ship turned around and again in silence she sailed through sunshine and through storm, until she reached again our own coast. The word was flashed across the country that the ship was here, and all over his land bells tolled and men took off their hats because the dead body of John Howard Payne had been brought home for burial, the body of the man who wrote the words "Home, Sweet Home." Thus did our American nation honor the thought of home.

Ever since the world began, it has been woman's place to make the home. We have expected it of her, we have put her into the home and in the hands of every woman has been put the lines which pulled well or ill have made weal or woe for the man who has chosen her out of all the world to come and live with him, to love him and do for him as only a woman can do in the home. It is true that man furnishes her the materials, but it is the woman's work that makes the home.

For many years we did not think it necessary to give the woman any training to make her ready for home work, we expected her to do it without training, we thought she could instinctively make a home. By and by, when we did begin to give young

women a little training, it was so little that it did not mean very much in the girl's life. We had to ask them to make bricks without straw and nobly they responded, as the homes in this land in past years will testify. Today we are giving them training in what we call domestic science, or home economics, or household science, it is in our schools all over the land, that training simply means teaching them some of the principles of home-making. We hope this may go on until every girl shall know these principles and have in her hand the power to apply them. Then she can go into a home and carry it on with some sort of system and regularity. You would not for a moment trust a man to carry on any special kind of business, would you, unless he had been trained for it? What would you think of a banker who has had no training for the banking business? Would you expect a man to succeed who went in to the grocery or dry goods business without any training whatever in business methods? Would you trust a boy or a man to carry on your farm, to plant crops and raise your cattle who had no training whatever? Of course you would not. We are learning not to ask our girls to make a home for anybody until they have had the kind of training that will make them fully and efficiently ready. Today girls are looking out into the great world of effort and work; they are looking out as people look out of their windows. We used to have in our houses windows with six by nine panes. Today we have broad, one-paned windows and we look out across the prairies and see the world before us. A girl sees not only the definite little bit of home work that she herself must do personally, but she sees broader and greater fields, and is ready to enter them.

Woman as a Municipal Housekeeper.

What shall a woman do whose children are grown, perhaps are married and gone into homes of their own? A woman whose home work has dwindled until it is such that she feels it is merely a handful, taking very little time and thought day by day. Shall she sit down when she has come into the prime of her life, shall she sit down with her knitting, put on a cap and go back in a corner and stay there? Not at all, thank you. That woman is just ready for the best work of her life. She has had experience in her home, carrying on various kinds of house-keeping, she has done many kinds of work, she has broadened herself by reading and by thinking, and has had experience in dealing with people, for who can tell how many kinds of experiences the mother has! The boy and girl growing up side by side, the one boy so different from the other boy, and the mother must always know how to deal with them all. Isn't it just the time of her life when the woman should take up better and bigger and stronger work, and where shall she find better work than just in her town or her community?

We speak about municipal affairs and we think perhaps they are the big things in the world. So they are, the greatest in the world for you and for me, but each one of them is perhaps a little thing. Municipal affairs have been carried on by men entirely. Why? Simply because in the early beginnings the men took hold of them and the women were too busy to help. Nowadays, when women are learning to systematize their work in such a way that they can have more time to use, why should not the women help in municipal affairs, doing better than the men have ever done? Men must hustle and work or starve.

Some of them in this strenuous age must strive all day long to make a living; and the man of affairs, the business man, generally has his hands full, how can he give attention to the details of municipal business? The woman, as a rule, has command of her own time largely, why should she not be the one to take hold of the essential affairs in the towns, or in the country communities, if you please? Sometimes we call it municipal housekeeping, and it is really only enlarged home-making.

Think of it for a moment. Everything in the municipality is for the children; I cannot think of a thing in any town, in any city, in any community, that is not primarily for the children. There is the school system, the educational work. Is there any one place in the educational work where a woman cannot do as much or more than a man? Certainly she has more time to devote to it.

I am not holding at all that the women shall do all the work of the schools any more than I am holding that the women should do all the work of the homes. Perhaps you remember I said in the beginning the men supply the means to make the homes; and the men should be on the school boards to supply the means, to take care of the business, because, as a rule, men have had more to do with business than women have, and, as a rule, you will get more perhaps out of a given one hundred men who are handling business affairs well than you will get out of the same number of women, so I believe there should be both men and women on every school board. Why? The school is for the children. Is there anything in the world that the woman cares more for than for her children? Is there anybody in the world who will do better work for the children than

the mothers? So when I have known of women going on school boards I have rejoiced and watched with great interest. I know, for instance, of one town in another state where two women were elected to the school board. The first thing they did was to go to the school houses, look them over carefully; one of the next things they did was to furnish long cloak rooms which were not dark and unventilated, where every child could come and hang its outer wraps. They were wise enough to see, for instance, if a child comes out of a scarlet fever home, or where there is diphtheria, the wraps are much more likely to spread disease when in unventilated rooms than where light and air can have free access and thus destroy many germs. So they went to work and before they got through those school houses were materially changed in many respects, because the women had time to look them over. They had the scientific knowledge and the thorough interest in the children to look intelligently and to bring about the proper changes.

So it goes all the way through. I could tell you many useful things that women on school boards have done, simply helping the men, not trying to do it all themselves, but taking hold and doing together with the men the same kind of house-keeping that they have done in their homes.

Take the matter of quarantine in a town. I know of a country community where this thing happened not three years ago. A hotel in a little bit of a town of not more than two hundred inhabitants had some people come in to dinner one day. After dinner a lady in the party was sitting in the parlor, and somebody else who was in the house said, "Oh, I am so sorry for Mrs. Abrams; her children are all sick with scarlet

fever." This lady who had been there simply for dinner said, "What do you mean?" "I am so sorry, they are all sick with scarlet fever." The woman said, "Do you mean there is scarlet fever in this house and we have been here to dinner?" "Why, yes," the woman answered. The first lady was a wise, strong woman, she went to the telephone and called up one doctor in the community, and asked, "Do you know there is scarlet fever in this hotel?" "Yes." "How do you know, have you seen the cases?" "No, but I have four cases that took it from one of the children at the hotel." Then she said to him, "What do you mean by allowing such a thing and having this hotel open where strangers can come and go, without reporting it or doing something to shut it up?" He answered, "I am not the Board of Health." She said, "Who is the Board of Health?" He told her and without stirring from the telephone she called up the Board of Health, and said, "Do you know there is scarlet fever here?" They said "No! they didn't know." She said, "Well, the doctor says there is scarlet fever in this house, and I with other strangers have been here eating. How do I dare go home to my children?" The Board of Health got busy and shut up the place. As a matter of fact, the man who ran that hotel told a boarder he had known for a week that the children had scarlet fever, but if the Board of Health found it out, they would shut him up. I haven't any idea that any woman who knew what scarlet fever meant would have stood that thing a moment longer than that lady did. Any woman would have done something, but the men who came in there day after day and drank beer there, many of them, knew it, as it came out afterwards. They had talked it over among themselves and

had said, "We won't say anything about it, because the bar might be shut up."

There are many other things where women will take a hand. I tell you when a woman's child is in danger, then she is ready to do something.

Take it in the matter of clean streets in the larger towns. The men have done the best they could. Remember, I am not grumbling a moment about the work of the men. Look at this land, look at this State of ours, and see what has been done in these past years. But the day has come when the women are able to take hold and help, and it is woman's birthright to be allowed to help in every direction where she can. It is her birthright to be allowed to do for her children everything that is needed. Take the matter of clean streets, for instance. I know of a town, I lived in it, where small pox became quite epidemic. It was a town of some twenty thousand inhabitants. The streets were in very bad shape, and at last one of the Women's Clubs said, "Let us take hold and help clean up." A committee went to the board of aldermen and said to them, "If you will give us the money that you will use for cleaning streets for three months, we will clean up these streets and see if we cannot get rid of some of the means of spreading this disease." The men were pretty nearly at their wits' end, and were glad to have the women help. The women organized a street cleaning brigade. They put white uniforms on the men, calling them the "white wings," they put men on the streets whom they hired, and then they watched those men to see that they did do their work. They found out that there was a long list of old soldiers and various other people who could not get a job anywhere else,

who had been put on the payroll in that department, because the street cleaning commission found that was a good place to put them whether they were fit for it or not, to pay off their political debts. Some of them had never done one stroke of work on the street, all the work they did was drawing their pay month after month. The Mayor acknowledged as much, he said he had promised them a job and so he had to give it to them. The women found one old darkey lying down on the side of the street with his face turned to the west, and when one of the women said, "What are you lying here for?" he answered, "I was watching the sun to see when to quit work." Those women put better men to work, and then they watched to see that they did the work. I went down myself one morning and there were two of the daintiest women in town at half past four seeing that the work was done in such a way that we could see the color of the bricks, which we had not been able to do for twelve years.

That sort of thing the women could do. The men are busy, they were busy down there, and when the women took hold of that thing in earnest the town was cleaned up and small pox disappeared. Isn't that woman's work? Isn't that house-cleaning, and isn't it a woman's right to handle such things and see that they are done properly? I believe when women claim their birth-right they will help in such matters all over the land.

There are some other directions in which the women are going to work. Women care for their boys. There is a class of men in this land who are looking for the boys; they are reaching out saying every year, "I must have so many thousand of your splendid young men to keep our saloon running." The saloon keeper

says, "I am going to reach out and make as many of your young men as possible come in here and swallow my liquor, because I have got to have them in order to make money, and money I must have; that it what I am here for." So the boys are making a procession in and out of the saloon doors, and the mothers' hearts are breaking and the fathers are going into their graves because their boys have gone wrong. When women lay hold of this sort of thing, and are cleaning up a town, they are going to see to it that this temptation is not put before their boys. I grew up in a prohibition state, and I have wondered very much as I have gone out into other states and seen the feeling that people had about the saloon, because I knew it was possible to have a state without saloons. I knew it was possible to have a great school, a school where two thousand young men went back and forth every day and did not have to face the temptation of the saloon, they did not know what a saloon looked like until they were grown men, and by that time most of them had sense enough to leave liquor alone. I went from my home every summer into another state where there were seven saloons between the college boys and a lead pencil. It was not anything unusual to have a bunch of college boys in the lockup down town at night, and one of the college professors would be telephoned for to come down and bail them out. He would have them carried back to the dormitory to sleep off their drunkenness, all this because temptation was put before them all the time. The day is coming, and it is coming soon, when our boys will not be tempted in such ways. When our women take hold they will take hold strongly and firmly. Pretty soon with the help of the men of Wisconsin we are go-

ing to be given the right to cast the ballot too. When you give us that right, we are going to see to it that we vote with the best of you and together we are going to drive out some of these evils that tear down the characters of our young people. We are going to protect our boys and give them the chance that some of you had in early days when you came out here into the clean, pure air of our beautiful State. There were none of these temptations right before you, but you had the chance to grow into splendid manhood, that chance we want to give the Wisconsin boys today.

There is another place where the women are going to help. Do you know that the white slaver in this land says, "Give me fifteen thousand of your girls every year and I will lose them for you." And he does it. Do you suppose the women are going to stand for that very much longer? When they step out and take hold side by side with the men in their municipal housekeeping, they are going to see to it that our girls are protected and that no fifteen thousand girls shall be lost every year in this land of ours.

The women have many things in their minds. They are doing this kind of work day by day, and in every way they are going to protect the little folks.

Not more than three weeks ago, one of the Chicago papers told of a little girl, only six years old, who was found on the streets of Chicago with tears frozen on her cheeks, she said, "I can't find my daddy. Mamma said supper was ready and sent me to the saloon for my daddy, but I can't find him, though I have been in every saloon on the street." Do you suppose we are going to have our little children hunting in such places, doing such things as that? Not only the white slaver, not only the saloon

keeper, but the fathers sometimes must be seen to, and when the fathers are so tempted that the little people with frozen tears cannot find them, the women of that whole community are going to assert themselves and see to it that such men are not tempted, that such men are protected, are given a chance to save their manhood and take care of their babies.

There are a good many lines of municipal housekeeping that the women will take care of. Sometimes I wonder that they have not taken hold of these big things before,—oh, they are big things, because they make life worth living, or they make life worse than death.

The day is coming when every real man in every community is going to stand up and give to the women of that community their birthright. Every man is going to do his best to give every woman a chance to do for her children, to do for herself, and to do for him in municipal housekeeping.

The Rural Church

There is another institution I would like to speak of just a moment, and that is the country church, the church that is situated in the small communities, or in the small towns, or way out in the country. Sometimes we grumble about the country church, it has grown to be the fashion nowadays to criticize it. Perhaps with our automobiles and other ways of quick transportation, we forget it, and go off to the city church, or go off for something else, and let this little church try to live without us. You know and I know that we cannot live without the church. We wouldn't want to settle anywhere with our children out of reach of the church, because we know perfectly well that we want

our children to have the influence of the church as they grow up. There is a great deal in habit in this world, and if there were no other reason, giving the children a good habit is reason enough for supporting the church; it is reason enough for having grace said at the table when you sit down to eat your meal; it is reason enough for having family prayers in your home, just to give your children the habit. Of course I believe thoroughly that there is a deeper and stronger reason. The religious influence that father and mother have on the children means a great deal more than simply habit, but habit is a good deal.

I know a man, and a good man too, who would never say grace in his home, and the reason he gave was because his father used to say such a long grace that the children all got very tired of it, his father always said the same grace exactly, and he thought it was not very religious, so he would not have it in his house. He brought up three boys, two of them have followed pretty well in their father's footsteps and are good men. The third boy broke away from home, from his father's influence, and when he was twenty-two years he said to me, "My father doesn't believe in religion, if he did he would have some of it in his home." I tried to protest, because I believed in his father and loved the whole family, and I said to him, "You do not think for a moment anything of the kind, your father has been too good a man, he has lived too near to his Heavenly Father for you to believe he does not believe in religion." But the boy said, "Then, why didn't he have some of it in the home?" When I went and told his father what the boy had said, the father said, "It has been the mistake of my life, and I see it now. I ought to have given the boys the kind of hab-

its that I was given, if I couldn't give them anything else." It means a good deal to have the habit of cleaning up, dressing up on Sunday, and going to the house of God, sitting quietly, even if you do not listen to the sermon, listen to your own thoughts. I am not saying that every one of you strong men who can think out your own sermons needs to go and listen to perhaps a student who comes out to preach for you, because country churches are not very well supported, and you cannot have a man who is worth five thousand dollars for five hundred, but you can go to your church with your children, and you can sit there and think your own sermon, if you want to, you can give your children the kind of training you were given in your early days when your fathers took you to church every Sunday. They saw to it that you were there.

I do believe some of the Puritanism of our grandfathers has come down in our blood. It has done much to enable us to meet whatever we have to face, but what are we giving to our children, what kind of training? I heard a man say not long ago, "Oh, no, I don't urge my children to go to church and Sunday school, I want them to be free moral agents, I want them to do just what they want to do." And the very next morning two of the boys were being hustled around by their father, "Hurry up there, boys; you'll be late for school." And when they didn't hurry as much as he wanted them to, he took one by the coat collar, and he said, "You hurry up, get your hat and go to school." A man who happened to be visiting there said, "Why, I thought you were letting your children be free moral agents." "Well, I guess I am not going to let them grow up without education." "Well, you said yesterday you were not going to urge them to

go to church or Sunday school, you wanted them to be free moral agents about church and Sunday School, why don't you let them be free moral agents about their education? The father said, "I never thought about it that way before, I guess they will go to Sunday School next Sunday." The man thought he was allowing them to be free moral agents as long as he didn't make them go to church, but when it came to going to school it didn't work. I have been made to go to church and Sunday School a good many times when I didn't want to, but I know now it was a good habit fixed upon me, and if some of you people would gain the habit and would insist upon supporting your country church or that of the small town, it would do the church good and do you good too, to say nothing of your children.

One word about there being so many churches in the small towns. We criticize our church, we complain about it, we feel that things are not going right, and sometimes we say consolidation is the remedy, but do we try to mix oil and water, though we well know that water is good and oil is good? The thing that comes closest to our hearts is the thing we are going to cling to as long as there is breath in our bodies, and every one of us has had some kind of a training or bringing up that gives us a leaning towards some kind of a church. Now, you cannot in this day and age put all the churches together in one church, much as we like to talk about it. You cannot make everybody come into one church, but why not? I am going to ask another question. All of you believe in this United States of America, all of you would give your lives if there should be a war for the sake of the government. Why don't you all vote the

same ticket? For just the same reason everybody does not go to the same church. Everybody wants something, he wants to get the consolation that the church gives him. Neighbors are willing to combine their interests in some outside things, just as you have put them together here in the Farmers' Institute, you put them together in the good roads movement, in school affairs, in public affairs of many kinds, in street cleaning, all sorts of things, and by and by, when there have been two or three more generations of young people who have grown up and worked together for the general good, they will succeed in consolidating more of these churches. But do not expect to consolidate all the churches and make them all into just one church, even though we are all trying to go to Heaven on the same general road, do not expect to put everybody into one church until all of you men vote the same ticket.

Once when I was talking about schools for teaching girls the art and science of home-making, a woman said to me, "Well, I was interested in your talk, but you see I haven't any girls, I have only four boys, and so it didn't mean so much to me." "Ah, but," I said, "you ought to have been a great deal more interested than if you had girls, because you do not know which of these girls in this neighborhood your boys will some day bring home to be daughters to you; it is much more to your interest to see to it that every girl in the neighborhood is trained, that every girl has an opportunity, that every girl has her due, because you want the girls that your boys bring home to be the kind of girls and to have the kind of training that will make them acceptable daughters in your home."

So it is with every one of us; whether we have daughters or sons of our own or not, we have an interest in the boys and girls of our neighbors. We should have an interest in every boy, every girl in this county, and perhaps in the next county, and in all this great State; we want to work for them, and that is where woman's birthright comes in, particularly when she reaches middle age and her own children have grown up. I am not talking so much for the younger women; the younger women are in their homes with their children, or they ought to be; but when they are through with the work of rearing their own children, then let them step out and take hold of the community life, helping wherever needed, because they can command their time, they can broaden out and make their experience fit into the larger work in the town, or the community in which they live.

Esau sold his birthright for a mess of pottage, and Esau's children, from that day to this, have suffered for it. Let us remember that we have a birthright, and that birthright is to care for our children and do for them in every way, both private and public, that shall

be for their advantage. I believe every fair-minded man in the State of Wisconsin will be ready to help us in every way possible. Let the women do all they can. When you men stand beside the women, teaching and helping them in these greater affairs of the municipality, you will find that they will do better municipal housekeeping on account of the experience in their own homes. They will do better municipal housekeeping with you than ever you have done alone, and when the day shall come that every woman in Wisconsin shall exercise her birthright, we shall have a cleaner State and our young people will grow up into the kind of citizens we expect and believe in. They will make for us the kind of homes that Wisconsin wants; when Wisconsin has such homes there will be no question about graft, there will be no question about malfeasance in high office, about dishonesty, because every man and every woman will have had the kind of bringing up that the woman who exercises her birthright gives her children.

Adjourned to 9 o'clock next day,
March 19, 1914.

THURSDAY MORNING SESSION, MARCH 19, 1914

The convention met at 9 o'clock A. M., Mr. H. D. Griswold in the chair.

Prayer, Rev. Mr. Davis.

Supt. McKerrow—I have a letter here from the Honorable C. E. Estabrook which I will read. The idea of this communication is to in some way bring out the history of the Institute work in Wisconsin. His request is that we put on record a motion to complete the history of the Institute work in Wisconsin. he touches on the early history.

If it meets with the approval of you gentlemen here, you can say so by resolution, or something of that kind. I would prefer to have it done in that way rather than to make it a personal matter. If it does not meet with your approval, it can be dropped with the letter. That is a matter that is left with you.

Mr. Geo. McKerrow:

As you have announced that you intend to retire from the position of Supt. of the Farmers' Institutes after an active and successful management of twenty years, it seems appropriate to take notice of your proposed action. Twenty years is a long time to be the acting director of such an educational force as the Farmers' Institute, with an attendance of about 100,000 per annum, reaching directly about 65,000 persons each year, quickening into new life and renewed activity the forces which count for so much in the growth and development of the State, and the health, comfort, convenience and prosperity of us all.

I think you are to be sincerely

congratulated on the fact that you have had such an opportunity of service and have been able to secure such gratifying results. What an army of devoted earnest workers you have been able to lead! And what a measure of health, happiness and wealth your joint efforts have been able to secure!

And now as you are about to quit the work with which you have been so long connected, I hope you will leave in printed form your own estimate of what has been accomplished in and through the activities of the Farmers' Institutes. The origin of the Institutes has been fairly well covered by what has appeared in print.

At this time would it not be appropriate to provide for recording some of the unwritten history? The Institute idea grew with rapidity when it was once launched. Its success was assured from the first. I felt such confidence in the measure that I consulted but a few persons before introducing the bill. This confidence was inspired by my knowledge of the men who were setting the standards for Wisconsin farmers in the early '80's of the agricultural history of our State. Hiram Smith, H. D. Hitt and C. H. Williams were in 1885 members of the Board of Regents and constituted the farm committee of such board, and on account of the character and fitness for the task, the authority to carry on the Institutes

was lodged with the regents of the University.

Shortly after the passage of the law I met Mr. Smith on a train, and after congratulating me upon the success of the measure and the enthusiastic manner in which the same was received, said that the law providing for the Institutes was just what was needed and wanted. Naturally the conversation drifted on to the question of management of the institutes, and "Uncle Hiram" said to me "That we have just the right man for that business down in Walworth County" Mr. W. H. Morrison, who was subsequently selected as Superintendent of the Farmers' Institutes, and continued as such superintendent until his death in 1893.

H. C. Adams of Madison was a member of the Assembly in 1885, and had introduced and was advocating a bill to create a separate agricultural college; after my measure had got well started he was advised that the passage of the Farmers' Institute bill would defeat him, and he was urged to turn in and "club" it as a means of saving his own. But "Cully" was too big a man and too loyal to his sense of public duty to do anything of the nature suggested, and while he recognized the force of the suggestion his judgment recognized the value of the Institutes, and he became an active and generous supporter of the Institutes and subsequently a valuable worker therein.

The Farmers' Institute idea was developed at a very auspicious time. The efforts of Prof. Henry, W. D. Hoard, Hiram Smith and others, and more particularly the organized efforts and co-operation of many through the Dairymen's Association, had prepared the public for the gospel of scientific farming, and the Institutes furnished the means of

taking the latest and best thought to the interested farmer.

The value and the far reaching effect of the Institute cannot be estimated. A few years ago a manufacturer in Manitowoc received a communication from Tasmania, asking the price of a feed cutter on board ship in San Francisco, saying that he had been reading some of the Farmers' Institute Bulletins and wished to try Hiram Smith's method of growing, reaping and preserving silage.

The persistence with which Hiram Smith, W. D. Hoard, Prof. Henry and many others of their associates in the early days of the Institutes advocated the purchase and breeding of thoroughbred stock not only resulted in a direct financial gain by reason of the improvement of the live stock in the state and the consequent profit, but resulted in the development of stock breeding as a distinct industry in this state, and a large revenue is now obtained therefrom. After the Institutes had been running about a year, Supt. W. H. Morrison attended the live stock show in Chicago and was much surprised to have the stock breeders gathered there from the various parts of the country ask him "What is the matter of the farmers up in Wisconsin?" explaining as a reason for the inquiry that "We get more inquiries from Wisconsin for thoroughbred stock, first class animals, than we do from all the other states." The teachings of the men named and their associates which aroused the farmers to the importance of improving the breed of domestic animals, resulted in the purchase and importation of high bred animals of all kinds, and many farmers with taste and aptitude in that direction became stock breeders, and as a consequence now Wisconsin has some of the best stock farms

in the country. The high reputation of Wisconsin breeders is now well established. Within two years I have met agents of Japan and South Africa who had come to Wisconsin to see Wisconsin herds, and who were so pleased with what they found made considerable purchases for their respective governments, at prices entirely satisfactory to Wisconsin breeders.

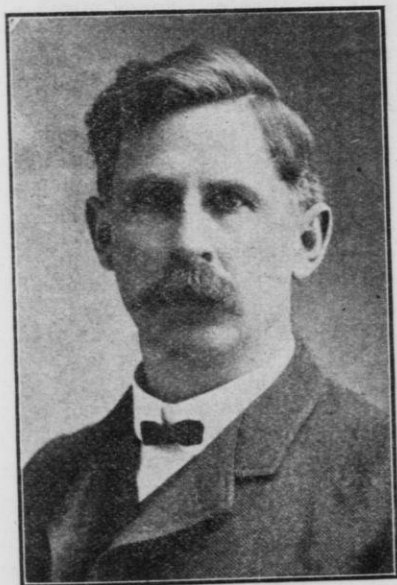
It seems to be that the people of the state have not fully appreciated or adequately recognized the value of the services rendered by the men named and their associates. It

would be of lasting benefit to the people of the commonwealth to have in appropriate form the history of the agricultural development of this, in which the high standards set by the pioneers could be recorded in accessible form for the benefit of all investigation; there is a deal of wealth buried in one report which should be utilized. Before you surrender your commission, can't you set the wheels in motion to make the record adequate and accessible?

Very truly yours,
C. E. Estabrook.

FOOD INSPECTION AND THE DAIRY AND FOOD DEPARTMENT

E. L. Aderhold, Ass't Dairy and Food Commissioner, Neenah, Wis.



Mr. Aderhold

The initiative for the establishing of the Dairy and Food Department was taken by the Wisconsin Dairy-men's Association at its fifteenth annual session in 1887, when a resolution was passed by that Association asking the Legislature to create the office of Dairy and Food Commissioner to prevent the manufacture and sale of any form of adulterated cheese for the pure article. At the sixteenth annual session of that Association, a resolution was again passed asking the Legislature to establish the office of Dairy and Food Commissioner to ferret out and prosecute for all adulterations of butter and cheese and the sale of the same, as well as of other foods. At the seventeenth annual session of that Association, a similar resolution was passed for the reason as stated in the preamble, as follows: "Imitations of butter are being sold in

Wisconsin in violations of laws, to the prejudice of honest goods. Cheese is being made in large quantities robbed of its natural fat, filled with lard or other foreign fats, and not stamped as the law provides. Adulterated and impure milk floods the market of towns and cities, drugs are made useless, drinks made more poisonous and nearly every article of human food diminished in value by adulteration."

Governor Hoard in his message to the Legislature in 1889 urged the establishment by the Legislature of a Commission clothed with the necessary power and means for the suppression of the fraudulent manufacture and sale of imitation butter and cheese, as well as the sale of adulterated, impure or diluted milk, and the widespread and rapidly increasing adulteration of the food of the people. He pointed out that the then existing laws on these subjects were practically inoperative, because there was no well established agency for their enforcement. He also called attention to the fact that neighboring states were in advance of Wisconsin in this matter.

In a public address delivered about ten or twelve years ago by the late Honorable H. C. Adams, who for seven and one-half years was Dairy and Food Commissioner of Wisconsin, he showed in the following graphic statement the need of such a department:

"Tea has been adulterated, coffee beans made out of rye paste, creased and colored to look like the real thing; flour adulterated with white earth; candy with the same material; common spirit vinegar sold for cider vinegar; a riot of adulterations in all forms of spices; butter adulterated with water, casein, lard and tallow; smoked hams that smoke

never touched and which obtained their color and flavor from a poisonous solution called 'liquid smoke'; baking powders with labels written by the prince of liars; cream colored artificially and preserved by rank poisons; sausage made of stale meat unfit for human use, brightly colored by an injurious preservative; maple syrup made out of brown sugar and a beautiful label; New Orleans molasses as nearly like the genuine as a decrepit negro would be like the Venus de Milo; milk, the special food of babies and invalids and the universal food of the people, diluted, skimmed and poisoned; veal from calves killed within forty-eight hours after birth; cheese robbed of butter fat and filled with hog fat; canned goods full of water and injurious preservatives; adulterated beer, adulterated whiskey, adulterated wines, adulterated drugs; cottonseed oil sold for olive oil; honey mixed with glucose; lard containing caustic lime, starch, stearin and cottonseed oil; peas colored with poisonous copper. Nearly everything which can be used for drink or food has been sold to the American people in recent years under the name of pure food products."

The office of Dairy and Food Commissioner of Wisconsin was created by the Legislature of 1889, during the administration of Governor Hoard. The salary was fixed at \$2,500.00 a year. That is the salary which the Dairy and Food Commissioners have received and is the salary which the present Commissioner is receiving.

Some of the Things Accomplished

Referring to the work of the Dairy and Food Department, Commissioner Emery in his last biennial report makes the following statement:

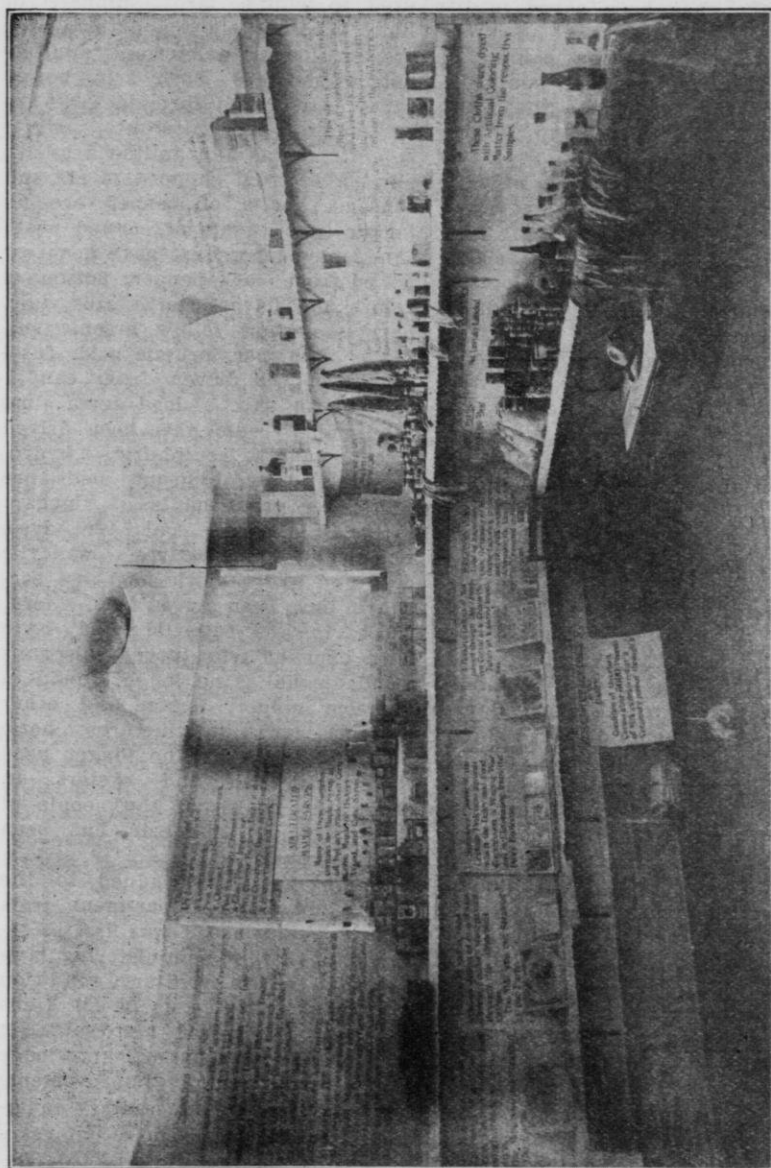
"I forbear to undertake to estimate what has been saved in life and health to the people of Wisconsin. Such a saving cannot be measured in dollars and cents. A study of the reports of the Dairy and Food Department and of the statements quoted in this report of the extent and character of food adulteration will disclose that in the early history of this struggle, milk, the common food of babes and invalids, was preserved with poisonous chemicals; that chopped meats and sausage, the chief reliance of the laboring class, were doped with borax, sodium sulphite and other substances deleterious to health; that extracts were made with poisonous wood alcohol; that numerous food products were artificially colored with harmful tar dyes; that salicylic acid was used as a preservative in many beverages; that saccharin, a coal tar product five hundred times as sweet as sugar and shown to be deleterious, was a common adulterant, and that in general there was a riot of artificial coloring and harmful chemical preservatives in general use in food products. These harmful chemical preservatives and deleterious artificial colors have been almost completely driven from the food products marketed in this State. It must follow that this result has caused an immense saving as to the health of the people of Wisconsin."

Elsewhere he states: "Salts of copper, lead and decayed substances have been eliminated from canned goods; red lead is no longer an ingredient of cayenne pepper; glucose flavored with artificial essences, dyed with artificial colors and containing chemical preservatives no longer masquerades in the garb of jams, jellies and preserves; aniline dyes and impure essence of almond are not common constituents of ice

cream; caustic lime is no longer used to whiten lard; sulphate of lime, Martius yellow and terra alba are no longer deleterious adulterants of mustard; boric acid, borax, salicylic acid and formaldehyde are no longer milk adulterants; sodium sulphite, borax and aniline dyes are eliminated from chopped meats and sausages; salts of copper are no longer constituents of canned peas; sand and pepper dust have been expelled from black pepper; poisonous colors and flavors, terra alba, talc, barytes, chrome yellow, arsenic, sulphate of copper, prussic acid, fusel oil, have been driven from candy; salts of tin, salts of lead, terra alba, sand and gypsum have been driven from sugars; sulphuric, hydrochloric and pyroligneous acids are no longer constituents of vinegar; artificial flavors, coal tar dyes, chemical preservatives, salicylic acid and hydrochloric acid and saccharin have been driven from ciders; saccharin and salicylic acid have been expelled from pops; poisonous wood alcohol is no longer found in Jamaica ginger, lemon and other extracts and in tinctures; boric acid and borax are no longer used to embalm fish and oysters. In short, the health of the people of the State of Wisconsin has been greatly conserved."

Among the duties added to the Dairy and Food Department from year to year since it was first established is that of administering laws relating to the sanitary condition of places where foods of all kinds are produced, stored and sold. It is a matter of common knowledge that revolutionary improvements have occurred in the sanitary conditions of these places in recent years as a result of the work of this Department and directly promotive of the public health.

That all this vigorous work of



Part of Exhibit of Adulterated foods made by Dairy and Food Commission at Wisconsin State Fair, 1905.

the Dairy and Food Department has had an appreciable effect upon the public health is supported by the report of the United States government that Wisconsin ranks second among the states in health.

The last biennial report of the Dairy and Food Commissioner contains statements relative to the financial savings of the people of the State resulting from the work of the Dairy and Food Department. Based upon the opinions of a representative number of wholesale dealers in butter and cheese that the patrons of creameries and cheese factories have been receiving not less than one cent a pound more for their butter and cheese than they would have received had it not been for the work of the Dairy and Food Department, and knowing approximately the yearly production of cheese and butter in the State, the conservative estimate is made that the patrons of cheese factories and creameries in Wisconsin are annually receiving over two and one-half millions due to the work of the Dairy and Food Department in improving the quality of their products, and the public is deriving the benefit of improved quality.

A Comparative Statement

This estimate is supported by the following statistics, published in the Yearbook of the United States Department of Agriculture, Washington, D. C., for 1911:

This statement shows that patrons of Wisconsin creameries during the year 1911 received more per pound for their butter during each month of the year than did the patrons of the creameries of any of the neighboring states.

In the matter of cheese, Wisconsin is now the leading State in quantity, quality and variety. Wisconsin cheese commands the highest price in the cheese markets.

The Dairy and Food Department is charged with the enforcement of the law relating to the sale of adulterated linseed oil. The last biennial report shows by careful estimates upon reliable data that over \$112,000 a year are saved to the users of linseed in this State by preventing the sale of linseed oil adulterated with mineral oil. In addition to this, the damage to buildings through the use of such adulterated oil would probably exceed many times the above figures.

It is shown in that report that the saving to the people of the State of Wisconsin by the work of the Dairy and Food Commission in ridding the State of adulterated and misbranded foods of all kinds has not only conserved the public health, but has resulted in an annual financial saving of not less than six million dollars.

Department of Weights and Measures

The year ending June 30, 1911, was the last year that the Dairy

Average Price Received for Butter by Farmers on the First of Each Month of 1911

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Illinois.....	27	22	21	22	21	19	20	22	23	23	25	27
Michigan.....	25	24	32	22	20	19	19	20	22	23	25	28
Wisconsin.....	30	27	24	24	22	21	22	23	25	25	28	31
Minnesota.....	29	24	22	23	21	20	20	22	24	24	27	30
Iowa.....	27	22	21	21	20	19	19	22	23	24	25	28
United States.....	27.8	24.1	22.7	22.6	21.4	20.3	20.4	21.7	23.1	23.8	25.2	27.4

and Food Department operated before the Weights and Measures Department was added, by making the Dairy and Food Commissioner ex officio State Superintendent of Weights and Measures, and practically doubling the work of the Department. The cost of maintaining the Department for that year was in round numbers \$43,000. The population of the State, as shown by the census for 1910, was 2,333,000, from which it will be seen that the cost for maintaining the Dairy and Food Department was less than two cents per capita. As the Dairy and Food Department is a conservator of the health of every man, woman and child in the State, it seems especially fitting that its cost per capita should be shown.

In this connection, it is interesting to observe that for the year 1911 the reported cost of the Illinois Dairy and Food Commission was \$73,000; of the Iowa Dairy and Food Commission, \$45,000; of the Michigan Dairy and Food Commission, \$40,600; of the Minnesota Dairy and Food Commission, \$62,700.

The amount of fines imposed by prosecutions brought by the Dairy and Food Department in 1913 was more than \$11,000. These fines are required by law to be paid into the State Treasury and become part of the State's school fund. They amounted to more than one-fourth of the cost of the Dairy and Food Commission for the year, exclusive of the Weights and Measures Department.

Whether considered from the standpoint of public health, or from the standpoint of dollars and cents it is apparent that the State's investment in the Dairy and Food Department returns to the people of the State amounts vastly in excess of all costs.

DISCUSSION

Mr. Convey—With reference to the inspection of linseed oil shipped in from outside of the State, does that come under your jurisdiction?

Mr. Aderhold—No, that is under Inter-State Commerce. We cannot prevent the shipment of adulterated goods into the State.

Mr. Brown—Can you prevent the retailer from selling them?

Mr. Aderhold—We cannot prevent him from doing it, but we can prosecute him as often as we catch him doing it.

Mr. Brown—Are the fines adequate?

Mr. Aderhold—The fines for nearly all these offenses are from twenty-five to one hundred dollars. Wherever the courts sustain us, we can stop those abuses. In some towns it has been difficult to get a conviction, even with the best kind of evidence. Of course that embarrasses the work of the Department.

Mr. Convey—Do you test samples for everybody who sends them into the office?

Mr. Aderhold—No, if we did, we would be swamped with that kind of work alone. The chemist wouldn't have time and we cannot do it for that reason.

Mr. Brown—Wouldn't it be far cheaper to take a sample in and test it than to send a man out to get it?

Mr. Aderhold—That would be cheaper, but after it was analyzed and the man got the report on it, if we didn't look after it, it might not do any good at all, and the party might keep right on selling it, even if such sales were unlawful. The Legislature has not provided us with enough chemists to do that, nor has it made it our duty to do such work.

CO-OPERATION OF THE COUNTY SUPERINTENDENT WITH THE FARMERS' INSTITUTES

Supt. Geo. W. Davies, North Freedom, Wis.



Mr. Davies

The Wisconsin Farmers' Institutes are an investment. As it is desired that this investment may return to the people of this State the greatest dividends, it is important, first that the Institute be assigned to the localities most in need of help and instruction, and, second, that the meeting shall be well attended.

How then may the County Superintendent co-operate with the Farmers' Institutes to bring about the above named results?

First of all, I would suggest that the County Superintendent may be an instrument of enthusiasm in the community. As he travels about the

county, he has an opportunity to meet the people; he knows first hand of the character of the men and women who are upon the Institute force; he knows the needs of his county, and he knows the nature of the instruction that is brought to these meetings. Where criticism appears, he may lend his influence in endorsing the work of the Institute.

Through the publications from his office he may announce the dates of the Institute to be held in the county, and keep the teachers, the school board officers, and the parents of the pupils generally posted as to the coming Farmers' Institutes. He should himself attend and take as active a part as possible in the deliberations at the Farmers' Institute meetings.

There are many factors that contribute to a well attended Institute, but the only one for me to consider here is the one in which the County Superintendent may co-operate. This will eliminate the weather, as well as many other important factors, from this discussion. Too often did the Institute conductors find a mere handful of farmers at the Institute.

During my first year as County Superintendent of Schools, a letter was sent to teachers and district clerks of all schools within a radius of five miles of the place of holding the Institute, advising that on a certain day these schools be closed and means be provided to have the children attend the Institute. So generally was the suggestion adopted that the large hall used as meeting place was crowded beyond its capacity. Not only the school chil-

dren, but the parents and young people on the farms came. The conductors made their talks of interest to the school children and a general interest in vital farm topics was aroused. This practice has been followed ever since with good results.

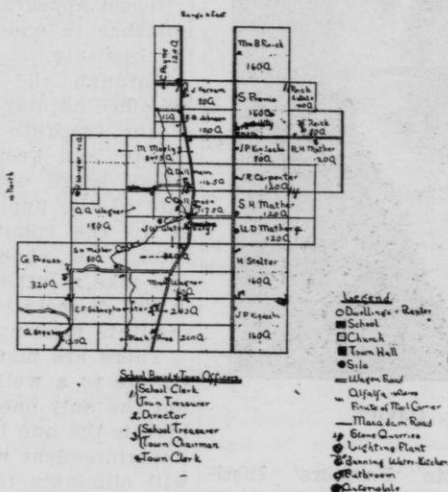
The County Superintendent may distribute Farmers' Institute Bulle-

people of these organizations are always glad to receive the latest Farmers' Institute Bulletins.

Locating the Institutes

Now, in considering the second topic, as to the location of the institute, it seems to me that the County Superintendent's work may be most effective, because the speak-

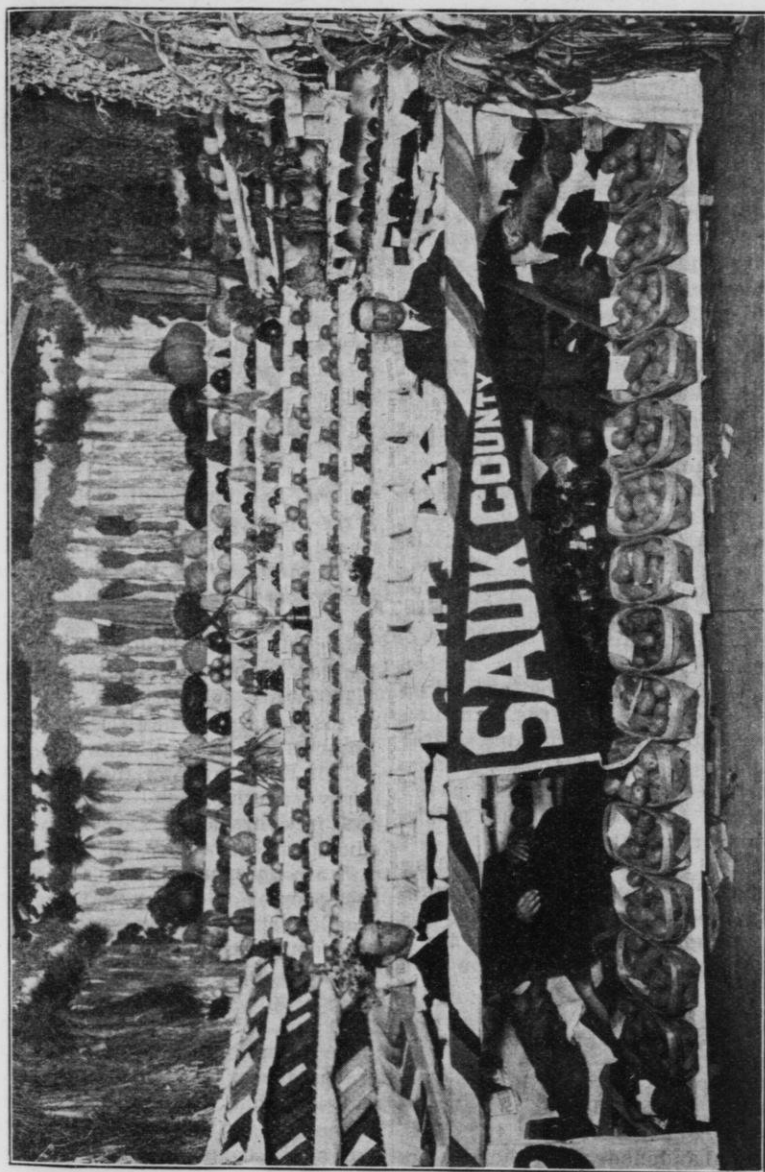
School District No. 4 Supter.



tins. We know that he is loaded down with a lot of material that must be distributed to the schools in the county, but he will find room in his buggy or automobile to carry a few of the Institute Bulletins, and I find that the people of the county are eager to receive them; in fact, some men write in for them every year.

The Farmers' Institute Bulletins may be distributed at the Farmers' Clubs and other social gatherings and at agricultural meetings that are held within the county. The

ers sent out and the topics presented upon any program should be governed by the needs of that particular community. I can see very easily how your Superintendent of Institutes and your conductors may not know and cannot know in detail the conditions in the different counties of the State and the sections that most need the Institute. If the County Superintendent cannot be an agricultural expert, he can at least be the county agent to assist in securing this information.



First Prize County Exhibit Wisconsin State Fair, 1914.

A Survey of Sauk County and What it Shows

I want to report to you briefly the results of a little survey made in our county last year, because I believe that the information gathered is of value to you as Institute workers. We have dignified this work by calling it a "Survey."

This work was started at the suggestion of State Superintendent C. P. Cary and has been carried on in every school in the county. Modifications and changes have been made to cover local conditions.

Under the direction of the teacher, the older pupils in each school drew a map of the school district showing accurately what each district contained. First the facts of local or home geography are noted. The near-at-home facts of civics, history, agriculture and farm arithmetic are collected and studied. These school district maps show location of roads, streams, schools, homes, halls, churches, creameries, cheese factories, grist mills, timber areas, alfalfa fields, silos, pure bred herds of cattle, orchards, untilled lands, rented farms, running water in farm kitchen, bath rooms, pianos, automobiles, lighting systems, paved roads and farmers' clubs or neighborhood organizations.

Detailed information regarding the survey of a school district may be obtained by applying to the College of Agriculture, Madison, for a bulletin now in preparation on this subject.

Summary of Facts

As a result of the information gathered, we found that there were in Sauk county last year 440 silos, not one abandoned, all of them in active use. From a certain source of information in the State, it was stated that the farmers of Sauk

county raised 40 acres of alfalfa two years ago. As a result of this investigation and reports received from the teachers, we find that there were 250 farmers in the county raising alfalfa and a total of 750 acres was being grown. To my mind, this information is the biggest single argument for the growing of alfalfa that has ever been presented in our county. The value of alfalfa to the dairy farmer is well established. It only remains to show the average farmer that by the use of right methods, alfalfa may be successfully and profitably grown anywhere in the county.

Last year the country teachers carried on work in the ear testing of seed corn in one hundred schools. There were in operation in the schools of our county twenty Babcock milk testers, and many of these testers were operated not merely in the school house, but they went out into the community to the farm homes, which became more interested in that school and the work it was doing. The number of milk testers will be doubled during the present year.

There are twenty-three creameries in the county and thirty-five cheese factories.

This survey shows the location of thirty neighborhood organizations now in operation. These are active educational agencies in the county that are an expression on the part of the people of a community for a broader, richer and more wholesome life on the farm.

When teachers' reports for the close of the present year are in, we shall not only be able to show how these different lines of activities have grown during the past year, but in addition shall be able to tell these Farmers' Institute workers in what part of the county we have the greatest number of renters and how many renters there are on the farms of the county. We shall be able to direct

you to every pure bred herd of cattle. We can even name to you the men who own automobiles. We can direct you to the homes that enjoy the comforts of a bathroom, and we can tell you also how many farm women are enjoying the privileges of running water in the kitchen, or a lighting system in the home.

Now, is this information of any value to you? It seems to me that in determining the location of your Institutes and the nature of the discussions to be brought up, it is important to know what the community has and what it most needs. I know of no one who is more ready to do the work and has the machinery to do it better at his disposal than the County Superintendent when backed by the support of the teachers in his county.

Short Time and Evening Meetings

There is one feature that I would like to urge in connection with the Farmers' Institutes. It is a kind of help that I have never been able to receive. It is this, that in season and out, one might feel free to call upon some of these men and women as Institute workers and bring them to his county when we could hold perhaps a day's session and an evening meeting in some of these localities that are most in need of help. We had in one town last year only one acre of alfalfa growing, while in another town the same size there were 118 acres. I would like to get hold of the best alfalfa man on this force and take him into that town that has but one acre. That town is claimed to have the best farm in Sauk county. It is not a barren waste by any means.

So in the location of these short Institutes and evening meetings I wish we had at our disposal some of these people who could come to us at appropriate times of the year and help in this work.

Because of local conditions there are problems peculiar to each community. Attention and effort should be focused upon these problems. There are sections that need draining, communities that need to pay more attention to the selection, grading and testing of corn and seed grains; others that may profitably engage in community efforts in growing potatoes, testing cows or marketing fruit; farmers in one section may need instruction in ventilating barns and very generally should the campaign for the production of clean milk be carried on. Where Shorthorns or unprofitable mongrels are being used for dairy purposes without regard to butter fat production, we would like permission to secure Mr. Griswold, or some other of these cow men, for meetings in parts of the county which the Institute proper cannot reach. If such a plan could be put in operation, if some of the Institute workers were available during the year, at least for a few of these meetings in every county, more nearly than ever before we would be able to just touch the spot that needs attention and it would be one of the most effective means of co-operation between the County Superintendent and the Farmers' Institute.

DISCUSSION

Supt. McKerrow—It was through the work of the Educational exhibit at the State Fair that I became acquainted with this gentleman and I saw that he was one of the practical superintendents in this State, one of the men who was working to accomplish things, and you can see here from what he has said that he has been a co-worker with the Farmers' Institutes, he has been more than that, because this is the age of sur-

vey. That is one of the popular things in these days. This survey that Superintendent Davies has made in Sauk county is of a popular kind, and a very useful kind. The surveys were made by his teachers and by his pupils in every school district in Sauk county. Now, do you see what they are getting out of that themselves? They are getting education, they are becoming survey experts. Each is in competition with other schools and they will do their best; they are getting knowledge all along the line; they are stirring up the farmers in their own immediate neighborhood with that kind of a survey, and without jealousy, without any increase of taxes, without any hard feeling of any kind, and that is the right kind of a survey, and I think we ought to commend this kind of work, and that those who are doing Institute work in Wisconsin in the future should keep that in mind, and stir up the lazy superintendents along such lines as this.

Now, we have some other superintendents in the State of Wisconsin who are working along the same kind of lines. I think probably Mr. Davies is just in the advance, but he is being followed closely; still I think Superintendent Davies, as long as he is in that work in Sauk county, will keep in the front rank. Still we are glad to know that there are others after him, the same as our friend Wilson said yesterday that Minnesota is after us. I hope some of them will catch up to him and march shoulder to shoulder with him, and I hope that our Institute workers in Wisconsin in the future will try to spread this gospel and harness up more superintendents to work along these lines. It is valuable work and should be encouraged. It will be good work for the teachers and pupils to follow up and they will get out of it a

great deal of education and experience, because it cannot help but be valuable in every school district and every county in which such work is done. I hope you people here in this county will help your superintendent to take up such work, because it is good for the teachers and pupils, it is good for all of you.

I was rather pleased when I looked at this blackboard over here the other day and saw that here in your county the pupils of your schools were testing some of the herds of cattle in this county. On that blackboard are good lessons for every farmer here and for us all, for that matter. We can afford to study it and see the difference in production in eleven months between the best cow and the poorest cow in each of these herds. The difference in one herd of cows is some sixty-three dollars, between the best cow and the poorest. Somebody spoke yesterday, Mr. Allen, I think, of the foreign butter that was coming into our markets, and we have got to recognize that, and to meet this competition we must look to the quality rather than to the quantity, and one way by which the farmers of Wisconsin are meeting that kind of competition is to cut out the unprofitable cow and keep only the profitable one. We can cut out one-third of the cows of the State of Wisconsin and make money by doing it. That will reduce the production some, but it will not reduce our profits, because one-third of our cows do not pay any profit. If you would do that, that is one way to make money and it doesn't increase your taxes. I am not in favor of too much of this survey work by experts that cost us thousands of dollars a year, but I am in favor of the kind of surveys that Superintendent Davies mentions, and of the kind shown upon that blackboard.

Mr. Bradley—After hearing this talk of Mr. Davies, I feel like suggesting that somebody write back to New York and suggest that the Russell Sage Committee come out here and have another survey made, because they didn't find Sauk county when they were here before.

Addenda, June, 1914.

Mr. Davies—Reports received from teachers of the county for the year closing June, 1914, show 24 creameries, 29 cheese factories, 39 Babcock milk testers in schools, 530 silos, 850 acres of alfalfa on 325 farms, 391 rented farms, 92 herds of pure bred cattle, 404 automobiles owned by farmers, 32 rural social organizations, 68 electric lighted

farm houses and 78 gas lights, 227 bathrooms, 270 farm kitchens supplied with running water and 635 farm homes with pianos.

One town in the county last year raised only one acre of alfalfa. This year it has twelve acres. The town that leads in the number of silos is low in the number of acres of alfalfa. In two towns having the largest number of rented farms (33 in each) one has eight automobiles and the other sixty-six. These towns differ in size, value and character of soil and distance from the railroad. The town that stands first in the number of rural organizations also excels in acres of alfalfa, number of pianos, herds of pure bred cattle, and has been a leader in the good roads movement.

SUCCESSFUL CO-OPERATION IN BUYING AND SELLING

W. H. Hanchett, Sparta, Wis.

In attempting to discuss this subject, I do not wish to pose as an expert, nor shall I attempt to theorize and paint beautiful word pictures on how the thing ought to be done; my only excuse for attempting to discuss the subject at all is that I have been connected with and am a member of an organization known as the Sparta Fruit Growers' Association, a corporation doing business for its members in a co-operative way.

Organization Result of Urgent Need

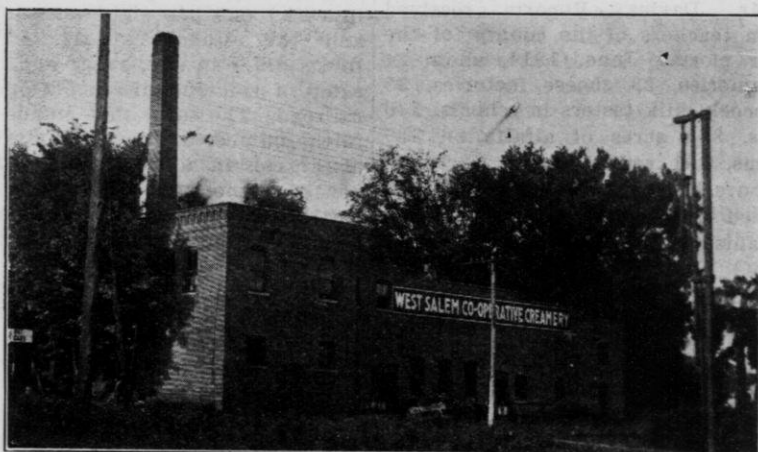
The occasion calling this organization into existence was one of urgent need. The production of small fruits had reached such proportions that individual efforts in marketing had brought conditions

of wild confusion, loss of individuality in the product and the attending evil of a premium on dishonesty in the pack, with unprofitable prices to the producer.

Our methods are not the result of expert investigation in foreign lands, but rather those devised by our own members, after a careful study of our own needs and conditions. We do not wish to boast of great attainments, but we think we may claim to have been fairly successful, in that we have brought system out of confusion, order out of chaos, profitable conditions out of unprofitable, and last, but best of all, equality of opportunity out of inequality as far as small fruit growing in the vicinity of Sparta is concerned.

During the eight years in which our organization has taken charge of the marketing of our fruit, it has marketed 199,823 cases of strawberries at an average price of \$1.16 per case; 22,575 cases of red raspberries at an average price of \$1.64 per case; 9,760 cases of black raspberries at an average price of \$1.65 per case, and 47,347 cases of black-

and warehouse building costing us a little over \$13,000.00. We have also paid six seven per cent dividends on our capital stock, and yet we have never taken one cent of profit out of the sales of fruit of our members, the stock end of our business looking to the buying and selling of other products than those of members for its earnings.



West Salem Co-operative Creamery

berries at an average price of \$1.49 per case.

These prices average from twenty-five to forty per cent higher than the average prices received by several of the leading growers for some years previous to the installing of this system of marketing.

During this time no emergency has arisen which we have not been able to handle in a fairly satisfactory way. Never have we been refused needed credit at our local banks, and with six thousand dollars paid in capital we have been able to accumulate a surplus sufficient to enable us to buy a business location at a cost of \$2,700.00 and build thereon a substantial office

Rules of the Organization

Our rules require members to deliver their product of small fruit to the organization for marketing under penalty of forfeiture of membership upon the tender of par value of the stock held by such member. The products thus delivered are examined and the grade declared in the presence of the member. If the member is dissatisfied with the decision of the grader, he may appeal to any officer of the Association who happens to be present, or to a committee of three members who happen to be present. He receives a receipt, stating date of delivery, grade and number of package delivered, a carbon copy of which furnishes

the data for the proper entry in the books of the Association. Each member has a number which must be stamped upon every package he delivers. This number furnishes the clue to needed evidence should any dishonesty in the pack be discovered by the customer buying the package, and he is required to report this number in making any claim for refund based on dishonest packing. Each day's sales of fruit are pro-rated according to grade, all members receiving the same price for a given grade delivered on any given date.

Our rules, until our last annual meeting, required that ten per cent of all sales be withheld until the close of the season when, after deducting the actual expenses, the remainder was paid to the members as a final payment in settlement of their year's business. At the last annual meeting, owing to the decreased production of small fruits and the difficulty of determining just what proportion of a given expense should properly be charged to the fruit account or to the stock account, a resolution was passed setting the fixed charge of five per cent as the charge for handling the fruit of members, and ten per cent for handling fruit of non-members, any surplus above the actual expenses accruing from this fixed charge to be transferred to the stock account.

That there may be no misunderstanding as to the motive of this resolution, I will say that the average expense of handling the fruit for the past six years has been above six per cent and this resolution was offered by the Board of Directors as an assurance to the members that under no conditions of crop failure or low production would expenses be unduly burdensome on fruit handled.

We are told by our co-operative

experts that as we are organized under the corporation laws of the State as a stock company, with stock holding the voting power, we are not a co-operative concern, although we have handled the business of members in a co-operative way, and the laws of 1911 prohibit our claiming to be co-operative unless we elect to come under the law. Possibly "we should worry," but we shall not so long as we are not interfered with in working out our own problems in our own way.

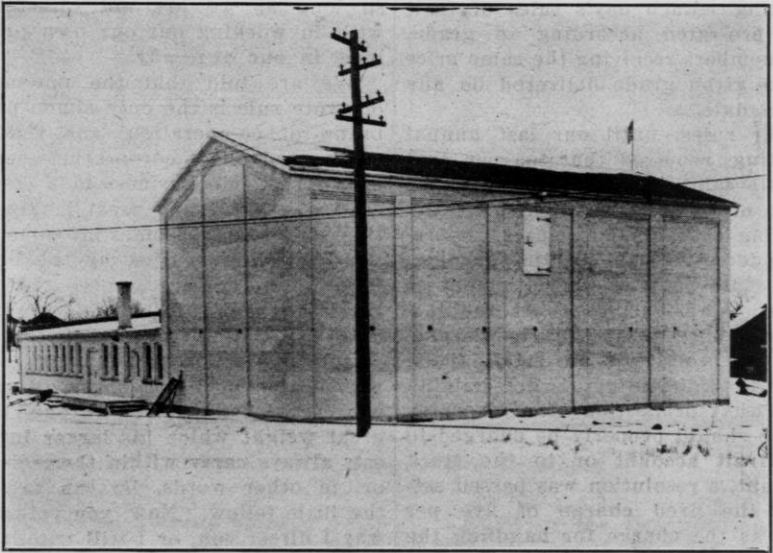
We are told that the one-man-one-vote rule is the only simon pure brand of co-operation, and that a stock controlled corporation never continues to do business in a co-operative way for any great length of time before it becomes a game of the big fellows eating up the little fellows, and we are assured that on the other hand in a one-man-one-vote association the big fellow is amply able to protect himself from being eaten up by the overpowering number of little fellows through the great weight which his larger interests always carry within themselves, or, in other words, he can say to the little fellow, "Now, you vote the way I direct you, or I will withdraw my support and patronage from the concern."

Now, I am willing to concede that the man with the larger interest is amply able to protect himself in this way, but I will leave it to you to decide which method is the more conducive to the development of a high grade of independent thought and manhood, to have the right to cast an independent ballot representing one's own opinion in proportion to one's own investment, or to be allowed the privilege of casting a ballot carrying with it a representation out of proportion to one's own investment but being compelled to submit to dictation as

to the nature of that ballot to obtain that privilege.

But why bandy words over this question of what constitutes a fair representation? Our ideas on this subject when we organized at Sparta were that proper representation was representation in proportion to the volume of business furnished by the member and that each member

our own. Unanimity is our watchword, and never has a business policy been forced against dissenting voices, and a policy is brought to a final issue only when the meeting, without a dissenting voice, instructs the secretary to cast the unanimous vote of the Association. That constitutes our one-man-one-vote system, and I believe it is a mighty



Warehouse and Cold Storage Plant of Sheboygan County Cheese Producers' Federation, Plymouth, Wis.

ought to furnish capital in proportion to the business the organization was attending to for his benefit, so we organized under the corporation law of the State and asked each member to subscribe to the capital stock in proportion to his business, and with very few exceptions they took their apportionment of stock in the company and we have not as yet seen fit to indulge in a quarrel over the matter of representation; in fact, we have a sort of one-man-one-vote system of

good one, for it embodies that great essential which we are pleased to call the co-operative spirit.

I have promised not to theorize, but I am prompted here to offer a little advice, for I believe our experience at Sparta will bear me out in any part which may sound like theorizing.

If you would co-operate, get the co-operative spirit to settle in your community, and just remember that this spirit won't long reside in any community where a bare majority

of either stock or men force an issue over a protesting minority. You may protest that progress will be very slow if practical unanimity is required, but I believe slow but certain progress is more to be desired than dissension, and warring factions are death to co-operation. I will not attempt to tell you how to proceed to get unanimity of thought, but possibly you may be benefited to some extent by our methods, which briefly stated, are, in cases where there is no pressing need, simply postpone, leaving the membership to act as a committee of the whole to think the matter out. If there is need of more speedy decision, we refer it to a special committee, taking care to have the different ideas or factions represented, and then the committee are asked to investigate certain representations or conditions pertinent to questions involved and report. They are expected to bring a unanimous report as to facts in the case, and are not allowed to indulge in mere personal opinions or prejudices, and the facts thus reported usually bring the members to one mind.

Obtaining Capital and Credit

The matter of raising capital in a farming community is generally a difficult one. At Sparta we effected this by asking members to subscribe for their allotment of stock and pay down twenty per cent in cash, the payment of the balance being spread over several years. The capital has further been augmented by the creation of a surplus from profits derived from a general jobbing business in produce.

The matter of obtaining needed credit is one of importance in a co-operative buying and selling association and one to which we gave

some careful thought. Upon investigating it, we found the one-man-one-vote plan does not usually enjoy the confidence of the business world, and that the personal endorsement of members would be required on Association paper of this class. While, on the other hand, the plan of requiring members to subscribe capital in proportion to their business and basing representation on investment was sufficiently popular to secure credit without the personal endorsement of members. Of course, mere bankers may not be good authority on this subject, but they were the people from whom we desired to obtain credit, so we conformed to their ideas on the subject. Here again we found unanimity very important, for our bankers have told us many times it had an important bearing on our credit.

Having obtained credit, the protection of that credit becomes at once of vital importance and involves the whole subject of good business management, careful system of accounting, frequent and full statements of profits and losses, assets and liabilities.

Marketing the Products

Supplementary to the subject of co-operative marketing is co-operation along lines of producing a uniform product of high quality which will become recognized in the market for its merit, creating a demand, insuring stability of prices, reflecting credit and adding dignity to producer and community. I believe I may safely prophecy that those communities who are the most painstaking in this supplementary work will be the ones most benefited by co-operative marketing, and I for one would welcome the setting up of established standards of ex-

cellence toward which we might work.

In our work at Sparta, our primary object was the marketing of our crop of small fruit. This was the first work we undertook, and our success in this line is due to the fact that the work was directed by leaders who worked in harmony in solving the problem. As a part of its solution, we recognized the need of employment throughout the year of our main office force, including our business manager. We recognized that we needed business management of a high order and that we could secure this only by giving it steady employment, so we sought to add to the business of marketing our small fruit crops such other items of business as were closely allied to the fruit growing industry; such as handling fruit packages, the handling of such supplementary feeds as our members used in the feeding of their dairy cattle, garden and farm seeds, fertilizers, etc. Then as a natural outcome of marketing our own products, we are doing something of a jobbing business in products which we do not raise, but which we can secure in car lots from other communities and for which we have a demand.

No plunging has been indulged in. We have found this the safe way of development, for usually we find that first ventures on new lines are unprofitable. Business along these lines has been strictly on a commercial basis, net profits accruing to the stock either as dividends or surplus.

The co-operative latch string, however, is always out to the member so far as he wishes to use it. We have required the co-operative method only in the marketing of small fruit. In the matter of marketing other products, such as

clover seed, apples, potatoes, seed grains, etc., the member has been given the option of receiving the competitive price in cash or having it marketed co-operatively, and it may be of interest to you to know that at the present time by far the larger part of the membership prefer to sell for cash at the competitive price, and I believe an attempt to require them to market all their products in a co-operative way would lead to disruption. There is, however, an increasing number from year to year taking advantage of the co-operative plan, so I think we may claim to be teaching successful co-operation, in both buying and selling, in an effectual way.

We know further that our work has had a beneficent influence in our community, in that it has opened up a field of equal opportunity to all. No longer does the young man of small capital, or the man of little business training, have to hesitate about entering the small fruit industry, fearing the competition of the man of greater means or wider business experience. His one share of stock entitles him to all the benefits of the marketing machinery of the organization with its years of experience and knowledge of markets. He needs only to be a thorough cultivator and give his entire time and thought to producing an article of merit to succeed, resting content in the knowledge that in a downtown office are a busy corps of workers, made expert by long experience, looking after the market end of the problem. That this is an accomplished fact is evidenced frequently by the grateful acknowledgment of many whose business training has been insufficient to qualify them for the writing of a business letter.

We are told of wonderful results obtained through co-operative mar-

keting in foreign lands. It is claimed that the Danish farmer, through his co-operative association, receives ninety per cent of the consumer's price, while we Americans, without co-operation, receive less than fifty per cent. If this is an actual fact, why are the Danes at the present time seeking to enter the American market with their products? Is it possible that our fifty per cent means more to the producer than the ninety per cent in Denmark? Will some of our experts please explain?

I will close with a quotation from Emerson: "The highest compact we can make with our fellow man is: Let there be truth between us forever more."

DISCUSSION

Mr. Campbell—I have always tried through life to defend my own work that I am in, and when I cannot do that I will go out and do something else.

Co-operation, as I understand it, should start in the home. Reason together. Reason together. Counsel together. That is where we can accomplish a great deal, by counseling together.

I have been talking co-operation for twenty-five years and now they want me to talk it, but to do it in ten minutes. I wonder what my wife would think if she were here!

What brings these Institute workers here this morning and these farmers? How do they happen to come here? It was through co-operation. When I started out to see if I could get the Round-up Institute here, I met two men, Mr. Moody is one and Prof. Clark of the High School. I spoke to them and suggested that we try to see what we could do. We went to

work, we got together, and we obtained what we started out for. Suppose any one man of us had written to Mr. McKerrow and given him the very best language we are capable of in order to get this Institute here. I am certain it would have had no effect, it is co-operation that accomplishes things.

A few years ago we were confronted, as I suppose localities have been all over this State, with the proposition of our dairy business. The centralized creameries were running the dairy business in this county and we felt sure we were not getting what belonged to us. We called a meeting of the farmers, we met in our little town hall, and we made up our minds to co-operate together and start a creamery, which we did. The day we started, the creamery station raised the price two cents, then a little later they raised it two cents, then three cents, but we didn't stop, we organized our creamery. We had our troubles, of course, but we stuck together, we co-operated, and last year we paid the patrons of our small creamery about \$140,000, and we have kept up the price of butter, have been paid from two to four cents more than the price in Chicago. This we did with the overrun by the large amount of business we are doing.

We had much the same experience in our stock shipments last year. We ran out about two hundred cars of stock through our shipping association. Not only that, but we have stopped the stock shippers losing thousands and thousands of dollars every year. We are helping ourselves and helping them, although we cannot make them fully appreciate it.

Now, we have our own elevator, we have three elevators. After we had our elevators a little while, the

grain trust came along and offered us \$10,000 more than that elevator cost us. Who would have paid that \$10,000? Would they have taken it out of their pockets? We don't think so, if we had sold out to them; but we didn't do that. We stuck to the elevator, and they raised, they raised barley thirty cents a bushel in three days at one time when the market didn't raise a cent, and they have kept up the price since. That is one of the things we have accomplished by co-operation in our county.

We have in this one local right here five hundred good members and we are doing a profitable business. The object with us is not to tear any one man down, but do the most good to the largest number and to get the nearest connection between the producer and the consumer. We are progressing and we hope to keep right along on this line.

Mr. Bingham—To prevent confusion of terms, it is best to define what is meant by co-operation. In a general way, it is joint endeavor to promote a mutual object or common interest.

As applied to industry, it means the equitable distribution of gain among those who earn it. Whenever there is any organization to effect this object, it necessarily follows that it performs a distinct function. If this is marketing the produce of any association or group of individuals, this organization must necessarily exercise a regulating power and a judgment that may or may not be entirely independent of the producer. In other words, it renders a distinct and separate service and should not be hampered with diverse and personal interests that in any way encroach upon the just performance of this service, but should be conducted upon the broad platform of general benefits, rather than that of special interests. The production,

handling and delivery for shipment and sale of any article whatsoever, is of necessity the function of the grower or producer. Aside from the influence of environment, the delivery of goods properly packed and handled and in good condition is not only a matter of honesty, but also of judgment and skill on the part of the producer. No co-operative effort can be successful that does not have a power to correct such wrongs as occur from either of these causes. To maintain that the men who perpetuate these errors are the ones best qualified to correct them is to expect too much from human nature, and the history of the so-called co-operative associations throughout the country for the last forty years proves it. Since the marketing organization renders a distinct and separate service, its make-up should as far as possible eliminate the influence of Tom, Dick and Harry of the one-man-one-vote crowd and place the business in the hands of an organization whose very existence must depend upon rendering this service acceptably.

Mr. John Imrie—The only way co-operation in a community can be successful is for all those who wish to accomplish any certain thing to cultivate a co-operative feeling or spirit; to forget ourselves as individuals for the time being and consider the best interests of all co-operating. In the nature of things, each member will thus secure his share of the good gained by working together.

I believe farmers can benefit themselves greatly along certain lines of this work. For instance, in forming cow testing associations for keeping a record of each cow's production and what it has cost us to produce same, whether she is making a net profit for us or losing us money. This will enable us to increase our herd production as we will then know from which cows to save the

heifer calves. In forming communities breeders' associations, purchasing good registered sires to head our several lines of live stock, keeping in touch with other communities that are breeding along the same lines, so that we can exchange sires when their usefulness to us is over, without extra expense, thus getting new blood into our herds.

To co-operate in a social way, to make life pleasanter and more worth the living.

To co-operate in forming so-called "Booster" clubs, to advertise our communities and put them on the map, to let the world know that we are alive and doing things. To discuss better methods of farming, to test our soils for available plant food, to secure pure bred seed grains as well as live stock, by joining our pure seed growers' association, and our alfalfa growers' order, that we may get the benefit of securing the right kind of seed to sow and at the same time be protected in its germination qualities and freedom from weed seeds.

Our co-operative creameries and cheese factories have been generally successful where correct business principles have been followed, as I understand they have been here around Ellsworth.

By co-operating along right lines of work farmers benefit themselves by the broadening influences derived from associating with others and in time will draw the attention of outsiders to their localities, helping socially as well as financially.

Farmers should co-operate to help each other. I like this sentiment; "We pass through the world but once, any good thing we can do for any human being, let us do it now, as we will never pass this way again."

Mr. Raessler—I want to put a

question, and I will leave it to these gentlemen who shall answer it. The only co-operative association I have had anything to do with is the Wisconsin Experiment Association, and in that we are running on the basis of one-man-one-vote. The man who has ten thousand bushels of grain to sell, hasn't any more votes than the man who has twenty bushels. Of course, there is no stock in that association, but, on the other hand, supposing we had stock, we have got to invest some money. Suppose a man has only twenty bushels of grain to sell and he hasn't enough money to buy the controlling stock, how can we get in on that condition?

Mr. Campbell—We have it in our by-laws that no one person can buy over one thousand dollars worth of stock. He can buy stock, but he cannot have any more, and he has one vote.

Mr. Imrie—I think it is advisable to put that into the Articles of Incorporation, namely, a restriction as to the amount of stock to be sold to one man. If we had not done so, there are quite a number who would have been willing to take a majority of the stock, so as to have control of the corporation.

Mr. Hanchett—In regard to Mr. Raessler's question: this co-operative institution to which he belongs is not strictly speaking a co-operative marketing association. It is simply a co-operative advertising affair; all that is invested is the fifty-cent membership fee. You have nothing at stake particularly, and I do not think it co-operates at all in a co-operative way. When it comes to marketing, the members are not at all equally interested in the advertising. They have to do their own advertising to a great extent, and whether the association is a benefit to them or not depends more upon

their own individual effort than upon anything the association can do for them.

With us the proposition is entirely different. The marketing is practically the whole thing, and the success of the marketing end depends upon selling at a paying price the product to be sold. Your organization does not undertake to sell the product. I am a member of it myself and I have to sell my own products, I have got a little benefit by belonging to that organization, because it is doing a lot of advertising, which I get for fifty cents a year. It has a very competent advertising agent at the head of it, Prof. R. A. Moore.

Mr. Bingham—Of course in a co-operative organization, there must be considerable difference between a co-operative creamery and a co-operative fruit selling business. The fruit business is all done in a few months and it has to be done quickly. I would like to ask Mr. Hanchett this question, in the matter of honesty and fair dealing, where do you find the most frequent offender?

Mr. Hanchett—The only one who has given us any trouble in that respect has been the man who was only casually in the business of small fruit raising. The big grower, the professional fruit raiser, is the man who in our community has always been among those who realized the necessity of giving the consumer value received and an honest pack, an honest measure. The small growers might be divided into two classes, those who are small only in the matter of production and those because they are small men with a small outlook on life. Now, that last division are the fellows who give us the most trouble in regard to an honest pack. They are also the ones who give us the most trouble

in running the organization. They are the fellows that are always around with an angry accent in their voices, denouncing the management as robbers and the place as a robbers' roost, but we have a way of handling them down there which I think is very effectual. When they come in, usually pretty well tanked up with a spirit that is not a spirit of co-operation, our manager will say to them, "Well, now, John or Frank, or whatever your name is, you don't believe in this thing, do you?" "No, by gad, I don't." "Well, say, the best thing you can do under the circumstances is to bring in your share of stock and get your money for it and then get out. We really don't like to have members in this organization that won't get along with the rest of us and help boost the whole business. You don't believe in the work we are doing. The best thing, the most consistent thing for you to do is to bring in your share of stock and get your money back and get out."

Mr. Campbell, I think, has given the keynote of successful co-operation. It is the working together with the men with whom we can get together and reason things out and decide upon a definite policy without quarreling. I want to ask these gentlemen here: You are now working successfully in your co-operative organization, say, with reference to these elevators that Mr. Campbell spoke of. Where would you ever have got in the direction of co-operation here if you had accepted that ten thousand dollars for your elevator, or where would you ever have got with your co-operative creamery if you had taken the bribe which the centralizer was willing to give you in order to have you step down and out? Just as sure as you live, either one of these people would have taken it back out of you immediately if

they hadn't known that there was going to be a co-operative creamery or elevator in operation. There is where a great many communities in this state fail in their co-operative work, just because they do not realize that the extra price that the competitive buyer is very often willing to give you is nothing in the world but a bribe, which you will only accept to your own undoing. Where a community of farmers is willing to stand shoulder to shoulder and not accept these bribes—these higher prices—even to the point of shouldering a loss,—where they are willing to say, we will fight it out if we have to shed a little bit of financial gore to do it, we will do it, and we are going to win,—where they will stick together like that and in that spirit, they will win.

Mr. Raessler—Mr. Hanchett threw out a few remarks here about our Experiment Association that I am afraid might be misleading. It costs each member fifty cents a year for the fee, but they are entitled to pure bred seed corn, which is worth no less than \$1.50. We are not advertising, we are disseminating pure bred seeds that are higher in yield than any other seed ever produced in the state. As far as marketing is concerned, we are advertising perhaps, but we are marketing, and it doesn't cost the members one cent, we are marketing \$2,000,000 worth of pure bred seed for our members, and it doesn't cost them one cent for advertising through the Association. I have just negotiated for a carload of barley over in Minnesota last week for a party, and it didn't cost them one cent for advertising.

Mr. Convey—I am a member of that Experiment Association, and I notice they have had a change in the management, so as to guarantee the stuff that is sent out. The man that does not send out stuff that is up to

guaranty, is thrown out of the Association.

Mr. Raessler—We never had any trouble in disposing of all our seed. If the seed is not sold, it is because it does not come up to the standard.

A Member—I want to ask Mr. Hanchett if there is a clause in their by-laws compelling members of their association to deal through the association? Quite frequently members of our association can get a cent or two more at the other elevator and it is quite an inducement. It seems to me there should be something to compel co-operation, even if there is a temptation to go somewhere else.

Mr. Hanchett—We have a clause in our by-laws which says members shall deliver their fruit or produce to the association for marketing in such a manner as the board of directors may direct. Now, we left that somewhat under the supervision of the board of directors, for the simple reason that we did not know how far it was advisable to require the members to deliver products. We organized primarily for the purpose of bettering the market conditions of our small fruit, and we believed at the time we organized that the success of our movement in that line depended upon requiring our members to deliver their small fruit for marketing. Unless we did that, we might send out traveling agents to get a market for our stuff, to solicit orders from all over the country, and then not have a thing to fill orders with. If a member was allowed to go out and sell his stuff to a buyer out on the street, you can see the management would not have anything to fill orders with, so we have required from the outset that the members deliver all of their product in small fruit to the organization for marketing. The only penalty we have is that if he did not, we could tender him the par value of his stock

and turn him out. We have had to exercise that in one or two cases.

Mr. Bingham—I do not believe you could do that according to law. I do not believe you can take stock from a man in any association, and that is the reason why a lot of those people drag down a co-operative association, because they get a little more, a very little more somewhere else, they go off and deliver their stuff to some one else, and of course if there is much of that done, it would drag down the whole association. We have found, after fifteen years' experience, that we must have some corrective measure where we can absolutely hold them in line. The stock vote is the best way I know of.

Mr. Hanchett—In doing this, we have to exercise a little of that quality which is called tact under such circumstances, and our manager has done it by getting the fellow in, getting him to do a lot of kicking, and then telling him it didn't look good for him to be a member of an organization if he wasn't going to live up to the rules.

Mr. Campbell—We have in our by-laws that if they sell to another elevator they will get a cent back—we would like to see the man who would get the cent back.

Mr. Hanchett—The courts of Iowa have decided that that is not legal.

Supt. McKerrow—There are some recent decisions right along that line in the east.

Mr. Hanchett—And there are laws which congress has just passed, I think, which may make every farmer subject to a fine.

Mr. Bradley—Do you handle the wool clip in this part of the county, Mr. Campbell?

Mr. Campbell—Yes, sir.

Mr. Bradley—Do you have any trouble in grading wool, or do you make a price for the whole?

Mr. Campbell—We have had some trouble, but as I understand, during the last two years they have made two grades. We appoint a man and the farmers appoint one, and they do the grading.

Mr. Bradley—As long as there shall be two or three prices on the grades, I can see how it will work out all right if the man who delivers the wool is willing to take the lower grade that his wool deserves. On the first attempt of the Equity Society up in our county, there were some loads of wool that were refused; that is, they graded so low that they simply would not accept them, and they sent it away. Suppose a man belonged to the Society of Equity and you wouldn't take his product, then what happens?

Mr. Campbell—He has a perfect right to take his wool home if he is not satisfied with the grading. We have had some trouble that way. Mr. Wilde has had some experience.

Mr. Wilde—I like to treat people alike, to give the man who has good wool the benefit over the man who has poor wool, but it takes a little bit more than a common man to grade wool. I have been handling from fifteen to twenty-three thousand pounds a year, and I have watched as carefully as possible, but you cannot leave this thing to the common man. There has been a difference of four cents in the price of wool, that is, that which was quite satisfactory received four cents more than the poor stuff.

Supt. McKerrow—You are getting your people educated. They are doing better now than they would have done four or five years ago; isn't that so?

Mr. Wilde—Yes, that is true. Our biggest trouble is dirt. Loose dirt, that brings down the price.

Supt. McKerrow—My opinion is that there are not so many farmers

that would be dishonest in a wool deal, or any other, but there are a whole lot of ignorant farmers; that is, they are ignorant about these crops, and especially about wool. A great many farmers do not think that a little chaff, a little hay seed, can cut much figure if it gets mixed with their wool. In the days when I was buying wool, I went through the woolen mills and saw where the wool sorting was going on, and I saw that in getting out this dirt they wasted a lot of wool, they broke a lot of fibres, making a short, shoddy-like wool, and the loss was great, but I never knew that until I got in there and saw it. The trouble with most of our farmers is, they are like other people, they lack education, and it takes a good while to get education of any kind, even on co-operative lines. I have had some experience years ago, and later with my boys, buying and selling, and the main trouble is in the lack of knowledge that the farmer has. Then it is true there is occasionally an association that wants to take advantage of this man's ignorance, or may be dishonesty, and the first thing to do to him, when he is found out, is to bluff him out, because he is no good to have around. If it is simply a matter of ignorance, then we have got to educate him, and that is what we are trying to do by all these movements. He won't be so much better as the years go on, but if you can only get him to stick while you are waking him up, it may finally get into his head.

A Member—I don't know much about grading wool, but I saw one that somebody had stuck in about two dozen iron spikes, and in another a pump handle.

Mr. Payne—How do you grade the cattle shipped out of here?

Mr. Campbell—Where the cattle

are not shipped to the yards and sold on the St. Paul market according to merits and in the seller's name, we would hire a man to do it. When we had our annual meeting, there were six commission men from South St. Paul here, bidding for our stock, because we are recognized in the market.

Mr. Hanchett—In handling small fruits, we find that it is absolutely necessary to do the grading at our end. If we send a carload of stuff to the commission men, it is likely to be all leveled down. That is one of the things that our association has to take hold of and do it at the start. We realized that one of the things we needed was this matter of establishing something of justice and equality among the fruit growers, and the only way we could do it was to grade at our end. Of course the live stock business is a different proposition.

Mr. David Imrie—Yes, it is an entirely different business. There isn't one farmer in a hundred, I might say in a thousand, that can grade cattle and place the right price on them. I was raised on a farm that raised all sorts of stock, but I would not consider myself able to judge what that stock would sell for on the Chicago or St. Paul market. A great many farmers think there is an injustice done to them if you place the right price on their stock. It is a great deal better to let the commission men do that grading—it is not the commission man, it is the buyer—and when a single company will pay a man the money they do pay some of their buyers, way up into the thousands of dollars a year, simply because they know how to grade these cattle, it is not surprising that farmers do not know about cattle to grade them right, and the only way you ever

succeed in shipping is to let the buyer do the grading.

Mr. Campbell—Even if you could grade the cattle, you couldn't set a price, it is not practical.

Supt. McKerrow—The different grades vary from day to day, according to the condition of the market. As Mr. Imrie says, they have experts. I know one of the sheep commission firms of this country who made my son an offer, a very good offer, and they tried to encourage him by saying they paid one of their men eight thousand dollars a year. At the same time, they said to him, "You are a judge of sheep all right, but you have not had experience in marketing, killing, etc., therefore we will give you so much money this year and raise it as you learn; you may be getting eight thousand dollars before very long." I know of some men who are getting ten thousand dollars at the Chicago Stock Yards because they have the knowledge. They can look at an animal and see the carcass that is coming out of that animal. You and I may know something about live stock, but we do not know

all that those fellows know. Then again, the market may vary from day to day as the supply of a certain class of cattle come in. If we attempted to grade at this end, we might grade them fifty cents too low, because they might strike a market where there is a dearth of that kind of cattle; or there might be an oversupply of that kind of cattle, and they would go down fifty cents.

A Member—I have in mind an association of farmers organized in Missouri. They had some sheep there and they had a man to grade lambs, but instead of having them mixed in a carload, they would have a uniform lot, and they figured out that they would get a great deal better price in that way because then the poor ones would not bring down the price of the good ones.

Mr. Hanchett—In talking co-operation about the State this winter, I have been very much impressed with the enthusiasm with which the middlemen are willing to get under and stand these losses for the farmers.

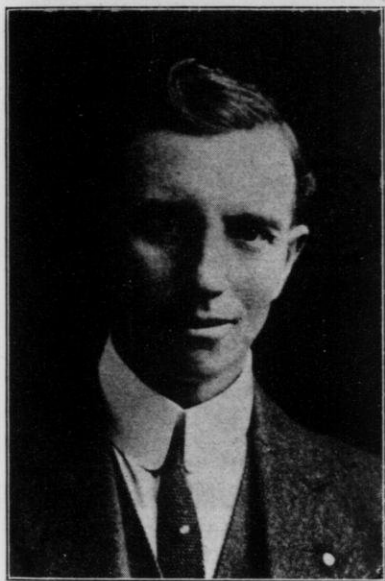
Adjourned to 1:30 o'clock P. M.

THURSDAY AFTERNOON SESSION, MARCH 19, 1914

The convention met at 1:30 P. M. Mr. E. Nordman in the chair.

EDUCATIONAL POULTRY WORK

Geo. W. Hackett, North Freedom, Wisconsin.



Mr. Hackett

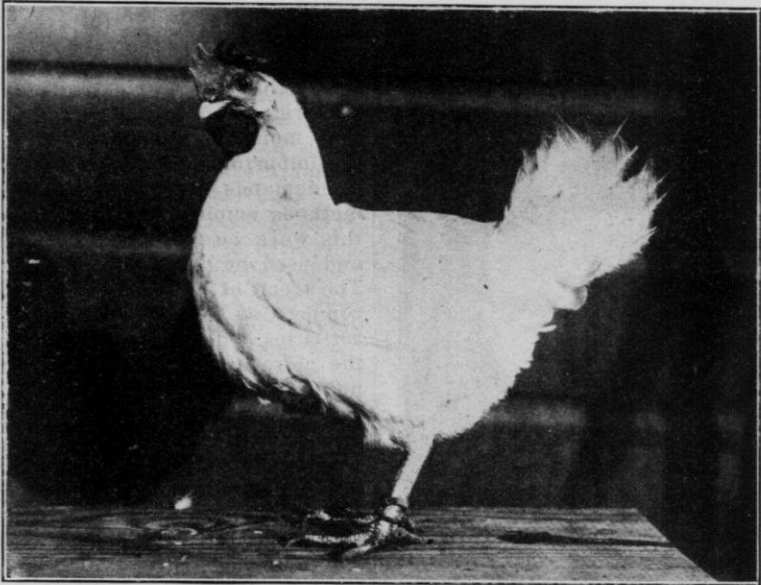
I am glad for the opportunity to follow these educational topics at this Institute, for the reason that I have chosen for my subject "Educational Poultry Work." All Institute work, to be commendable, must of necessity be educational. It must be a treatise of facts from a comprehensive standpoint, and to be of interest to the average farmer and poultryman it must proclaim simple rules and methods of prac-

tical value, the application of which will return dollars for the efforts and money expended. The growing importance of the poultry industry demands that the most improved methods employed by the leaders in this work be more generally known and used by all who would succeed. The trend of the times and the close competition in all lines of industrial activities demand the teaching of all the more practical industries in our public schools. It is in response to this demand that various branches of agriculture have been added to courses of study in most of our public schools, but the teaching of many of these subjects is greatly handicapped by the inefficiency of teachers to present these subjects. This is especially true regarding poultry work, which is further made difficult by the inadequacy of the text books now available. "Of making many books there is no end," and this is true of text books on poultry, but he who prepares a text book on the subject in which he is not versed, is not a benefactor. But as urgent demand always calls forth the best of efforts to supply a needed product, so it is in this case and at present text books are being compiled from reliable sources that will fully meet this demand.

We have been gratified this winter to note the large number of students from our public schools oc-

cupying the front seats at the Institutes with pencil and note book to jot down the items of interest applying most closely to their work along these lines. We believe our Institute work to be of value to all who attend, but I believe its greatest value will be found in the ob-

of every child, whether in country, village or city, and in later years may become a valuable asset when applied to any line of live stock management. On many farms, to our knowledge, the interest taken in the poultry by boys and girls has been the means of turning loss into



World's Record Hen.

Oregon Agricultural College hen. 303 eggs in one year. Taken day after finishing year. She is a high grade White Leghorn, a little coarse for exhibition type, but a wonderful producer from trap nest breeding.

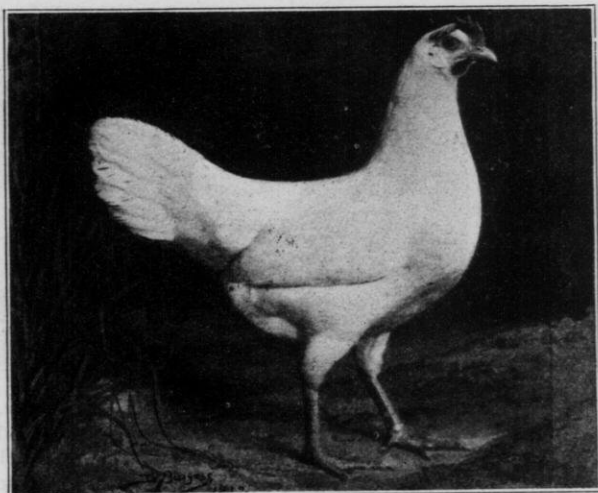
servations made by these young men and women whose active minds are quick to grasp new ideas and on whose shoulders will soon rest the responsibilities of agricultural progress. The boys and girls who in their class in agriculture study the correct methods for the care of poultry that will result in profit, have an object lesson that may be in possession of or within the reach

profit in that particular branch of the farmer's business and has given the poultry a chance with the other live stock kept on such farms.

The poultry industry is fast gaining prominence, due to its adaptability to all climates and conditions, both for the urban and country dweller, and for the profitable returns thus obtained from waste materials that would otherwise be lost.

The comparative value of eggs to meat and the extremely high price of the latter, would seem to justify the belief that when our farmers learn the importance of handling their eggs as a valuable food product, especially when we consider the many uses for which they are available, that the price will never again go so low but that they may be produced at a reasonable profit.

that work and cited the extremes in production as proven by the trap nest, and made mention of the splendid record of 281 eggs laid by the champion hen in twelve months at one of these contests. I refer to the national egg laying contest carried on at Mountain Grove, Missouri. The first year's work at that station seemed to prove that the product of the average hen can be increased from three to four dozen eggs per



A noted prize winning Leghorn pullet close to standard type. Females of this type are also making excellent egg records.

The Egg Laying Contests

Perhaps the most valuable educational work in poultry to date is that obtained from the result of the great egg laying contests which in recent years have been conducted at several of our state agricultural colleges. This work is carried on at considerable expense and the results should be more generally known by all keepers of poultry.

In the last Bulletin I referred to some of the details brought out in

year by giving her good housing, care and feed. Another year has passed and the good work has continued. The individual egg record for the previous year was not equalled, but the average per hen was increased about ten eggs, due, it is believed, to the fact that many of the pullets in this last year's contest were the progeny of the heavier producers of the previous year. This experiment but adds proof to the accepted theory that careful breeding and selection, with the trap nest rec-

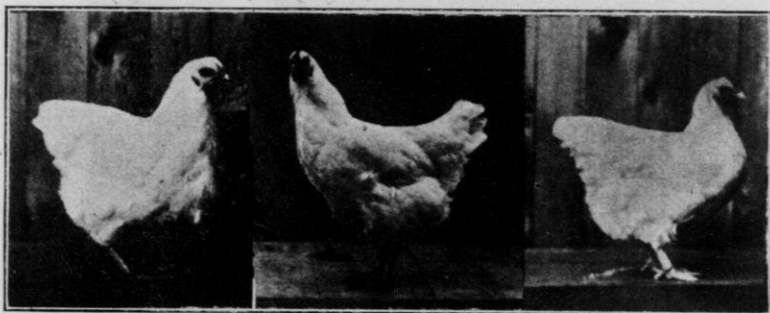
ord for a guide, count for much in the matter of increasing production.

Some Lessons from the Feeding Experiments.

Feeding experiments carried on in connection with these contests furnish reliable data and are real education. Skim milk and butter milk were found to be an excellent means of supplying the animal matter so essential for obtaining best results in egg production. It is likewise valu-

Other Educational Poultry Work.

But this educational poultry work has not been confined to any one section of the state or country. The Poultry Department of the Oregon Station, under the direction of Prof. James Dryden, has recently come forward with a most astonishing record of production as a result of selection in breeding. This work was begun more than six years ago, with more than two hundred pullets, and the first year there was but one that



First Prize White Wyandotte pullet, Wisconsin State Fair, 1914, at left. Blocky type, full breast, cushioned back; good layer, good for market. White Plymouth Rock hen at right, a model for breeders. White Wyandotte at middle, so in name only. Too long and angular; too high on legs, long on back and flat in breast.

able for growing chicks, but best results are obtained where fed sour. Hens fed from open hoppers, being permitted at all times to help themselves to a variety of thirty kinds of feeds and materials, including grit, oyster shell and charcoal, were found able to balance their own ration. Only a few hens in such pens became overfat, but instead converted these feeds into eggs at a good margin of profit. They consumed a large quantity of oats and oat meal, giving proof to our theory that oats is one of the best of poultry foods.

exceeded the two hundred-egg mark. The whole flock averaged less than one hundred eggs per hen. It was from this flock, through pedigreed breeding, that the 303-egg record from a single hen in twelve months was made, closely following a record of 291 eggs laid by a pen sister. Are these hens freaks, is the question that will be asked many times. They are of similar breeding but not closely related. They are high-grade White Leghorns from an original Barred Rock-Leghorn cross. They were kept in a flock

of forty, were housed in the same building, ate from the same hoppers and scratched from the same litter. Five full sisters in this pen averaged 246 eggs and the five best layers in the flock averaged better than 280 eggs. It is truly a wonderful record. Twenty-six of the forty exceeded 220 eggs and the whole flock averaged more than two hundred.

This is educational work of great value to poultry culture, adds dignity and prominence to the business, and emphasizes the importance of careful breeding. These great records were made under the management of an expert and should not discourage the farmer with his meager comparative efforts and attainments, but should be considered from the standpoint he regards the one thousand-pound butter record of the dairy cow. He cannot hope to attain such records, perhaps, in a life time, but they point the way to the possibilities before him.

The Immensity of the Poultry Industry

There is but little use to make a schedule of regular feeds and fix certain methods for breeding and care when we know that various methods and combinations have given a like general good result. The price of feeds and the convenience of the feeder are factors that always enter in for our consideration. The Systems, with their fairy tales of quickly massed fortunes, have had their day and their disastrous results are being rapidly overcome. What we need is a better conception of the immensity of the poultry industry. It is truly an educational work. We should learn the significance of that increase of the three or four dozen eggs per hen per year, which was

found possible through good care in feeding at the Missouri Station, as referred to. An increase of three dozen eggs per hen per year would amount to several millions of dollars in the receipts of the Wisconsin farmers alone, and as before stated, the hen will give us the added product in response to good care and feeding. Added to this could be gained several other millions of dollars through the methods of pedigreed breeding as demonstrated by each of these contests referred to. What is the use of expending large amounts of money both by state and nation for this experimental work if it is not to be made use of by the average farmer and poultryman? The increase of population demands more intense methods in farming and the application of the most scientific methods. The public schools are the means by which future generations will acquire this scientific knowledge, beginning with the elementary schools.

DISCUSSION

A Member—At what age would you get a pullet to begin laying?

Mr. Hackett—I would say it is not desirable, generally speaking, to get a pullet to lay before five months with small birds and six or seven months for larger birds.

A Member—The best I have been able to do is to get a pullet to lay at six months.

Mr. Hackett—We can beat that. It depends on the breed and how the stock has been carried along in the matter of development. It depends on the individual, too.

A Member—I have Leghorns and I can make them lay earlier than any other breed.

Mr. Hackett—Generally speaking,

you can, but it makes a difference as to the different strains, even of Leghorns. We have found it is not any particular breed that is the best layer. The earlier developing breeds are the earlier layers usually, but the experiments proved that it is in the special breeding, the particular strain of different breeds and varieties, instead of any particular breed or variety.

Mr. Nordman—Does that apply as between, for instance, such a breed as Plymouth Rocks and Leghorns?

Mr. Hackett—Yes, it applies to all breeds. In fact, in the first egg-laying contest that was carried on, there was not a prize that was awarded in the open class that was won by Leghorns. This was a surprise to all poultry people. The hen that won the highest was a white Plymouth Rock and the winning pen of five hens were Rhode Island Reds.

Mr. Corneliuson—Eggs generally bring a good price in this part of the world in winter. Along in the spring they are pretty cheap sometimes. Now, to get hens to lay in the winter is what we want. I have one hen that has laid all winter and the rest of them lay once in a while. If I could get all my hens to lay like that one hen, I think they would be worth probably about five dollars apiece.

Mr. Hackett—That is just your opportunity to start a strain of fowls that will be of that kind, of the kind that hen is, providing you get the right kind of a male. What you are after is not so much the breed, but the individual in that breed, and, remember, more depends upon the breeding of the male that you use for the prepotency and breed characteristics than upon the female side, so with that hen you mention, while she would be valu-

able, I would be particularly careful to get a male that came from a good laying hen to build up my strain.

A Member—Is there any cure for egg-eating hens?

Mr. Hackett—We recommend a scheme which has worked as well as any we ever tried. We add to the contents of each egg a teaspoon of ammonia, put it back in the shell and place where the hen can get them. That broke our hens of this habit.

Mr. Nordman—Does the trap nest prevent their eating eggs?

Mr. Hackett—No, not entirely, if they have once formed the habit, but it helps prevent their getting the habit, because a hen that is alone won't eat the egg she lays. It also helps to detect the ones having the habit.

A Member—The eating habit generally comes from the fact that the eggs are thin shelled. I have watched my hens this winter and I have found out that if you do not feed your hens sufficient grit and oyster shells, so as to make thick shells to their eggs, they will break them and get started to eating, and whenever they once get started you have a hard time to stop them. A good supply of water before them all the time is one thing that will keep them from breaking eggs. They get thirsty, a hen drinks an awful lot of water, and if you do not have enough before them they will break the eggs to get the liquid; that is what they are after; also if you do not give them shell food they will break the eggs.

Mr. Hackett—That is where good feeding comes in and good care. If you supply these things in an open hopper, so they can supply themselves with shell, charcoal and grit and then keep a constant supply of fresh water, you will not have much

trouble with egg eating. There is just one other thing, and that is the animal matter which the hen craves when she is laying, and we should supply that in the meat scrap, a by-product from the stock yards.

A Member—Do you keep your earliest pullets?

Mr. Hackett—In order to get eggs in the early winter, we have to depend upon the pullets, and necessarily they must be well developed before cold weather sets in. Those that are hatched too early, so they get into the moult in the fall, will lay no better than the hens, but the pullets that come to maturity along about the middle of October to the first of November are the most valuable for egg production.

A Member—How do you hatch your eggs?

Mr. Hackett—Both with hens and with incubators. Of course the incubators are the most expensive, still on our farm, where we are running quite extensively and have had considerable experience in running incubators, it is not so expensive as it used to be. I believe,

however, for the ordinary farm, where not more than two or three hundred chicks are to be raised in the year, that the hen is the best proposition to raise your chicks and far the least expensive.

A Member—Is there any danger of feeding too many oyster shells?

Mr. Hackett—No, sir, the hens will not eat too much oyster shell, that has been my experience, anyway.

A Member—We have the idea that sometimes in hatching the shells seemed so hard that the little chicks could scarcely get through, and we wondered if there was any danger of feeding too much of that kind of stuff.

Mr. Hackett—I suppose it is possible to get too much lime, provided the conditions of incubation are not just right. If there is not a sufficient amount of moisture, that might happen. It has been found by experiment that carbolic acid gas, which seems to be necessary to break down the shell of the egg, is found more plentifully under the hen than it is in the incubators.

POTATOES

L. E. Scott, Stanley, Wis.

I talked for nearly an hour the other day upon potatoes when a man stopped me and said, "You have told us how to grow more potatoes, but you have not told how to get more for them." I answered, "I thought I told you at the beginning of my talk when I said, 'Raise fewer acres of potatoes and keep more cows.'" You see, I had talked so long that my audience had

forgotten what I had said at the start.

Possibly there has been too much talk. If so, let us stop talking for awhile and commence doing something by co-operating with our neighbors and deciding upon the best market variety and securing straight, uniform seed of that variety. There have been too many inferior varieties grown and alto-

gether too much mixed stock upon the market.

Improving the Seed

Sort out a few bushels of nice, uniform tubers of good size and color and plant them in a seed plat. Look them over next summer and if you find a top of a foreign variety pull it out as you would a weed. Even then, as you dig these potatoes next fall, you will find some that are not true to type and there always will be. "Like" does not not always "produce like."

Save your seed stock from this plat next fall and make a second selection, plant another seed plat next year and every year from your choicest tubers. You will keep your stock more uniform and stronger than if you make no selection at all. That means you will get better prices for your crop, have better yielders and it will cost little to do it.

Digging time is the best time to make this selection, when the skin is bright. The hill method of selection is no doubt the best method if you are digging by hand, but hardly practical when digging by machinery.

Grow Potatoes in Rotation

Another mistake common in our potato sections is growing them too frequently upon the same soil. Every potato grower in Wisconsin should be a live stock farmer of some kind, should practice a rotation of crops and should keep the soil full of vegetable matter with manures from a well fed herd or flock.

Clover has long been held to be an ideal crop to fit the soil for potatoes, but any cover crop will answer. Rye sown early in the fall

and plowed under just as it begins to shoot or head will almost insure a good crop of potatoes, if we do our duty in other cultural details.

The fermentation of any green matter in the soil will cause an acid condition that is conducive to the best growth and development of the potato and will also kill the scab germ. If I were planting potatoes in soil poor in organic or vegetable matter, I would treat the seed one and one-half hours in a solution of one pint of formaldehyde in twenty-five gallons of water, but with the longer rotation upon our humus soils we do not need to treat our seed.

Sort for Market

Another important matter often neglected is to screen and assort our potatoes when they are marketed. Nothing should go to market that will pass through one and three-fourths mesh and all undesirable ones that will not pass through should be picked off by hand. It is a waste to haul the culls to market or pay freight on them and have them rejected when they arrive at their destination. Better leave them on the farm and a little can be gotten out of them for feed. Besides a better price will be obtained for the good ones.

I am not going into details of culture in this short paper and the high points I wish to touch are these.

Do not raise potatoes for market unless you are reasonably near to market, for potatoes are a heavy commodity to haul a great distance.

Do not grow more acres than you can keep well supplied with plant food and vegetable matter.

Have your seed plat and make a reasonable selection of seed so as to keep your crop as uniform as pos-

sible and assort your crop before it goes to market.

DISCUSSION

A Member—How do you cut your seed?

Mr. Scott—We cut our seed in a chunked form; if they are just medium-sized potatoes, in four pieces, crosswise and lengthwise; it does not matter so much as to the exact number of eyes upon a piece (providing there is one good strong one), as it does the amount of matter contained in the piece, which should be enough to give the shoot a good start before it is necessary to draw its sustenance from the soil. Again, you want the piece in such form as to have the least possible surface exposed.

A Member—Have you a rotation in which you include potatoes?

Mr. Scott—We are practicing as nearly as we can a three-year rotation on our farm, sowing clover with small grain, cutting the clover one season and manuring and plowing; then putting part of this into corn and the remainder into potatoes. I have never been able to figure out quite a satisfactory rotation for a mixed farm, where we are growing both corn and potatoes; but potatoes do well in a three or four-year rotation; three-year preferably, upon your clover sod. If you are making a four-year rotation and putting in two haying crops, I would follow corn with potatoes rather than the other way, and sow rye upon that corn stubble. Put the corn in the silo and then plow the rye under just previous to planting in the spring. Another thing: Cut your potato seed shortly previous to planting. Experiments show that better yields are obtained where the potatoes

are planted soon after they are cut.

A Member—Would you expect to get a good crop of potatoes after harvesting millet or peas?

Mr. Scott—No, sir, it would be too late.

A Member—Do you claim that the seed end of the potato is just as good as that below it?

Mr. Scott—Yes, just as good. They tried a three-year experiment at Madison to determine the matter, and there was very little difference in the yield, and what little there was was in favor of the retention of the seed end. There is something queer about that, however. In Maryland they tried a similar experiment with seed obtained from Aroostook county, Maine, also from seed grown locally, and the Maine seed showed the same results that were obtained in the Wisconsin experiment, namely, a preference for the seed end, but the southern seed gave a little better yield from the so-called stem end. Why, I cannot tell.

A Member—Should I grow potatoes next year after growing millet?

Mr. Scott—I know of no reason why you could not, but in that case I would advise you, by all means, to sow rye and plow that under in the spring. Potatoes thrive best upon a soil slightly sour, and the fermentation of the green matter in the soil will cause that acidity. One of the best potato growers I know of raises peas, then raises rye after peas and then plows that under, and raises good crops of potatoes.

Chairman Nordman—We find in our experience that millet is exceedingly hard on the soil. I would think that you would have to use a little extra fertilizer to expect the best results.

Mr. Scott—There would be no

objection to manuring the rye in the winter.

A Member—In selecting the seed, do you use the largest potatoes or medium-sized potatoes, of uniform shape, or what?

Mr. Scott—I would use the medium-sized, or a little above, possibly; never the coarser, largest potatoes, as they are inclined to be hollow. I would prefer a good solid potato, but I like it a good, fair size.

THE FARM GARDEN

W. C. Bradley, Hudson, Wis.

The farm garden ought to be a thing of beauty and a joy forever, but it is often a neglected duty and a wife's endeavor. My wife says if Mr. McKerrow could have seen the kind of garden we have had the past four years, since we got our automobile, he would have put some one else on the program for the talk.

We used to have a garden worth while, but now the weeds grow most luxuriously and the scythe is sometimes used where once we used the hoe. Taking care of the poor, politics and insurance have been factors in having a poor garden. The automobile for a ride in the evening, instead of working in the garden as we used to do, getting old and getting tired quicker than we used to do, the high price of labor, thirty-five dollar per month and very few men even at big wages will work in the garden, these are the things that have hurt our garden, and I presume hundreds of others are like ours.

We still manage to have plenty of fruit, strawberries, raspberries, currants, apples and plums, and we still have early potatoes, peas, beans, lettuce, beets, cabbage, tomatoes, etc., but the asparagus, pie plant, horse radish, sage, melons and other things of much more value, have been lost in the weeds,

so I am not going to tell you how to manage your garden, but I am sure there are some here who can give good advice in the discussion.

DISCUSSION

Supt. McKerrow—What is the chief cause of this backward movement from that good garden I saw at your farm some dozen or fifteen years ago?

Mr. Bradley—It would probably be hard to figure out the chief cause, there are so many things that enter into things of this kind. As a man grows old, activities of life increase rather than decrease, as it has been in my case, other things have been placed upon me. I have simply had to let go of the things that could be let go of; and we kind of turn the garden over to our wives, because it is easier to do that perhaps than to turn over the harvest field. It is a fact that while the automobile is a mighty nice thing for the farmer, I have noticed that the farmers in our section of the country who used to go into the garden after supper and work perhaps an hour, or an hour and a half maybe, doing the little necessary things, it wasn't so much hard work, it was a sort of change from the other work of the day and

we rather enjoyed it in those days, but in the past four years, after supper when the chores are done, it has been, crank up the machine and get in and visit your neighbors, have a good time.

Mr. John Imrie—I guess the farmer still enjoys the fruit that grows in his garden.

Mr. Bradley—Oh, yes, friends, I still say the garden is worth while. I presume there is no acre of land on the farm that for the amount of time spent on it will give as many dollars' worth of food as an acre of garden. I am quite sure that on hundreds of farms in the State of Wisconsin we neglect the fruit problem a good deal more than we ought to. We ought to have fruit and vegetables in every farmer's garden, not, of course, in a commercial way, as has been talked about here, but we ought to have strawberries and raspberries and currants and things of that kind. That part of our garden we do take care of, because they are permanent in the garden and are not so liable to be over-run with weeds as some other things that we plant in the spring. We always start out with a good intention in the spring, we plant a good supply of stuff, but it is very easy to neglect such a place. We have a very nice farm orchard, perhaps fifteen or twenty bushels of plums were picked by the neighbors before we turned in the hogs to finish them up. It is very nice and healthy to have fruit on the farm in abundance, and I know that does not require very much attention, we can have a few plum and apple and cherry trees that are easily taken care of.

A Member—What variety of cherries do you grow? Why don't yours winter kill as ours do?

Mr. Bradley—Well, we grow the Early Richmond and the Montmor-

ency. I think the Early Richmond is the best for this country. On your clay hills you can grow cherries very nicely. We only have five trees of cherries, but we have three different varieties that ripen at different times, so we have cherries for at least three weeks.

A Member—Are they protected on the north?

Mr. Bradley—No, our farm is on top of one of these high hills, and they are entirely subject to winds from every direction, and our apple orchard is the same. The apple trees are gradually dying out, some of the older varieties, but each year we manage to put in four or five new trees. We have come to this conclusion that we had better have very few varieties. When I first set out the orchard twenty years ago, I think I put in twenty different varieties, but the last few years we are planting not over five varieties, perhaps three would be better.

Chairman Nordman—It occurs to me that since the automobile has come in and various other things to take the farmer's attention away from his farm, one of the things necessary to do about the garden is to make that a part of your regular work; make up your mind to take your hired man and go into the garden and fix that up just as regularly and just as well as you do your corn field. That is the only way we can keep a good garden at our house.

A Member—How do you keep the birds from the cherries?

Mr. Bradley—We have enough so the birds get all they want and we have enough left. For a good many years we had one cherry tree; that bore abundantly for five or six years, and the birds got every cherry, but when we got enough so there was plenty for all of us, then

we got our share, and I guess the birds got theirs too. They cost very little and you ought to have plenty of them.

A Member—What is the best variety of plum?

Mr. Bradley—There are three or four that ought to do all right, the Surprise, the Wyant, and the Hawk-eye.

A Member—Did you ever raise the DeSoto?

Mr. Bradley—Yes; they are not so desirable, because they form pockets.

A Member—I have some Wyant trees that are young and they are troubled with green lice. How will I get rid of those lice? They

come just after the trees leaf out in the spring.

Mr. Bradley—I couldn't tell you what to do. The regular fruit men use some kind of a spray to kill those lice. I would suppose Bordeaux mixture with a little Paris green in it would be all right.

Mr. Convey—Kerosene emulsion is better.

Mr. Bradley—The curculio is one of the worst things we have in the farm orchard. Some years they are very bad, but having the farm orchard close to the hen house, or letting the hens run in the farm orchard, they get a good many of the curculio, and you can feed your hens on curculio pretty cheaply.

HOME SURROUNDINGS

E. C. Jacobs, Elk Mound, Wis.

Nearly every farmer, and I am a farmer, is likely to neglect those phases of farm life whose returns he cannot measure in dollars and cents. We pride ourselves on being a practical people. We subscribe for practical papers, send our children to practical schools and practicability is the keynote in present day methods and education. This is as it should be, for after the past deluge of the theoretical, it was necessary to plant our feet firmly on the solid ground of the practical. As the theoretical proved unsatisfactory and incomplete for right living, is it not probable that a too practical principle of life may cause us in the same way to miss much of real happiness and content?

I believe a man who is too busy putting money in the bank to read a good book, to plant a tree, to en-

joy a holiday, is not getting the full measure of life. A man who appreciates a beautiful sunset can milk just as many cows as the one whose practical eyes sees nothing but the day's labor. The woman who enjoys the song of the bird or the fragrance of the flowers is not thus disqualified for making a good batch of bread or patching her husband's trousers.

In brief, an appreciation of the beauties of nature, of the merits of a good book, of clean, wholesome surroundings, can but make our lives happier, as well as more efficient.

Some Neglected Conditions

I would call your attention for a few minutes to conditions about the farm home which are likely to be neglected through the mistaken

idea that they are of little importance.

Let us take our building site as it stands today. When you go home from this meeting, drive past your home and look at it with the eye of a critical passerby; compare it with your neighbor's. As you view the tell-tale marks on buildings and grounds that proclaim

barns, sheds and fences that have outlived their usefulness; buildings needing paint and repairs, machinery, vehicles and rubbish scattered about the yard. Would you be a poorer man if these conditions were improved? Would your farm be worth less? Would you take any more pleasure in welcoming your friends to your home?



Lawn at Elk Lake Farm

your standard as a farmer, do you swell with pride, or don't you?

The farm home is the ideal home. There the husband and wife work together and their individuality is stamped upon that home and its surroundings. The product of their brain and hand is seen in every tree and shrub, and in the architecture and arrangement of every building.

Too often in passing along a country road we see remnants of

Let us move the wood pile to the back yard, send for the junk man to cart off the scrap iron, and start a bonfire that shall smell to Heaven of old shoes and chickens' feet.

Insist that everyone on the place abandon the practice of throwing rubbish about the yard. That which cannot be burned in the stove or furnace should be placed in some receptacle and carted away. The habit of having everything, from an

empty bottle to a discarded baby buggy, disfiguring the premises should be discouraged.

Boxes, pails, baskets, and whatever else is used in farm work should have their place and be kept there when not in use. I would suggest that the place be other than the front porch. It might be well to look over the back porch and see what might be dispensed with there. Too many of our homes present the "Queen Ann" front and "Mary Ann" back. Dish water and refuse from the kitchen should be kept in a covered receptacle and not thrown into the yard to become breeding places for flies and disease.

For the same reason the barn and barnyard should be kept clean from any accumulation of manure, rotting straw or other refuse.

Give Some Attention to the Yard

Take time to level off the yard and fill in the sunken places. Slope the yard away from the house, so water will not stand about after a rain. To do this will take some time if your yard has been long neglected, but when once it has been put in good condition it requires little attention, a few hours' work now and then being sufficient.

Sow grass seed over the filled in places. If you have spots in the lawn where the grass refuses to grow, find out the cause and remedy it.

A little tact and suggestion on your part will secure the ready help of the good housewife and the children and they will take pride in maintaining well kept buildings and grounds.

Young people will not so soon leave the farm and flock to the city when home conditions are attrac-

tive. The young man who has enjoyed the companionship of an appreciative and progressive father does not want to leave the farm. It seems to him a good place to stay. He is not indifferent to the yield of corn or the size of the cream check, but the magnitude of these alone will not hold him. Home must be to him an attractive and congenial place, a place which he enjoys, and to which he can bring his friends with pride, or no financial inducement will keep him on the farm.

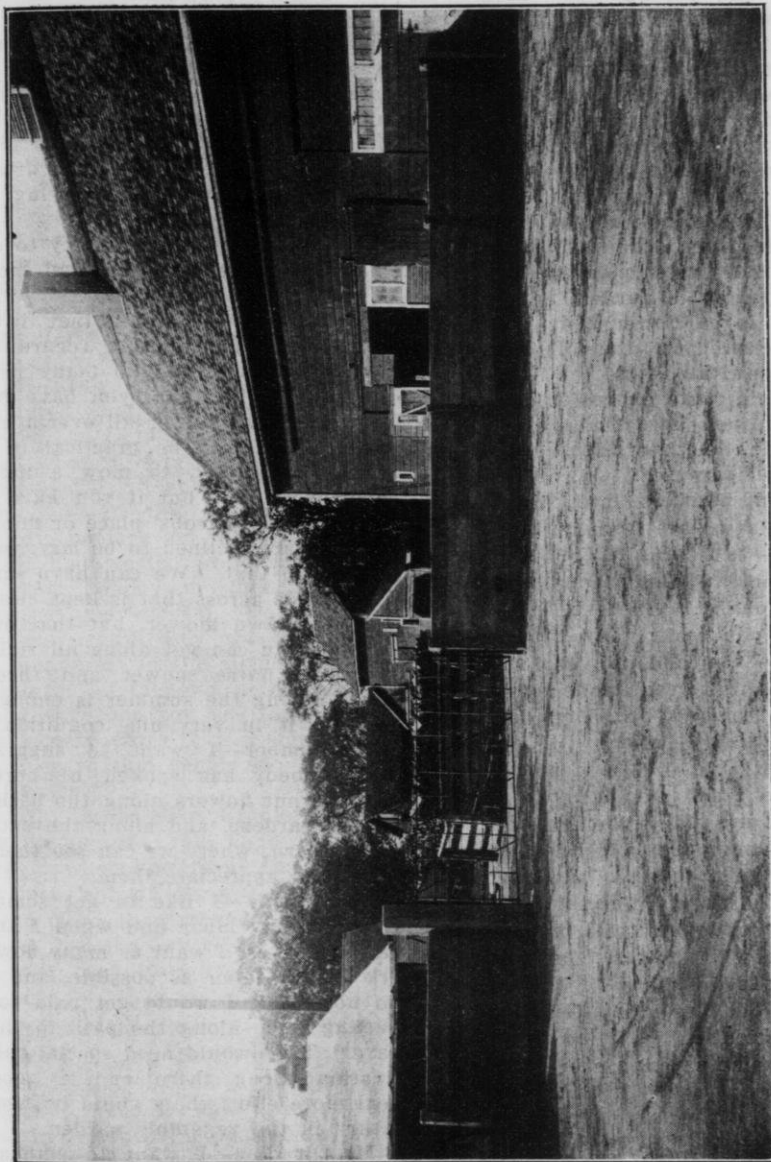
Trim up the trees in the yard, cut away those that darken and dampen the house. A tree should never be so near as to shut out the sunlight and air.

If you have neglected the planting of trees, begin this spring. In a few years their shade and added beauty to your farm will convince you that the time spent in caring for them was time well invested.

Care should be used in selecting varieties of trees to plant. In walking through the streets of one of the newer cities in northern Wisconsin, where the best varieties of forest trees were near at hand, I found only such shade trees as Lombardy poplar and Balm of Gilead. Of our forest trees, the elm is best fitted for all conditions of soil and climate. The hard maple is one of our most beautiful shade trees and while of slow growth is a desirable tree to plant on a clay soil.

The fruit orchard should not be placed in front of the house. Neither are pine trees desirable in the front yard, as the grass will not grow under them.

Do not plant trees in rows, except along a driveway or the border of a lawn. Nature does not plant trees in rows and Mr. Bradley does not like them that way.



Concrete yard at Elk Lake Farm.

Do not cut up your lawn with flower beds. Perhaps one or two judiciously placed will add to the beauty of a large lawn, but nothing is prettier than an expanse of smooth, green grass. We need the flowers, but let us place them to the side or back of the house or in the vegetable garden, where they may be just as much appreciated as in the front yard and where they will not mar the expanse of lawn. The vegetable garden is an ideal place for a flower bed. It can be easily cared for, the soil is rich and well cultivated, and the busy housewife can take more enjoyment of the flowers here than those placed outside the front door, which she too seldom uses.

Bring flowers into the house. Though we are farmers, we are not averse to having a bouquet on the table or to having one handed us occasionally.

Do you realize how much beauty a vine can add to your surroundings? A screen made of chicken wire, covered with ivy or some other hardy vine, will transform unsightly spots. A fence covered with a grape vine is more pleasing to the eye than when covered with the remnants of a belated washing.

A little thought and ingenuity spent on the various things which I have suggested and upon others which will suggest themselves to you, will do much for the improvement of your home surroundings. The attention given to beautifying your home pays, pays in dollars and cents and pays in returns that cannot be thus definitely measured. It pays in added happiness and added contentment, in family co-operation and unity, and after all, are not these in the measure of life the most valuable?

DISCUSSION

Mr. Imrie—Mr. Jacobs said there was nothing looks nicer than a large expanse of lawn covered with nice green grass. Somehow or other, it doesn't look quite so nice when you are out on a hot afternoon with a lawn mower trying to keep the grass down.

Mr. Jacobs—We do not try to do that. We take the team and mow it and it is all right.

Mr. Bradley—I think that is a very important thing in regard to home surroundings. So many people have an idea that you have got to run a lawn mower all over a big lawn. That may be practical in a village or a city, to mow a little lawn every day, but if you have a big place like Jacobs' place or mine, and you are inclined to be lazy, you cannot do that. We can have just a few rods across that is kept clean with the lawn mower, but that big expanse you can get along all right with the horse mower and three times during the summer is enough to keep it in very nice condition.

A Member—I want to suggest what nobody has spoken of here, that we put flowers along the paths in our gardens, and along the path to the barn, where we can see them often and appreciate them.

Mr. Jacobs—I like to get something for my labor and when I am raising flowers I want as many flowers for my labor as possible, and I do not think I would get paid for putting them along the path to the barn. They would need special cultivation along there and a good deal more effort than would be necessary in the vegetable garden.

Mr. Bradley—I want to emphasize the suggestion about tree planting. You people have had too many trees, you used to cut them up into cord wood and haul them

to market. You have quit that, you have got rid of the trees, but have all of you planted other trees to take the place of these great big maples and elms and ashes that you had in such abundance? Some of you have, but there are so many homes where they have taken away the first crop of timber and have replaced them with nothing, or, if they have replaced them at all, they have replaced them with almost worthless trees, box elders or poplars or other short-lived trees. I was down in the Kickapoo Valley two years ago, in a little town where the village had spent one hundred and fifty dollars to improve the condition of its streets, and what do you suppose they had done? They planted box elders on one side of the street and Lombardy poplars on the other, and they had wasted every single cent of their money in that way and spoiled their streets. Do not forget trees, because they are going to be a monument in the memory of your children; if they can point to a tree and say that you set that tree, it will mean more than a stone in the graveyard that people do not very often see.

Mr. Jacobs—Mr. Bradley is right when he says you have lost your effort when you plant that kind of a tree, so you have, but you have lost more than that, because you have lost ten or twenty years in the growth of a beautiful tree. I feel, as every one feels, a great deal of pride in the trees I have planted myself on my farm; there isn't a tree in that building spot, except a few of the oaks, that I didn't plant with my own hands. Now, those trees mean more than money to me. They are large trees now, though I am still a young man. My main planting was elm, and they are

beautiful today and will be there for a long time to come.

Another thing I want to emphasize. Do not plant too many trees in the front yard between the house and the road, as we see done so often, some people seem to think that all shade trees must necessarily be put right there. Those trees are going to require a lot of room when they get big and they will shut off the air, prevent its coming in and drying out the house and keeping it clean and healthy as nothing else can do but air and sunshine. Scatter them out a little, but do not set them out for a mile on a highway. It takes a lot of ground, and I would rather have them around the homestead.

Mr. Bingham—Have you had any experience planting Norway maple? That is one of the finest for home surroundings and perhaps one of the best for street planting, and it is very hardy. It is catalogued by all nurseries. And let me advise you by all means plant nursery trees, you will get much better results.

Mr. Jacobs—I realize there are different ornamental trees that are very desirable. By all means have a few of those in the yard.

Mr. Bradley—I was in the eastern part of Wisconsin two or three years ago this winter where a farm had changed hands. It was a beautiful old homestead, with an acre or two of lawn, covered with beautiful old natural oaks and elms, and some trees had been set out to supplement those that had died out, it was a beautiful farm home. The new man came along and bought it and the old man was leaving, moving away. The deed, however, had not been transferred from the original owner to the new man, but the trade had been made, part of the money had been paid and they were

getting ready to move. The new man came along and while the old owner was away for a day or two began chopping down trees in that house lot, noble, great, big, old trees that were a hundred years old. The old owner came home and saw what was going on and he said, "Mr. Man, you won't get a deed to that place till you promise me that you will save all those old trees." When I heard that story, I felt as though I would like to shake that man's hand, and I wish that every man in the State of Wisconsin would have written into his deed that he would get after the fellow with a gun who would cut down the trees he had planted in

his yard. Put that in your deeds, all of you, that those trees may stand, because they mean something, they mean more than cleaning out the front yard and growing barley in it as that man wanted to do.

A Member—You said when you were talking about gardens that you didn't raise horse radish because it got all over everything. Suppose you had it already, what would you do with it?

Mr. Bradley—I would dig it up and put it somewhere where the other fellow that hasn't any could get it. Everybody wants horse radish.

CLOVERS

W. P. Bussey, Omro, Wis.

In the short time we have this afternoon to consider this subject, it might be well to consider not only the quality and quantity of feed that is furnished by the clovers, but the value of this crop as a soil builder. If we consider them according to their values in this respect, we must place them in the following order: Alfalfa, Red, Alsike and White. As we consider them in this respect, it is the root growth that is the valuable part.

The clover is a legume and has the ability to take nitrogen from the air, and in connection with the root growth stores fertility in the surface of the soil that is made available for the feeding of our other crops. Not only is there an immense value in the chemical action during the growing of the crop, a network of roots is left in the soil, which, in the process of decay,

produce the organic matter that is especially valuable in furnishing humus to our soils.

It is true we are using up potash in the growing of our clovers, but if we are supplying our stable manures in the best possible methods, we need not fear that we will impoverish our soil of this most valuable element.

As the growth of the roots of the clover correspond quite generally with the upper part of the plant, then the feeding of the elements of fertility that stimulate and increase the growth of the plant ought to be considered.

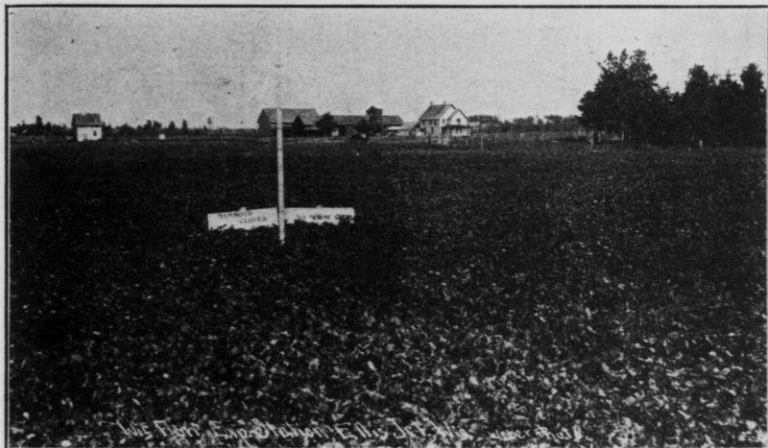
Curing the Hay

We realize, perhaps as never before, that the value of clover as a feed depends largely upon the methods and conditions of curing it. The

practice of allowing the crop to become ripe and woody before cutting resulted in a great loss of feeding values, and the part that was left was in great measure indigestible, and a considerable part was not eaten by the stock, but if more care is taken to secure the leaves and finer portions when they have in them the best elements of the feed, we have the coarser portions in a

ing on the surface, forms a mulch, retains the moisture, and prevents, to a great extent, the breaking of the roots during the spring when the ground is thawing and freezing.

Wisconsin has a great variety of soils and with the different varieties of clovers that we have it would seem as if every farmer in Wisconsin ought to be growing some of these different varieties of clovers, and in



Mammoth Clover on poor sandy lands sown without a nurse crop.

condition so they will be eaten, and be more easily assimilated and digested.

The study and experiments connected with the introduction and growing of alfalfa have been of great value to the Wisconsin farmers in the growing and handling of other clovers, both as to quality and quantity, also in the care of our new seedings. We are of the opinion that a great many farmers have allowed their stock to feed upon the newly seeded fields to such an extent that it is ruined. If, instead of pasturing, an application of manure is given the young plants, a better growth is made, and the manure, be-

so doing provide a good quality of feed for their stock and improve their soil at the same time.

DISCUSSION

A Member—What time do you cut this red clover to make the best hay?

Mr. Bussey—Just before full bloom. That is, if you have a large acreage, you usually begin early enough so that the latter part of the cutting wouldn't be after it had become too ripe.

Mr. Hanchett—Is it not a fact that that clover cut before full bloom is

of higher quality, makes a higher quality of hay, than that which is cut later?

Mr. Bussey—Yes, we have the juices in the best condition, the best quality.

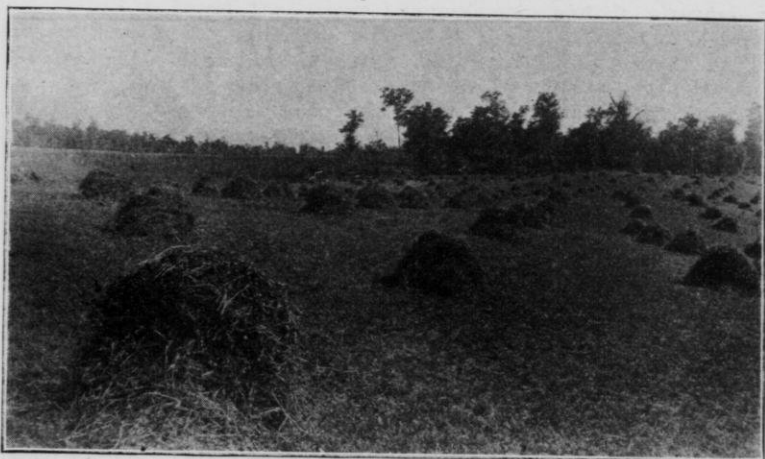
Mr. Convey—It depends on the curing, doesn't it? It is harder to cure.

Mr. Bussy—It is sometimes if the weather isn't just right.

that, to furnish a crop of feed for the following year, to clip it in the fall before the seed forms.

Chairman Imrie—How would it do to pasture it lightly?

Mr. Bussey—Well, you would not get as even a clipping of your pasture as you would with the mower. You would get quite a lot of feed. but if it was handled right, you would get more good feed in curing.



Second crop of clover cut Aug. 1st. This field was cut the first time June 15th and in the two cuttings yielded four tons per acre. Sept. 15th there was growth enough to have yielded nearly another ton of clover hay per acre, but some of this is being pastured off and the rest will be plowed under this fall for corn next year.

Mr. Corneliuson—Does it make any difference whether it is the first or the second year if the plant goes to seed?

Mr. Bussey—I think whether it be the first or second year after the clover plant forms the seed that that is the last of the plant. That seems to be the vocation of the clover, to reproduce itself in seed, and then it is done. We had one field that did produce seed the first year, and that was the end of it. It was sown with rye. It would be better if you wish

A Member—Would you like to put a lot of horses and colts right on that field?

Mr. Bussey—No; the trouble is in breaking down the stalk. That hurts the plant to a great extent, and you might have a greater loss in the spring by freezing. I think the colts and horses would break down the stubble.

Chairman Imrie—They would eat it clean into the ground where they got the snow cleaned off.

Mr. Wyatt—You made the state-

ment that one of the greatest benefits of clover was its roots and humus growth. Do not our clovers furnish us one of the most expensive elements of our feeds in addition to that other benefit?

Mr. Bussey—Yes, if we handle our clovers right in getting those elements through feeding it. We are putting up so much concentrated food stuff, so that we do not need to go out and buy concentrated food stuffs entirely.

A Member—What system do you use in curing clover hay?

Mr. Bussey—The best results are obtained through cocking that hay, allowing it to cure out in two or three days, slightly aerating it, and putting it into the barn or stack in a rather tough condition. We follow the mower with the hay tedder, allowing it to air, then rake up into a cock the same day possibly.

A Member—Do you put it into large cocks?

Mr. Bussey—Not very thick through, but high.

Mr. Scott—The more experience I have in cocking clover, the more I am inclined to put it up in large cocks. We do not like to have any outside moisture on it, but we like to put it up with a great deal of the natural juices in it, just slightly wilted.

A Member—You let it lie on the ground after this clipping you spoke of?

Mr. Bussey—Yes, I wouldn't clip it very closely. I never have had experience in doing that, nor have I ever clipped for a crop of seed, I never tried to grow seed.

Mr. Convey—We have tried both the clipping and the pasturing on young clover, and we think the high clipping is the proper thing. That stops the formation of seed and stimulates the root growth, and, on the other hand, pasturing is very injuri-

ous. We only have to study conditions to understand why pasturing would be bad under such circumstances. The success of clover depends on the bacterial growth that develops on the roots and draws nitrogen from the air. If the ground is packed, there will not be proper access of air to the roots and the result is that packing, especially before frost comes, compacts the ground, and that is death to the clover in many cases. So we do not want any calves or anything else on the clover.

A Member—Do you use hay covers in rainy weather?

Mr. Bussey—We do not. I think if we cock up this clover pretty tough, it will shed the water, more than any of us really realize it will. It is this partly dried clover that takes the water. We have heard a great many condemn the cocking of clover on account of this wetting in.

A Member—How many days do you let it stand in the cock? If you let it stand three days, isn't there danger of killing out the clover roots underneath?

Mr. Bussey—Not so much in regard to red clover as with alfalfa. Alfalfa will kill out more easily.

A Member—And isn't there dampness rising from the ground which will keep the lower part of this cock damp and wet?

Mr. Bussey—That can be attended to in dividing the cock just before drawing, just a half hour or so if you lift it off the bottom and it will make it all right if the day is fit to dry hay.

A Member—Isn't it a fact that clover can be cut down and put in the same day with good results under good weather conditions?

Chairman Imrie—If it is cut at the right stage of ripeness.

A Member—We have got a great deal of clover. Last year I bought

three or four loads of clover from a man. He cut it right down, it laid one day and we hauled it, and it was the best clover we ever put in the barn. It was put into a large mow with open doors and then covered well with timothy hay. We had some rye straw in the barn and we sprinkled a little of that over it. The idea of leaving clover standing in the field a couple of weeks is all nonsense.

Mr. Convey—About thirty years ago, that system of curing clover was practiced, and about once in five or six years it would work. You have to have fairly good weather conditions. If the hay becomes discolored in curing out, then of course you lose on the quality of it. Clover hay is no better than timothy, or any other kind, if it is spoiled in the curing, and in order to have good clover hay, you have it green after it is cured. So that old practice has been abandoned almost entirely by people who put up a lot of clover. Some of those people with whom that method was popular twenty-five or thirty years ago had spontaneous combustion in their large barns where it was put in, so that parties became scared about putting in green clover hay.

Mr. John Imrie—One year I put in fourteen acres of heavy clover, I cut it down in the morning and took it in in the afternoon and I never had better hay. The next year I tried the same thing and it all spoiled. The ground was very dry the first year, while the second year conditions came in which changed things.

Mr. Bussey—I think the same conditions existed in Wisconsin in regard to the corn crop for silage last fall. In the southern part of the State, where they had lots of moisture in the soil, even though the corn was not cured as much as usual, they had moisture enough to cure that silage properly. In our section of the State, the ground was very dry and we lacked just a little bit of the proper amount of moisture. I think clover is the same. Some years we have more moisture in the soil at the time of cutting the clover than we have other years. When the surface of the soil is dry at cutting time, the clover, and in fact all hay, will "cure" more rapidly than if there is a lot of moisture there. So it is hard to try to follow any set rule. Whatever method is used, try to secure all the leaves possible, as they are the most valuable part of the feed.

HAY MAKING

E. E. Wyatt, Tomah, Wis.

When we make hay, we should consider what we are to use the hay for, whether as a filler or a tempting, appetizing food for live stock. If for the first, let it get nearly ripe and woody and practically dried before cutting, then less time and labor will be required to complete the task,

and probably the yield in tons will be greater per acre at this age.

Let us consider what we have then secured. The hay will be very woody, the seed nearly mature, a large portion of the nutritious leaves crumpled up and fallen off on the ground. Stop and think if you

should attempt to feed this now as pasturage, would the stock eat it? Hardly, they would look for different lands and consider it but a fine carpet.

In our process of curing, can we improve upon nature? Hardly. It is but a process of preserving what we start with, so we should have a hay, or, rather, grass, that is palatable, tempting and rich in the nutritive elements, and at the same time

through the stems to the leaves. Here the process of digestion goes on and producing about one pound of plant growth for three hundred pounds of water, but what becomes of the water? It is evaporated out into the air through the large pores of the leaves. Now the stem is covered with a pack to help hold this water within while it is being transported. When we go to cure it, will we change the condition? Well, if



Farm home of E. E. Wyatt, Tomah.

get the most per acre of these elements.

This comes at the point in growth and maturity when it is in the blossom stage, for before it is too juicy and lacking in the protein and starch and the yield too small, but after this the sugars begin to set in starch and wood, the lower stems to decay in heavy grasses.

Now, the process in making hay consists in taking it from the standing to storage in mow, getting the moisture out and saving all the digestible ingredients.

Now, first, when is this moisture to pass off from the plant? In the process of growth, large amounts of water are pumped up from the roots

the grass lay exposed to the winds or direct sun rays, those leaves will keep pumping out that water, keeping up their function until they have to roll up and crimp down, because those stems cannot get moisture any longer from the roots and are unable to liberate that portion in their composition rapidly enough to supply them. Then what happens? Just like corn that gets frosted, no more water can be transported to them and so all that is left must be forced off some other way, or, in other words, is backed up to a slow process contrary to nature.

Using this principle, start cutting a little before full bloom, usually so as to get all cut before too late. If

very heavy, follow mowing machine in few hours with tedder and directly after rain to shake off extra water. Then rake when wilting is well started, before the leaves curl, and bunch in medium sized bunches, taking pains to make these in good shape, with small bottoms well rolled in their place directly on top, about three good swathes, and one for a top, placing it in good shape to shed water, then we have it in a good shape to follow the wilting, sweat out the moisture through the leaves, dry out by the wind, then after a couple of days open the bunch a couple of hours, if the weather is good, and it is ready to store in the mow, the moisture well dried out, the sugars caught in the plant, leaves well secured with their protein content and all in a very palatable condition, not too woody and sufficiently dry to not mow burn, and such that it will tempt the appetite and suffice the needs of a good stock feed.

DISCUSSION

Mr. Griswold—Isn't there a great deal more loss in letting hay get too ripe in the last part of the season than there is in the first part of the season?

Mr. Wyatt—Yes, the digestible nutrients become locked up later in the season. Although you have the tonnage, you haven't got the feed value, because it has been transferred into a condition where the stock cannot get the benefit of it, it is indigestible.

A Member—You talk about cocking up hay. Then you do not believe in loading with a loader?

Mr. Wyatt—I never use a hay loader. I have not as large a farm as some, then besides that, a great deal of the hay I have seen made

with a hay loader is a poor quality of hay.

Mr. Jacobs—I do not want to see the poor innocent hay loader blamed for somebody's shortcomings. We do not make hay with a hay loader, we make it the same as Mr. Wyatt does, but when we get into the field we load it with the hay loader, and we load it in the same way as we would without the hay loader. When it is opened up, it is in condition to put on the hay loader. I wouldn't use a hay loader if I couldn't use it without making the hay in poor condition. I find it a great advantage, I do not like to pitch up hay.

A Member—I have cured my hay for several years the way this gentleman speaks of, and I have used a hay loader too. You said something about the time to cut the hay; you said before it comes in full bloom. I suppose you refer to timothy hay?

Mr. Wyatt—Oh, no, I refer mostly to clover hay, but then timothy hay should be practically in the same condition.

Mr. Jacobs—The first hay loaders that were made, there was an arrangement that would not allow loading in any way except from a light windrow. That has been improved and we use a double drum in taking up the hay. I do not find any condition that we cannot drive into the field and then unload it with the hay fork. If it is in the cock, it is all right.

Mr. Wyatt—The worst feature with the hay loader is that a man thinks he can let the hay stay too long, or works it until he shakes off all the leaves.

Mr. Jacobs—It isn't the hay loader that is going to injure our thinking powers. A man ought to have just about as much sense, whether he has a hay loader or not.

Mr. Wyatt—All I go by is experi-

ence and the results I have seen among others who have hay loaders.

Supt. McKerrow—We have a hay loader. I do not know how much brains it has. The hay loader is a tool that can be abused, and you may lose your money on it, but it is also a tool that can be used and save your money, and save you sweat, and I notice my boys usually try to save sweat with it. They cock and cure the hay. Now, we have a side-delivery rake, and with some of our hay, even our alfalfa, if it gets left so long so it is beginning to get woody, then this is the process we follow: It is cut and sun-dried considerably. We want to get it out of the way; then the side-delivery rake goes in and the hay loader takes it up. If it is early, the side-delivery rake is a tool we leave out. Sometimes we do not even spread our cock. I believe, as a rule, this hay should be cocked when only partially wilted, because at that time the leaf and the little stem that joins the leaf to the stalk are still alive and have the ability to throw out moisture from the stem through the leaves in the form of sweat in the cock. If you let that dry out too much, neither the leaf nor the little stem has ability to throw out moisture. If you air it out too much, the chances are it breaks off. Of course, a man wants to use his brains. Wyatt hasn't had a chance, we musn't jump on him. He hasn't used the hay loader. I notice when Jacobs brings his wife along to the Round-up Institute, then Jacobs is a good deal smarter man than when he comes alone.

Mr. John Imrie—When we have green alfalfa that we cannot work with a common rake, we use the side-delivery rake. We do not try to throw one forkful on top of the other, or we would have trouble, we make a cleaner patch, we do not have to gather so much. In spread-

ing out the cocks, we turn them out along the row and then load as Mr. Jacobs does. These men have left out the next best tool in the hay field, and that is the tedder, on either alfalfa or clover hay. Of course in a dry season it is not of as much value. Shortly after mowing, we use the tedder and pitch the hay over. We do not want it to get dry enough to have the leaves dry up. We cure our hay practically the same way as Mr. Wyatt.

Mr. Wyatt—All those things are very valuable in the curing of hay, but I find so many that let the hay get too ripe. With the tedder they are inclined to let it lie too long and let the top get too dry, then shake it up with the tedder and take off all the leaves that are dry. They are all good implements, but we have got to use a lot of judgment in using them.

Mr. Bradley—There is more hay spoiled in this country by just waiting until after the Fourth of July before they begin to cut than we have any idea of. I wish the Fourth of July would come two weeks earlier, I believe we would get a good deal better crop of hay all over this country. I remember going to a picnic on the second day of July a few years ago, my wife and I, and we were all through our clover haying, the hay was all safe in the barn, but all the way from my place to Hammond that day we saw where they were cutting clover hay or had not begun yet. It is better to begin about the 25th of June.

Mr. Wyatt—There is another point in favor of the early cutting, and that is you are always sure of the second crop, especially with clover. Otherwise you let it get too ripe and you may lose next year's crop entirely.

A Member—What do you do with your second crop of clover?

Mr. Wyatt—I pasture a good share of mine. You have to use judgment as to the time of cutting. You do not want too much of the seed in that second crop of cutting, and still you want to have a good crop. You can make a little more variation there on that account than you can with your first cutting.

Mr. Bradley—It depends on the kind of soil you have. If you have a light, sandy soil, it won't stretch out the blossoming time as it will on clay soil. Two years ago I was down at Galesville on that light sandy soil, and those people insisted they could cut their clover today and put it up tomorrow, but you must remember their ground was hot, evaporation went on very rapidly. But within three miles of that, on the clay soils, they couldn't make hay that way at all, because their hay was full of water which evaporated slowly, and the stems of the hay contained a good deal more water than on the sandy land.

A Member—Now, I know my neighbor, Mr. Hubert, always makes his hay before I do. He lives on a sand bottom, I live on clay.

A Member—Do you use hay caps?

Mr. Wyatt—Somewhat, I do not use them very much. I have hay caps, but I seldom use them, I simply take the risk. By using them in case of a storm, you will save considerable of your clover while you are getting it into the barn. Clover will stand a good deal more rain when cocked rather green than it will if it is put up in the dried stage. It won't hurt it so much if it does get wet. Then there is something in the way you put up your bunches. You take a bunch that gets wet and mildews, the troublesome place is just that little rim around the edge, you take pains to lay it in good shape and do not

bunch a lot on the bottom, and it will be all right.

Mr. Imrie—We have to make hay lots of different ways. We sometimes cut it and get it in as quickly as we can. Sometimes you can make excellent hay and leave it out a good while. Ten or eleven years ago, we had some very dry days through June, and hay that was left out in the cock two days I found was dry clear down to the ground, and that was the nicest hay we ever had. We took it right out of the cock without opening it up. Other years, it is just full of sap, and it is an awful hard job to dry it out. You have to wilt it very carefully. You have to have it sweated so much or you cannot cock it. You have got to use a whole lot of judgment in making hay; you cannot follow any rule.

Chairman Nordman—This making hay is one of the things that it is necessary to do if we intend to practice intensive farming. One ton of hay made properly will furnish as much nitrogen to cattle as two or three tons that are made in the ordinary way, and for that reason it goes just that much farther in supplying your stock with food.

Mr. Convey—How do you find out whether it is dry enough or not?

Mr. Wyatt—One way is to take some of it and see if it will wring moisture from the stem, and then use good judgment.

Supt. McKerrow—How does Convey test it?

Mr. Convey—I always go out and do the testing myself. I just lift it on the fork, if it feels like hay we haul it in; if it feels like grass, better leave it there a little longer. If you leave alfalfa on the ground any length of time, you had better go around and move the piles.

Chairman Nordman—You cannot give any rules for making hay; it is a question of judgment and good

sense. In the northeastern part of the State, it is much harder to make hay out of clover than it is in the southern part of the State, where it dries much more rapidly. The different sections, different localities and conditions are what determine all these questions.

THE DAIRY BARN

H. D. Griswold, West Salem, Wis.

In the construction of the dairy barn, we should consider, first, the best possible arrangement for the health and comfort of the cow, and second, convenience in doing work.

Location

The barn is secondary to the house and should not be placed in front or at the side of the house, but back of it, where it will not obstruct the view or detract from the beauty of the home.

The dairy barn should be for the dairy alone, horses, chickens or pigs should not be in it.

The Interior Arrangement

We like a barn of rectangular shape, standing north and south, and wide enough for two rows of cows. If manure carriers are used, thirty-four feet is wide enough, but if one wishes to drive through with the manure spreader, thirty-six or thirty-eight feet is necessary. Each cow needs three and one-half feet width of stall and the number of cows will determine the length needed. Allowance should also be made for box stalls for calves, bulls and cows that are to freshen.

Eight feet is high enough for the stable. Less than that is too low and more than that is hard to warm.

Construction

The stable part should be built warm and of lasting material; cement blocks, double brick or stone, with plenty of windows. There should be one window three by four feet for each two cows. With windows on the east, west and south sides, every cow should get the sunshine at some part of the day.

The doors should be double for cold weather.

A basement barn is not as desirable as most men seem to think. In the first place, it is harder to get good light, and secondly, we have too much side hill around the barn. With the machines we use, like the silage cutter, shredder and threshing machine, and the hauling of hay and the manure spreader, level ground is much more convenient.

The barn above the stable can best be constructed of plank frame. This is cheaper and stronger than the old timber frame and gives more clear space inside. Galvanized iron is being used for roof and sides instead of lumber and is cheaper and more lasting.

If the floor above the cow stable is tight, there is no objection to storing hay, fodder or straw above the stable, and that is the most convenient place for it.

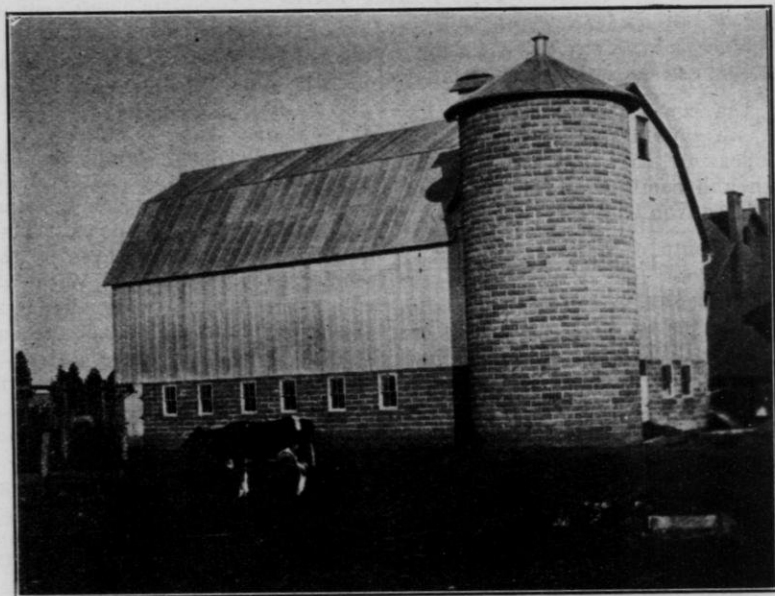
The stable should have a good system of ventilation. The King sys-

tem is the best and care should be taken that it is put in right and according to instruction in our University Bulletins.

Have nothing in the stable to obstruct the light that is not absolutely necessary.

Swinging iron stanchions, adjust-

when standing the other way. For my part, I much prefer that they face in, it is more convenient and we prefer to use the manure carrier instead of driving through with the spreader. The cows should not go in and out of the same door where the manure is put out.



Barn and silo built together on farm of H. D. Griswold, West Salem.

able from front to back, seem to be the most popular, with pipe partitions between the cows. The iron posts look neat and take less room.

As to whether the cows face in or out is largely a matter of individual preference. If they face out and you drive through with a manure spreader, you must build wider to give that extra room, and the cows have to furnish heat to warm that extra space; also the large doors at each end let in more cold and the light from the windows comes in their faces, instead of on the body as

The Floor

The stable floor should be of concrete, the stalls from manger to gutter should be four feet, eight inches for the average sized cow, sloping not more than one inch, and should be covered with boards or plenty of bedding. The gutter should be twenty inches wide and eight inches deep behind the cow, and four inches deep next the walk. The walk should slope toward the gutter and the floor left rough in front of the doors, so it will not be slippery.

Water should be provided in the stable, so the stock will not be obliged to go out in the cold, stormy weather.

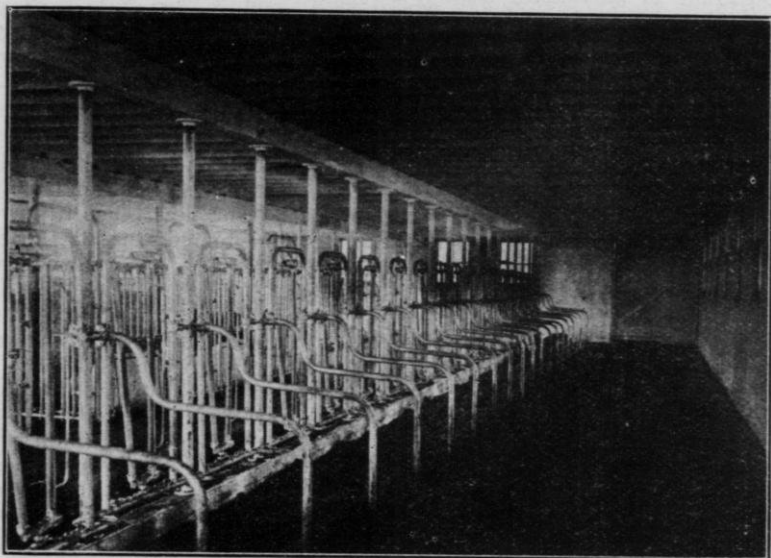
Whitewash the stable at least once a year, provide a closet for the unsightly tools and a sink where the men can wash.

The milk room should be conveniently located and the separator run

DISCUSSION

A Member—How would you fasten these planks to the floor so they wouldn't be bobbing up all the time?

Mr. Griswold—You do not need to have this plank if you have a cement floor. Boards will do just as well. Put in boards enough to fill one stall and fasten them together with



Interior view of stable, G. W. Dudley, owner, West Salem, C. D. Griswold, Manager.

with a gasoline engine, which can also pump the water and run a dynamo for the electric lights.

Old barns cannot always be arranged as we would like to have them, but in most of them larger windows, better ventilation and better floors could be arranged, so that the cows would be more comfortable and sanitary and give better returns, and more convenience, profit and satisfaction to the owner.

a strip of hoop iron on the under side. You can take them out of the stall and leave them out, or you can put them in when you wish.

Mr. Imrie—Do you think that galvanized iron for a roof will last as long as cedar shingles?

Mr. Griswold—Of course it has not been tried out as much as cedar shingles, but I know personally of cases where it has been on seventeen years and is apparently as good as

ever. You must remember that in galvanized iron roofing or siding, there is a great difference in the way it is manufactured. One way of testing is to take a fresh clipping of it and look at the edge. If there are any black streaks in that fresh cut, that is poor iron, and you do not want to use it. It will rust very quickly, but when you get a heavy, good grade of galvanized iron, it is all right.

A Member—Can't you give us the number? Is it twenty-six or twenty-eight? There are lots of common roofing and siding as well. I saw some corrugated iron the other day that was twenty-gauge. That is a very heavy brand. It is expensive, too, costs more than shingles.

A Member—Twenty-four or twenty-six should be about what you want.

A Member—No. 26 is usually the heaviest there is in stock.

Mr. Griswold—In putting the iron onto the building, we put on a six-inch board. Then leave a six-inch space, what is called half boarding. You do not want the wind to get in between the cracks; if it does, it will rattle and make too much noise. In putting on a plank frame, it is half boarded the other way, or at right angles to the studding and rafters, and you have your building well secured, so you have a stiff frame, and you have a chance to nail it often enough so it is tight.

A Member—Do you ever find any leaks in the nailing places?

Mr. Griswold—No.

A Member—What is the result when the cement floor is not planked?

Mr. Griswold—If the cow lies on the bare cement, you know if she has an udder at all that lies right down in the cement, and it has more dampness, she is more likely to have

trouble with that udder than if she were on boards.

A Member—Is there any difference whether you have clay under your cement floor or sand and gravel?

Mr. Griswold—I do not think there is much difference in that respect. We have clay, and then on the clay we put three or four inches of sand before we put in the floor.

Mr. Convey—We have had trouble from cows getting garget because we had not put on the floor. I think the trouble is due to the fact that moisture gathers on the cement, and it is just like getting your feet wet. A cow's udder, especially a fresh cow, is very easily hurt in that respect. You must keep it dry. Of course the temperature is higher on the boards than it would be on the cement.

A Member—I have had a cement floor under my stock four years. When I put it in I calculated to have a wooden floor laid on top, but I came to the conclusion I would try it and see if I thought it would be necessary. So far there has been no trouble. I use plenty of bedding.

Mr. Griswold—If you can keep it covered with bedding, it is all right.

Mr. Aderhold—Mr. Griswold stated in his paper that the horses and chickens ought not to be kept in the same building with the cows. I would like to know why.

Mr. Griswold—In the first place, horses do not want as warm a stable as cows have anyway. Then if you have your horses in there, you know there is always a much stronger smell from horse manure than there is from cow's manure. You go in there and curry your horses, you bring your horses in after they have been at work, you curry them off and the air is full of dust from the horses, and that is not nice to have in a cow stable. As to the chickens,

if you ever saw chickens in a cow stable, you will not need to ask that question twice. If there is anything I hate around my cow stable, it is chickens. They not only roost in all kinds of places, but they get into the feed, they leave their droppings in the mangers, and they are in the way. We do not keep chickens on the place, for the reason that my son would pretty near kill one if he found it in the cow stable. Pigs are worse than anything else, of course.

Mr. Aderhold—I think Mr. Griswold's point is well taken. In our work of inspection of dairy barns, we frequently find a barn that is all right, with the exception that the horses are kept in the barn with the cows, and those horse stables certainly smell a good deal worse than anything else in the barn. We insist that the cow barn is a food factory, because we are producing milk there in the winter, and during the operation of milking, the milk will take on odors, all that are in the barn. It will surely take on odors from those strong smelling horse stables. Horses certainly ought not to be kept in a dairy barn.

Chairman Nordman—Do you consider it a good plan to have a separator room aside from the cow stables?

Mr. Griswold—I like to have the separator in a separate room from the cow stables, yes.

Mr. White—What are the advantages of a rectangular barn over a round barn?

Mr. Griswold—In the first place, we can get better light. You know that in a round barn, in dark weather, it is pretty dark necessarily. Then the manure carrier, or the hay carrier cannot be very well managed in a circular barn. If you put the track on a curve, your carriers do not run very well. The cir-

cular barn will probably enclose more space with a given amount of lumber.

Mr. Imrie—There is only one figure you can make that will enclose more area than the circle, and that is the six-sided figure. Another thing, you cut to a waste in a round building. You have more rafters than are necessary at the top and haven't enough at the bottom. When you go to put on your roof, you have to cut that timber to waste. You have to shape your shingles so as to form your circle. When you make frames for gutters, you have to have them in a circle, and they are harder to make. There is one point where you economize, and that is where you have a silo in the center. But there is only one opening in this silo and you have to travel around it. Another thing, you cannot fill as full with hay as one with a peak roof, because your carrier will have to be brought way down to these eaves. Another trouble, you cannot get around behind the silo. If you get your carrier in there, you cannot get it back again.

Mr. Jacobs—And another bad thing—when you go to milk, you start in and keep going around and don't know where you left off, so you keep going round and round.

Mr. Clark—Why don't you want your cows to go in at the same door where you carry out the manure?

Mr. Griswold—Because most every barn you have ever seen, even if they keep the manure hauled out pretty well, there is more or less manure around that door and there will be a little seepage from the manure spreader. It is better to have another door for the cows to go in and out, or else they will get their feet dirty.

A Member—Do you think the concrete floor will hold the bedding as

well or better than the plank floor?

Mr. Griswold—That depends on how you smoothed off the concrete when you finished it. If you left it pretty rough, it would probably hold it as well as the boards. It should not be smoothed off. Just take a straight edge and float it a little bit, enough to fill up the holes, and leave it solid and rough.

A Member—In your opinion what is the best litter for the cow in the barn?

Mr. Griswold—Our best litter is corn stalks shredded.

Mr. Imrie—What do you think of a truss to support the floor? You said iron posts looked better than wood, but all of these are in a row.

Mr. Griswold—You have to use extra lumber. They furnish now a iron stanchion that carries with it a two-inch post between every stanchion, and in a building where the cows face each other, we can arrange the overhead so as to have beams come directly over the stanchion and use this two-inch post, which has a cap at the top and bottom and a big trench filled with concrete for the foundation. Those two-inch posts come between the stalls and take very little room. Of course, if they are facing the other way, you can have them back of the gutter.

Mr. Bussey—You can have them right back of the stanchion, so it clears the stanchion.

Mr. Martiny—There is one very important point that has not been touched upon, and that is the water

supply in the barn. Tell us about that.

Mr. Griswold—We use a cement manger. We make that cement manger rather sharp down in the bottom. We have water tanks in the stable. Water is pumped into the stable, then with a little pipe and a piece of hose, we can turn the water into any manger and water the cattle right in the same manger where they feed. We sweep it out first from one end to the other, so it is perfectly clean, and let in the water, let them drink until they get enough, and then it goes down along the line and is let off at the farther end. If there is a little bit left, we turn it right out.

A Member—How deep do you have to bury your pipes in order to be sure they won't freeze?

Mr. Griswold—From the windmill to the barn we put those down about six feet. We wanted to be sure we wouldn't be bothered with them. There is an underground cut-off at the windmill. Our tank is right in the stable, covered over, a galvanized iron tank.

A Member—Would not individual drinking basins for the cows be better than watering in the manger?

Mr. Griswold—Not for us. We sweep out this manger every day and six feet. We wanted to be sure we let the water in and they drink all they want. There are no partitions in the manger, it is a continuous manger. Each cow is in a three and a half foot stall. She cannot reach so as to bother the other cows to amount to anything.

REPORT OF COMMITTEE ON RESOLUTIONS

The following report was submitted by the Chairman, Mr. Hanchett, and adopted, section by section:

Resolutions

Whereas, Agriculture represents the greater part of Wisconsin's industries, and, as the future development of Wisconsin depends and will be in proportion to the development of agriculture, and

Whereas, the permanent and most profitable farming is where high-class live stock and farm crops are produced and markets secured for these products, and

Whereas, a great opportunity is at hand for the advertising of our State, its live stock and other farm products at the Panama Exposition to be held at San Francisco, therefore, be it

Resolved, By the farmers and taxpayers at this, the Twenty-eighth Annual Round-up Farmers' Institute, that a liberal portion of the \$75,000 appropriated for a Wisconsin exhibit at the Panama-Pacific Exposition at San Francisco be used in encouraging a creditable exhibit of our live stock and farm crops at the above named Exposition, and be it further,

Resolved, that a copy of this resolution be sent to the Secretary of the World's Fair Commission and to His Excellency, Hon. Francis E. McGovern, Governor of Wisconsin.

Whereas, Agriculture is the backbone and foundation of Wisconsin's industries and as such merits more careful consideration and encouragement from the Executive Department of the State than it now receives:

Whereas, we believe that our interests have not been fairly and judiciously represented by some of the officials in authority; be it

Resolved, that we resent some of the pretensions for the betterment of agricultural conditions and condemn them as being superficial, impractical, inefficient and expensive. Be it further

Resolved, that the farmers of Wisconsin should exert a united effort to secure a larger representative of active farmers upon boards and commissions whose functions it is to promote and foster the agricultural activities of this State.

Be It Resolved, by the farmers of Wisconsin in our Twenty-eighth Annual Round-up Institute, that we express to Mr. George McKerrow our hearty appreciation of his services in organizing and assisting to maintain a State Live Stock Breeders' Association, in conducting the affairs of the State Board of Agriculture as President for a period of thirteen years, and in the Farm Institute work for seven years as assistant and conductor and for twenty years as Superintendent of the work.

We believe his efficient and unstinted efforts have been a large factor in promoting a more prosperous agriculture and a better agricultural citizenship for Wisconsin. We regret his retirement from the Institute management and hope it does not mean that the cause of agriculture is to be entirely deprived of his valuable services. Be it further,

Resolved, that Supt. McKerrow be requested to prepare an historical record of the organization, growth and development of the Farmers'

Institute work in Wisconsin, together with his estimate of its value in placing all branches of agricultural activity in the State upon their present high standard of efficiency, and we further request that the letter of Hon. C. E. Estabrook which was read by Supt. McKerrow before this body, together with the historical record, be made a part of the records of this meeting, to be printed in the next annual report.

Whereas, The Farmers' Institutes have been of immeasurable value to the farmers of Wisconsin and have been a great factor in promoting a more profitable and high standard of agriculture, that they have received the hearty co-operation and loyal support of the farmers because they have been conducted in a practical manner by a practical farmer, and that the duty now devolves upon our Board of Regents of the University of Wisconsin to select a new Superintendent of Farmers' Institutes to succeed Mr. George McKerrow, who has through his able management for the past twenty years kept Wisconsin Farmers' Institutes up to a high standard of efficiency, be it

Resolved, by the farmers and taxpayers of Pierce and adjoining counties in attendance at the Twenty-eighth Annual Round-up Farmers' Institute, that it is their sense and best judgment that in order to continue our Farmers' Institutes in their present high standard and at the same time command the loyal support of our Wisconsin farmers, the succeeding Superintendent of Farmers' Institutes be a practical and successful live stock farmer.

We believe that the financial side of farming has been discussed in our Institutes so that success is almost certain and now we believe that more attention should be paid

to spending the money in better homes with modern equipment, good books, papers and music; that we urge the establishment of town or union High Schools in the open country, that will serve as centers for the social, moral and intellectual life of the communities; that we encourage the old-time visiting, singing and story telling, so our lives may be more fully rounded out, shedding more sunshine and getting more happiness, in short, being a better neighbor, and this means more than money.

We desire to express our thanks to the local branch of the American Society of Equity and other farmers for their co-operation in securing the Twenty-eighth Annual Round-up Farmers' Institute of Wisconsin; to the schools and other agencies for their contributions to the program; and to the citizens and business men of Ellsworth, Wis., for their efforts and entertainment that have contributed to the success of this meeting.

W. H. Hanchett,

E. W. Campbell,

Geo. W. Davies,

Committee.

Supt. McKerrow—If there is nothing else, I want to say in closing this Twenty-eighth Annual Round-up that we have been here for three days discussing these questions relating to our business and representing, as I do, the farmers who come in here from the outside to help you hold this meeting. I want to say personally and for them, that we have all been very well pleased with the manner in which you have taken hold of the meeting. Maybe you might have asked more questions if some of these fellows of ours had kept quiet, but they have learned to talk so much that unless myself, or some-

body else, has their hand right on their mouths, or they have their wives beside them to hold them down, they will talk. I hope you will excuse them for the active part they have taken.

Of course, one of the objects of the Round-up Institute is to get material in the form of discussions for the people to read throughout the State of Wisconsin, and in other states, next year when these Bulletins are printed, and so we could not hold the discussions just to local conditions as we do in local Institutes, but I am very well pleased with what you have done here locally.

There is only one thing I have to find fault with you about, and that

is that you did not have these roads in better condition before we came. We are all in favor of good roads, the discussions we have had here show that, and the discussions all over the State this winter show it, although we do not want better roads in Ellsworth for the purpose that an old farmer in Ozaukee county suggested after a pretty warm discussion in which the tax question came in. He jumped up and said, "Yes, we want good roads. We want good roads from Madison out, so we can move out the politicians next fall."

Thanking you again, we will declare this Twenty-eighth Round-up Institute closed.

WISCONSIN FARMERS' INSTITUTES

Supt. George McKerrow, Madison, Wis.

In 1885 the Legislature of Wisconsin made an annual appropriation of five thousand dollars for the purpose of organizing a system of State Farmers' Institutes. So far as we can learn, that was the first considerable annual appropriation ever made for this work by any state or country. The results were so satisfactory that in 1887 this appropriation was increased to twelve thousand dollars. The Legislature of 1905 appointed a University investigating committee of its members, who, in their report to the next Legislature of 1907 advised that this fund be increased, which resulted in an increase to twenty thousand dollars without dissent.

Hon. C. E. Estabrook, representing Manitowoc county in the Assembly of 1885, introduced the bill that established the Wisconsin Institutes

and practically every state and province on the North American continent now have these annual Institutes in one form or another.

Organization and Management

The Farm Committee of the University Board of Regents, composed of three of Wisconsin's leading farmers, Hon. Hiram Smith, of Sheboygan Falls; Hon. L. D. Hitt, of Oakfield, and Major C. H. Williams, of Baraboo, selected the late W. H. Morrison as the first Superintendent and established the Farm Institute office in the State Capital. Mr. Morrison had had experience as a farmer, county superintendent of schools and secretary of the well-known Walworth County Agricultural Society, whose annual fairs have become known throughout

the country as one of the best organized working county agricultural fairs in the world. Mr. Morrison proved himself an adept in organizing and during his nine years' of service developed a system admirably suited to the needs of the farmers of Wisconsin.

After the death of Mr. Morrison, George McKerrow, a Waukesha county farmer, was appointed as his successor and directed the work of the Institutes from July, 1894 until June, 1914. Mr. McKerrow had had experience as a farmer and school teacher and had made something of a reputation as a breeder of pure bred live stock, which had been very successful in the show rings at the leading fairs and expositions of the country.

Upon the resignation of Supt. McKerrow in May, 1914, Prof. C. P. Norgord, of Madison, was appointed Superintendent.

Plan of Work

The general plan of this work in Wisconsin, commencing in 1885 up until 1914, has been to make these meetings just what the name implies, Farmers' Institutes, held in the different farming sections of the State for the farmers, by farmer instructors, who were among the leaders in their respective lines in Wisconsin agriculture. During these twenty-nine years there has been a steady growth and development of this work. Practically every phase of farming and home-making on the farm has been discussed at the 2,862 Institutes and the 390 Cooking Schools held in the State.

Subjects of Discussion

A number of the most important subjects have been discussed at practically every one of these meetings, such as soil fertility, crop ro-

tation, silo building, dairying, better seed, better crops, improved live stock, good feeding, bovine tuberculosis, road building, co-operative creameries, cheese factories and marketing, better farmers, home sanitation, the principles of cooking and a balanced ration for man and beast.

Work Accomplished

The first two years an average of forty-four meetings per year was held; the next seven there was an average of seventy and for the past twenty years an average of one hundred and fourteen Institutes has been held and for the past nineteen years an average of twenty-one Cooking Schools per year.

Institute Publications

During the first year of the Institutes, no publications were issued. In 1886 Supt. Morrison conceived the idea that the best matter brought out in the different discussions should be preserved and put into book form, and commenced the publication of the Wisconsin Farmers' Institute Bulletin. This has been continued annually and this year No. 28 of the series will be given to the Wisconsin farmers.

The matter for this Bulletin is secured by holding a Round-up Institute at some central point in the State, where the different corps of Institute workers are brought together, with some of the best workers from other states and some of the professors from the College of Agriculture. A competent stenographer is secured and a full report of all the discussions of this meeting is edited into the annual Bulletin.

In 1887, 31,000 copies of Bulletin No. 1 were issued. The demand was so great that in 1889 the issue

was increased to 40,000 copies, in 1895 to 50,000 and in 1896 to 60,000 copies. One hundred thousand could now be profitably used, but the funds will not permit the publication of so large an issue. Since 1908, under a ruling of the Attorney General that the State Printer must do this work, only 50,000 copies have been issued. Eight thousand cloth bound Bulletins are placed in the school district libraries of the State. The balance of them are distributed at the Institutes and through the local press, creameries, cheese factories, farmers' clubs, agricultural societies, county representatives, county superintendents, farmers and business men who see that they are placed in the hands of the reading farmers.

Since 1908, 10,000 Cook-books of ninety-six pages each, have been printed and distributed at the Cooking Schools.

The cost of the preparation, editing, printing and distribution of this Bulletin of 320 pages and the Cook-book is over six thousand dollars, or nearly one-third of the annual appropriation.

Mid-Winter Fair Feature

Mid-winter fairs, under the local management, have been held in connection with many of the two-day winter Institutes and Cooking Schools and at all the Round-up Institutes for the past nineteen years, where prize lists for products of the farm and home, varying from ten dollars up to two thousand, five hundred dollars, have been offered. Where properly managed, this fair feature adds a great deal of interest, but when the amount offered is more than two or three hundred dollars, the interest centers too much in the exhibit and not enough in the Institute proper.

Wisconsin Institute Methods

The Wisconsin Institutes are different from those in many states in that they are in the main farmers' conferences. The lectures of the farmer speakers are confined to about one-half the time, the balance being taken up in discussion of the subject under consideration by the farmers of the locality, usually in the form of questions and answers, which bring about a general discussion of the phases of the subjects in which each locality is most interested.

Nearly all of the meetings held in Wisconsin have been of two days' duration. The evening session of the first day has in the main been devoted to the discussion of educational subjects, taken part in as a rule by the schools of the neighborhood, representatives of the educational department of the State and county often taking part in these programs.

The meetings have been presided over by the conductor of the corps that is doing the work. In opening his work, the conductor always improves the opportunity to impress upon the farmers in attendance that it is their meeting and that they are to take an active part in all of the discussions.

A report of each meeting is made by the conductor in charge upon uniform blanks furnished from the Superintendent's office. The main object attained by these reports is the aid that they give the Superintendent in planning the future work in the same district.

The Farmers' Attitude Toward the Institutes

At first the farmers of Wisconsin were suspicious of the Farmers' Institutes, looking upon them as a political move or an advertising

medium for breeders or the Agricultural College and the State University, and quite often spoke of the Institute workers and speakers as theorists. This spirit has been entirely overcome by the employment of practical farmers as the Institute instructors, until now the farmers of Wisconsin bank on the Institutes and their teachings as reliable and practical.

To illustrate, let me quote from a chart prepared locally and placed upon the walls of the Institute hall at Beaver Dam, Wis., in 1893. This chart showed a district within a radius of ten miles of the city of Beaver Dam, giving the location of thirty-eight butter and cheese factories within that district. The statement accompanying this chart reads as follows: "The Farm Institutes encouraged the farmers to build 38 butter and cheese factories within 10 miles of Beaver Dam, Wis., paying in cash annually over one-half million dollars to the farmers for milk and adding over a million dollars to the wealth of Dodge county in the past seven years since the first Institute was held in this county in 1886."

In Hoard's "Dairyman" of April 15, 1904, a writer from Kewaunee county says that the farmers of that district follow the teachings of the Institutes.

Organizations Fostered by the Institute Work

In February 1886, the Superintendent sent out a request to the superintendents and directors of the Farmers' Institutes in the states and provinces then organized to send representatives to Watertown, Wis., where the Wisconsin Round-up Institute was to be held March 10, 11 and 12, for the purpose of organizing an International Association of

Farmers' Institute Workers. In response to this call, representatives were present from Nebraska, Michigan, Minnesota, Illinois, Ohio and Wisconsin, an organization was perfected and now includes all the states and provinces of Canada, which has since grown to be a power in the development of Institute work on this continent.

The Farmers' Institutes, through calls issued by the Superintendent, took the initiative in the organization of the Wisconsin Live Stock Breeders' Association, which has become a leading factor in the development of the pure bred and high grade live stock industry of Wisconsin.

The Institutes have worked in harmony with all such organizations as the State Board of Agriculture, State Horticultural Society, Dairy and Food Commission, State Highway Commission, the College of Agriculture, and all other agencies, State and local, that have stood for the betterment of Wisconsin agriculture.

Wisconsin Plan Model for Other States

Many of the states that followed Wisconsin in establishing Farmers' Institutes, either by correspondence or personal visits from their representatives, have investigated the plans followed in Wisconsin and have adopted many of these features. Of those who spent some time in personal investigation were Supt. K. L. Butterfield, of Michigan, and Supt. Fred W. Taylor, of Nebraska. A Commissioner of the Russian government also spent a day in investigating Wisconsin Institutes and reported in favor of the establishing of such a system in Russia.

Some of the Results of Wisconsin Institutes

The 2,862 Farmers' Institutes, 390 Cooking Schools and the distribution of 1,372,000 of the annual Bulletins and 60,000 Cook-books we believe has had much to do with the rapid advancement of home building, home-making and the prominent position which Wisconsin holds as an agricultural, dairy and live stock State. In all these respects she is admitted by her sister states to be in the lead.

Some specific features in which the Institutes can lay claim for successful advance through its work, in connection with the other agen-

cies, are the great advance made in dairying, silo building, freeing our herds of cattle from tuberculosis, a good system of crop rotation with more clover in proportion to cultivated area than any other state, and the great advancement that has been made in the breeding of pure bred cattle, sheep and swine, with the great increase in well ventilated, well lighted stock barns, and good, well-kept rural homes.

We believe it is not boasting to say that the Farmers' Institutes in their close touch with the farmers of the State have done as much or more along all these lines than any other one agency.

WOMAN'S DEPARTMENT.

COOKING SCHOOL

Held at Ellsworth in Connection with the Closing Farmers' Institute, March
17, 18 and 19, 1914

Conducted by Miss Nellie Maxwell, Neenah; Miss Susan K. Brown, Luverne,
Minn., and Mrs. Nellie Kedzie Jones, Auburndale.

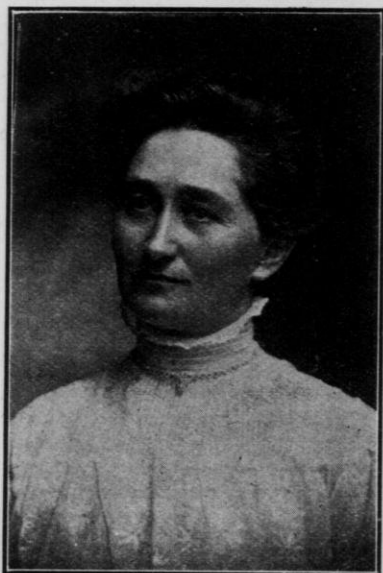
Stenographic Report by Miss Nellie E. Griffiths, Madison.

FIRST SESSION

Tuesday Afternoon, March 17, 1914.

**THE FOOD VALUE OF CHEESE AND A FEW OF THE VARIOUS WAYS
OF SERVING IT**

Miss Nellie Maxwell, Neenah, Wis.



Miss Maxwell

I am very sure I am glad to be with you and hope we may have a good time together. I also hope you will feel free to ask questions. This is not going to be a formal gathering; we are just housekeepers gathered here to exchange ideas and get helpful thoughts for our home work, and I trust you will feel at perfect liberty to ask questions at any time.

I wonder if we realize that Wisconsin leads the United States in its production of cheese. We make more than one-half of the cheese that is produced in the United States. New York comes next, and it seems to me as patriotic citizens of the State we ought to be studying more about the methods of serving cheese, to have it oftener on our tables and appreciate what a valuable food it is.

Cheese is a food that is very

concentrated and a very little goes a great ways. One ounce of cheese is equal to two ounces of meat and is three times as energy producing as meat, so you see you have in cheese a very valuable food.

There was a time when people said that cheese was indigestible; it was the popular belief. It is very unwise to take popular opinion for judgment, because we are apt to form wrong judgments about things. I think in over a thousand experiments there were sixty-five persons in the whole number who found cheese indigestible. The great fault with most people is improper mastication of cheese. It must be well chewed in order to be well digested, and because it is so very rich, crumbly and slippery, it slips down without proper mastication and goes into the stomach in good-sized lumps, and that perhaps is how the idea originated that cheese is indigestible.

There are four hundred and thirty-five varieties of cheese made in the world. In Wisconsin we have something like forty varieties. We used to make Edam cheese in Wisconsin. I have some samples here of cheese made in Wisconsin: I could not get them all. We are going to have this cheese exhibit here for you to examine, so you can see where the cheeses are made and see some of the different varieties that are produced in Wisconsin.

The properties of cheese depend upon the amount of water it contains, the amount of casein, quantity of fat and the kind and degree of fermentation that goes on in the process of making. Many additional factors come in, in the making of cheese, the pressure, the frequency of turning, the amount of heat applied, those are the things which determine the quality of the cheese. The ripening is a thing of

importance, and the bacteria which are introduced to give it a flavor. We think that New York cheese is a finer and richer cheese than that made in our own State. Now, they tell us that some of the New York cheese that we pay a high price for is simply Wisconsin cheese sent there to be ripened and sent back as New York cheese. That is not quite fair to our State. We are in too great a hurry to dispose of our products on account of the people who furnish the milk. They need the milk check, and the cheese is sold out as rapidly as possible and not even given the time to ripen that it is in other States.

The cheese that is largely made in Wisconsin is the Cheddar. That is made in different varieties and forms and called by different names.

We have the brick cheese, which you all know, and the common Cheddar, which has had some coloring added to it. The Stilton cheese is made from sweet milk to which a portion of cream has been added. Limburg, known for its odor, is made from whole milk and is one of the most wholesome cheese we have, but because of the process that is used in its ripening, it gets the flavor which is characteristic. The pineapple cheese is a very hard cheese molded in a mold which gives it that form. In England we have the Cheshire cheese, one of the oldest and most popular varieties, and the Roquefort from France, which was originally made from goat's milk. A very interesting story is told of the first Roquefort cheese. A young boy had a piece of cheese and some rye bread when he went out to tend the goats. He put his lunch in a cave for safe keeping and went off and forget it. A week or two after he found his bread and cheese in the cave, the cheese was covered with a green

mold which had come from the contact with the bread. He tasted of it and it was so extremely delicate and fine of flavor he took it home to his mother and she thereafter made the cheese and put it in this cave to ripen with rye bread, and from that moldy cheese we have the wonderful industry of the Roquefort cheese.

We have the Swiss cheese, a sample is here on the table, with the great holes in it, the large holes give the cheese the appearance of having eyes and in those eyes are drops of water which are called tears. The amount of liquid contained in those holes is always noted in the judging.

The lesson this afternoon is entirely of cheese. We could have a thousand dishes and still not finish the wonderful versatility of this great food. We may have soups and desserts and pies and puddings, souffles and fondues, sandwiches, salads, rarebits and supper dishes; any number of dishes with cheese, and a large variety, of course, using the cheese with other things.

This afternoon I will make cream of cheese soup, a salad, sandwiches, a souffle, a cheese roll, a cheese supper dish and a tomato rarebit.

The first dish is cheese soup.

Cheese Soup

One tablespoonful onion juice, two and one-half tablespoonfuls flour, one quart milk, one teaspoon salt, one-half cup grated cheese. Paprika, a blade of mace.

This is simply a cream soup flavored with cheese. The mace which we use is the outside covering of the nutmeg and the flavor is similar. A small section is called a blade. Put it in the soup and then remove it before you serve it. It gives a delicate flavor.

Paprika is a mild red pepper made from the Hungarian sweet red peppers of our gardens.

Cook in a double boiler, or, if you do not have a double boiler, cook over hot water so as not to scorch the milk. Put the cheese in last, it just simply wants to be melted. This is just a thin white sauce with the cheese added for flavor.

You notice in making this white sauce I am not using butter. The reason is because of the amount of fat in the cheese. If you were making a white sauce and not using any other fat, you would want butter for the seasoning, but this soup will be sufficiently rich with the half cup of grated cheese.

Question—What kind of cheese?

Miss Maxwell—Just the ordinary American Cheddar cheese. It must be grated, or you can cut it in fine shavings.

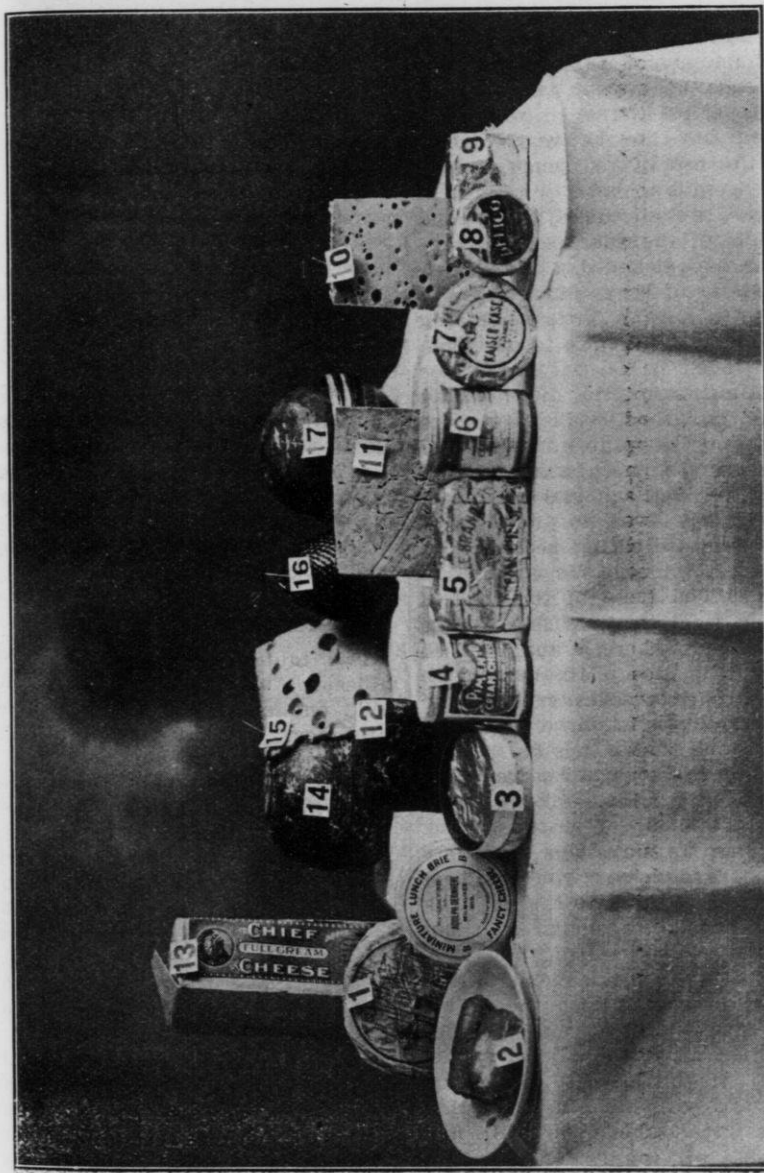
Have your flour sifted before measuring and in all the recipes which you will find in your books the measurements are level, then there need never be any trouble about having improper measurements, or having "bad luck" in cooking if we put things together properly and have proper proportions.

Question—That is intended to fool the man, isn't it?

Miss Maxwell—What a person doesn't know doesn't hurt him. Sometimes it is just as well not to tell everything you know about what you put in your cooking if you have fussy people to cook for.

If you ever use these little measuring spoons you will like them very much. There are three in the set, a teaspoon, one-half and one-fourth teaspoon, and you do not have to stop to divide it off if you want a half or a quarter.

I will add a very little milk to



- | | | |
|-------------------|---------------------|-----------------|
| 1. Wisconsin Brie | 9. Limberger | 13. Brick |
| 2. Hand Cheeses | 10. Swiss | 14. Edam-French |
| 3. Lunch Brie | 11. Cheddar | 15. Swiss |
| 4. Pimento Cream | 12. Primost | 16. Pineapple |
| | 17. Edam (Holland). | |

the flour and cook it very carefully over hot water before I add the rest of the milk.

The amount of paprika you put in depends upon your taste for it. Red pepper, of course, is very nice, but you have to be very careful about the use of red pepper. Red pepper is said to be a quickener of the liver; we all have livers and this time of the year perhaps they need to be quickened a little. After a winter of heavy foods it would be well to have a little something to add ginger and spice to our food. But we must be careful in the use of condiments not to disguise the taste of the food. When we are eating food we want it to taste of the food itself, not be so covered with pepper and salt and other seasonings that we do not know whether we are eating beefsteak or mashed potatoes. We want to have the food taste of the food.

If you want to serve cheese balls with the soup, there is another dish that is very nice. Mix the cheese with seasoned cracker crumbs and form into balls to serve with any kind of soup that is not too rich.

Our soup is ready to serve. The balance of the milk has been added and a half a cup of grated cheese. If you want to make this soup very much more delicious, you can beat an egg and add that to the hot milk with the cheese, although it is not necessary to do that, and you have a good deal of nourishment in this half cup of cheese with the milk.

The cheese that goes into the hot soup must be served almost immediately. If you leave it to cook or stand, you will have a dish that will be unpalatable, you will find the cheese will toughen, it must not overcook, just simply melt.

When we are cooking we are anxious to have our food taste well, because that means it is all going

to be eaten; if it is not well seasoned, the family will refuse it and so it will be wasted. The housekeeper who uses her head can prepare her food so it can be all eaten, or if there is a little left over it can come back in some other form and be very acceptable.

Question—Does the soup just come to a boil?

Miss Maxwell—A little of the flour and milk is cooked together (thoroughly cooked), then the rest of the milk is added and just brought to the scalding point. Add the cheese the very last thing.

If you want to have your soup especially attractive, you can sprinkle it with a little chopped chives, they are those very fine, grass-like onions, or hard cooked egg or parsley can be used.

Now I will prepare the cheese soufflé.

Cheese Soufflé

Two tablespoonfuls butter, three tablespoonfuls flour, one-half cup milk, one-fourth cup grated cheese, three eggs, one-half teaspoon salt, a few grains of cayenne.

This is a dish that can be prepared for a supper dish, it takes the place of an omelet, or you can use it just as you would an omelet. A soufflé is a dish that has to be served with just as much care as an omelet and your family must always be ready when it is ready to serve. The family can wait for the soufflé, but never the soufflé for the family.

We will take two tablespoonfuls of butter and three of flour for the white sauce we are making. Use one-half a cup of sweet milk, a teaspoon of salt, a few grains of cayenne and the yolks of three eggs.

The soufflé is a little harder to prepare than a fondue. I will give you a recipe for it.

Cheese Fondue

One cup milk, one cup stale bread crumbs, one-fourth of a pound of cheese cut in small pieces, one tablespoonful butter, one-half teaspoon salt, three eggs.

In the fondue we use the bread crumbs instead of the white sauce, which makes it an easier dish to prepare, using bread crumbs and milk instead of flour and butter and milk cooked together.

The soufflé is simply a white sauce foundation. Melt the butter until it is bubbling hot, then add the flour, and you can put your flour on one side of the dish and the butter on the other and when the butter is melted you can stir in your flour and have the mixture all ready. Mix the butter and flour, adding the milk.

These little wooden spoons are such a convenience in cooking; they never get hot and are easy to handle. When you have a lot of mixing and stirring to do, you do not have calloused hands if you use wooden spoons.

Add a little of the red pepper and a little salt; we have to have seasoning. When you are putting red pepper into a dish, it is always well to mix it with the salt, because you are apt to get the red pepper in spots and the one who gets the little spot won't like you.

We have the butter, the flour, the milk and one-half teaspoon of salt. You see by measuring with these little measuring spoons you do not need to measure off the teaspoonful, then down through the center for the half, this is just a half teaspoonful.

Now we will put a quarter of a cup of cheese to melt in this mixture, then when it is cool enough we will add the eggs and put it in the oven.

In baking an egg dish, there is one thing we have to remember, and that is that it must be baked with steam around it in order not to get too high a temperature. Always set a custard, or anything of that nature that is cooked in the oven, in a dish of hot water, in that way you will have the dish evenly cooked.

Butter the dish before you put in the mixture. Add the yolks of the eggs, and you want to cool this white sauce before you put your egg in, or you will have it cooked in lumps.

You can add a little paprika or red pepper, fold in the whites of the eggs beaten stiff, put this into the oven and bake it.

We want to serve it just as soon as it is firm, after it has been in about twenty minutes. A good plan to test it is to thrust a knife into the center; if it comes out clean it is ready to come out of the oven.

This is the soufflé. It must be served immediately, or it will drop just like an omelet. A perfect soufflé should stand up just like a most delicate sponge cake or omelet, having a nice smooth texture. A soufflé, like an omelet, should never wait a moment for the family to come to the table, they should be there when it goes on.

Cheese Roll

One cream cheese, one and one-half cups grated cheese, a small bottle of stuffed olives, seasoning.

Here is another dish that I have partly prepared and will now finish. It is a way of serving cheese. I am going to let you look at this and perhaps I will let you sample it, if you think you will like it. It is a cream cheese or a blue ribbon cheese creamed with a cup and one-half of ordinary grated cheese, seasoned with salt and pepper and what there is in a small bottle of stuffed olives, saving out just enough to

garnish the outside of the roll. They are chopped very fine and mixed with the cheese and a little paprika and salt, seasoning it well. Form in a roll and decorate it with thin slices of olives. This makes a very pretty way of serving cheese for a change and this can be used with crackers at the close of a dinner.

When you are serving a cheese roll like this, it is always a good plan to have your plate covered with a pretty doily and pass the roll with a cheese knife and crackers. Nowadays they have a little arrangement where all are on one plate, so one can help himself to the crackers and cheese as the plate is passed.

You could have a little pile of crackers on this plate if you like to serve crackers with the cheese. I am going to pass this around and let you see how it looks, because some of you might not see it at all if they commenced to serve it. It is as nice as it looks, and you know we want to have our food look as attractive as we can when we serve it, because our appetite depends largely on the way things look.

Another very nice way of serving cheese, if you want to have a pretty little dainty, is to cut a cream cheese in nice little squares, roll them in chopped nuts or decorate with half of a nut meat and put one of those little squares on the salad plate as you pass your salad.

Cheese is something that we all ought to have often on our tables. It is especially appetizing, most people like it and you can vary it with any number of seasonings.

I was going to make an Easter salad, using the cottage cheese, but, owing to a misunderstanding, the cottage cheese will not be here until tomorrow; however, I will tell you just how to do it and you can try it at home, or perhaps we can have some for you to look at tomorrow.

Just form the cottage cheese into little egg-shaped molds, then roll them in chopped parsley and serve in a nest of three or four on a lettuce leaf. They are served without any dressing whatever.

If you have chives growing in your kitchen (a great many people take up a bunch in the fall and have it growing in the kitchen with a pot of parsley), cut them up very fine and mix with cottage cheese, and those little green straws showing all through the cottage cheese makes a very attractive way of serving cottage cheese.

Then another very nice way, when green peppers are in the market, is to cut off the top of a green pepper, remove all the seeds, stuff with cottage cheese, put it away in the ice chest and then when you want to serve it just cut it in little thin slices and you will have a slice of cheese with a green rim of pepper around it. Put on a salad plate and you have a very attractive looking salad, and it is very good too.

I want to speak to you about the making of cottage cheese. I suppose there are a good many in the audience who are making cottage cheese every week, but perhaps some of you have not learned that it can be made in a very simple, quick way.

The making of cottage cheese is a process that some of us think takes a long time, putting it on the back of the stove, and letting the milk curdle, and often it gets too hard before you get it ready to make, and you spoil your cheese.

I saw a lady make it in a way which was a perfect revelation to me and I have wanted to pass it on ever since to show how easily it can be made. She had a large bowl of curdled milk and a tea kettle full of boiling water. She poured the boiling water in the milk until she saw the curd had formed, then she turned

out the curd in a strainer or colander and she had the most delicious cottage cheese all in a minute. Have any of you ever prepared cheese that way?

A Lady—We do at home.

Miss Maxwell—Yes, it is such a nice way, you do not have to watch it.

A Lady—It doesn't always work that way.

Miss Maxwell—Perhaps the milk is not properly thickened. The milk has to be perfectly curdled, sour milk to begin with.

Here is another salad that I am going to pass for you to look at and a little later on we will serve it. I want you to see the beauty of it.

This is simply a ring of pineapple, just the Hawaiian pineapple taken out of the can, filling the center with grated cheese. The pineapple juice is thickened with a little flour, adding a tablespoon of lemon juice; perhaps a tablespoon of flour to the same of butter for the amount of juice from a pint can, would make the salad dressing. Just have the cheese for the center of the flower, making it look like the stamens of a flower. Serve on a lettuce leaf.

Fillings for Sandwiches

Now we are to have a few cheese fillings for sandwiches.

I have here a can of red peppers, they are the peppers that you get sweet and fresh in the summer. Take a few of those, mash them very fine and mix with equal quantities of cheese and soft butter. Mix all together, the three things, and it makes a most delicious filling for sandwiches. You do not need to spread butter on your bread.

If you want to have some fancy shapes for some special occasion, you can make some "kindergarten" sandwiches. I think you would like to make them this way. Take a

doughnut cutter and cut out rounds of white and brown bread, then take a smaller cutter and cut out a round in the center, putting the center from the brown bread into the white slice and vice versa, put them together in this fashion and you will see how delighted the children will be with them, and I have even seen grown people pleased.

You can use different fillings for the sandwiches, using equal parts of grated cheese, having it smooth and nice, and soft butter. If you desire to be more economical you can use less butter, but, of course, it makes them richer to use more butter.

Just jam the pimentos all up with the butter and cheese and mix until smooth.

When you are making sandwiches, always soften the butter by letting it stand where it will just soften, not melt, but soft enough so you can cream it nicely, and it spreads very much better on bread.

One thing about making sandwiches, if you want to make fancy sandwiches, you see you have this bread left, but you can make any number of things with bread, such as scalloped dishes or bread pudding, or dressing, or any number of things that you have all tried many times.

Here are some other sandwiches that I want to give you this afternoon.

This cheese sandwich is just grated cheese mixed with a little cream to make a paste, seasoned with paprika and salt, made in the form of sandwiches, and fried in a little bit of butter in a hot frying pan, or it may be toasted in a hot oven. Served with a succulent salad this makes a nice combination. They are fried in a very little butter in a hot frying pan, just enough to brown them and give them a nice flavor. Put this filling in between them and when the sandwiches are toasted the cheese will be melted. This is a sandwich

that the men like. Add thick cream, to make it just of a consistency to spread, a little paprika and salt.

Just put the cheese on one half and then put on the other half. It is not necessary to have the cheese on both sides. Have enough to give them a good flavor. You can cut them in any shape you desire. If it is a valentine party, you can cut them in heart shape.

Just a little butter in the frying pan, enough to toast the bread nicely, but not fry it. We will toast them on both sides, turn them over, see that they are well browned.

Escalloped Cheese

Two cups soft bread crumbs, one cup cheese chopped, one and one-half cups milk, one egg, one-half teaspoon pepper, one-eighth teaspoon pepper.

This dish can be made from the bread in slices, you can butter the bread in slices and pour the milk and cheese over it without going to the trouble of crumbling it up at all. It makes a very delicious supper dish that way.

Anybody who is at all ingenious in arranging her menus can change dishes to suit conveniences and save time.

Be careful when you are making this escalloped dish that you do not cook it too long, or the cheese will be tough and stringy.

We have another cheese down here on the table that I did not mention. It is Premost, a Scandinavian cheese, made out of whey. It is cooked a long, long time until the sugar in the whey has changed.

Now the rarebit.

Tomato Rarebit

Two tablespoonfuls butter, two tablespoonfuls flour, three-fourths cup thin cream, one-eighth teaspoon

soda, two cups finely cup cheese, two eggs, salt and mustard.

This makes a very delicious dish if you want to serve an evening dish. It is a good one to dream on, warranted to give assorted dreams.

Rarebit is really a word that has been very much misused, it is called "rabbit" by some and "rarebit" by others, but it originated in the mind of some one who made a rare bit, it is just simply a rare bit, or a good dish.

A great many times we have ale and beer and things of that sort put into rarebit, but you can make a very delicious one with nothing but just a little cheese melted and a little cream. Just make a white sauce, putting it over crackers. We are using tomato sauce with the cream, which makes a white sauce.

Instead of using any cream, you can use all tomato if you like, by adding a little more butter for the richness and a little more of the cheese.

Two tablespoons of butter. If you have your butter soft, you can measure it exactly and very quickly.

If you are measuring butter and have it as it comes from the store in a pound brick, it is a good plan to mark it off in halves, then in quarters and eighths, then if you want a quarter of a cup you just cut this off. If you want to mark your quarters again, you have an eighth of a cup, or two tablespoons. If your recipe calls for two tablespoonfuls, all you have to do is just to cut at the mark without soiling a tablespoon or measuring in a cup.

This is made just like all white sauce foundations for so many dishes.

The addition of a little soda to the tomato, of course, neutralizes the acid of the tomato and so keeps it from curdling the cream, and soda is also a good thing to serve with

cheese, as it sort of softens the cheese. Many people in making a rarebit like to add a little bit of soda, thinking it makes it a little more digestible.

Just a touch of mustard, not too much, because that is one of our strong condiments, and a very little bit goes a great ways. If you want to use a little bit of red pepper, you can mix it with the mustard.

Now, this rarebit is something that ought to be served very hot. I am going to cut these crackers so you can all have a very little.

We will leave out the eggs in this dish, because I think the rarebit is fully rich enough without the eggs. We will see whether you like it or not.

There is one thing I forgot to mention about a rarebit, when you are picking out the cheese for it, try the cheese by pressing it with the tongue against the roof of the mouth. If it is smooth, without any grain, seems smooth against the roof of the mouth, that will make a good rarebit; if it is rough and grainy, do not use it.

The next will be a cheese supper dish.

Cheese Supper Dish

Two cups bread crumbs, one cup cheese, one and one-half cups milk, one-half teaspoon salt, one-eighth teaspoon pepper.

This cheese dish will be made with two cups of soft bread crumbs, a cup of cheese, one and one-half cups of milk, one-half teaspoon of salt and pepper. Soak the bread in the milk five minutes.

If you want to get crumbs that are nice and smooth, take bread thirty-six hours old and you will get nice fine crumbs. This bread is a little bit moist for bread crumbs, but we can use it all right for this dish because it is soaked. Two cupfuls of crumbs. A nice thing about this dish is that it is economical and you

can make it with things that you have at hand, and sometimes when you do not know what else to have for supper, just prepare this and see how well your family will like it.

When you have the pleasure of using one of these beautiful cheeses, like the Edam, serving out a little at a time with crackers, then you can use that little shell again to serve baked macaroni in; the cheese that is left in the shell will flavor the macaroni several times. Put on the lid, set in a pan well wrapped in buttered paper, and you can serve it right from the little cheese shell and serve it a half a dozen times if you are careful about it.

We use one egg for the supper dish.

Now, if there is anything else I can tell you ladies about the cheese we have, I shall be glad to do so. We have some homemade cheese, those little cheese in that dish there are very delicious; the Swiss cheese with the large holes, both the foreign and the Wisconsin made; then the cream cheese made here in Wisconsin.

A Lady—Do you think cheese as a food is constipating?

Miss Maxwell—No, if it is not eaten in too large quantities. We must remember that it is very concentrated and a small piece is enough for a meal, but where you eat too much it may cause constipation. If you are careful about masticating it, you won't have trouble with constipation; however, that is largely an individual matter.

A Lady—I suppose that any of these dishes mixed with bread crumbs are all right, it causes constipation when eaten alone.

Miss Maxwell—It is melted when prepared with other things, or cut finely, is better if melted, just simply brought to the point where it melts, it is more easily digested, so we are told. I am not quite decided

in my own mind that that is true, but the green cheese is more apt to be more indigestible than the richer, riper cheese, not because of its composition, but simply because it is greener and harder to masticate, it slips down without being properly chewed. Cheese of that class does not have the flavor that a richer, riper one has. The rich foreign cheese, like Brie and Cammenbert, are used more for a relish than they are as a food. Our common American Cheddar is a food as well as a relish. We serve dry crackers with cheese, because we must masticate them well in order to swallow them, the cheese is also finely divided and in that way is better digested. Cheese was said years ago to be hard to digest, but that is not so excepting in extreme cases. We find it is not hard to digest if properly masticated. We cannot take one person's "say so" for things, but when we have scientists who spend years experimenting on any one food, we certainly can give them the credit of having looked into the matter sufficiently to take their word, when they have used a great many people for the experiments and all sorts of conditions. We cannot take any one case and say it is conclusive. There are some of us who cannot eat strawberries or fish, because they do not agree with us, these things have to be considered, each person's idiosyncrasies make a difference in the food they can use and digest.

Miss Brown—Doesn't it make a difference with the things served at a meal? The cheese might be too much and cause indigestion.

Miss Maxwell—Yes, we take a little rich cheese on top of a heavy dinner and we blame the cheese when we are ill, we forget that we have eaten enough to make anybody ill before we took the cheese. We must remember not to have too large a variety, or cause too much waste

to be eliminated, and as cheese is such a very rich food, a very little goes a great ways. You know the Italian laborer can do hard work on a piece of cheese, a little fruit and a piece of rye bread, so we know it is a satisfying food and if we used more and ate less meat we would be healthier and better. There would not be so much waste to eliminate. When you buy cheese you get more for your money, just a little rind is wasted, and you can even use that to bait the mouse trap. In meat there is the waste of bone, gristle and portions of the skin that are not eaten, but in buying the cheese you get your full money's worth, so it is an economical as well as a nutritious, rich food.

A Lady—Cheese dries up very quickly.

Miss Maxwell—You can grate your cheese and put it away in a jar. We much prefer dry cheese for the grated cheese than the fresh cheese, so if you have a little bit of cheese dried up do not waste it, grate it and put it in a jar.

A Lady—Some think, do you, that it is as well to run it through the grinder as to grate it.

Miss Maxwell—Yes, you can do that just as well. I always think of washing the grinder. I would rather use the grater. A meat grinder is a fine thing to have for many things however.

A Lady—Don't you think the brick cheese is more easily digested than the Cheddar cheese?

Miss Maxwell—I do not know, perhaps it is. Of course, the richer a cheese is, the richer in fat it is and the more nutritious it is. You say it is more digestible. That may be true; I am not sure about that.

This closes the lesson for the afternoon. I hope you will come tomorrow afternoon and bring some one with you, so we will have this room full.

SECOND SESSION

Wednesday Afternoon, March 18, 1914

SOME SUGGESTIONS FOR ECONOMY

Miss Susan K. Brown, Luverene, Minn.



Miss Brown

In all well managed factories, the waste products are utilized very closely, in some cases making just as useful and attractive articles as the first articles. The kitchen should be run on just as scientific a basis as a factory and the housewife who does not utilize the small bits which are left over and make them up into palatable and attractive dishes, is apt to run her factory at a loss.

Mrs. Ellen H. Richards, one of the greatest promoters of Home Economics in this country, who has written a great many books on the subject

and was a great authority up to the time of her death, said that the housewife could throw out more at the back door on a tablespoon than the husband could bring in at the front door on a wheelbarrow if she did not utilize what was left from the table, so what we are going to consider today are some attractive ways of making up left-overs. Of course if food is not properly cooked in the first place, that which remains is much harder to utilize to advantage, but that is not our subject today.

Yesterday we had a demonstration on cheese, so I will do only one thing with cheese. I hope you won't think I am repeating because the first thing I am going to do is to talk about cottage cheese. We were to have had it yesterday to show the Lenten salad, so Miss Maxwell will show it today, but I just want to make a suggestion in my line for using cottage cheese, because nearly every one has sour milk at one time or another; and the sour skimmed milk is what you use for making cottage cheese, seasoning it to taste with a little butter, cream and salt. That is the most usual way of serving it, but today we will make it into a salad. To do this it is moistened with cream, seasoned with salt and cayenne, and a few olives and pimentoes are added, if one has some of them remaining from previous meals. Here is the exact recipe.

Cottage Cheese Salad

Moisten cottage cheese with cream, season with salt and cayenne, add chopped olives and pimentos. Press into cylindrical shape. Let stand two hours. Cut in slices and serve on lettuce leaf with French dressing.

The definite amount of cream is not given, because that depends on the amount of cream which you have, just how dry the cheese has been made, etc. Use enough cream to moisten it nicely, so you can work it easily, thus. Now, we want to make this into a sort of roll, somewhat as it was made yesterday. We are using some pimentos and the stuffed olives which were left yesterday, because if we are making over left-overs we should not put in too much new material. Sometimes when we make over old hats we pay more for material than a new one would cost us, so we must be careful not to do that in making over our food.

Now, we have some of these pimentos, which are the Spanish sweet red peppers, and we will put in enough to give our salad color, and we will put in some chopped olives that were left. If you have a few nuts in the house, they will improve it. Just a little hint of cayenne and a good deal of paprika, which gives the red color which is attractive, and a little salt. I will be careful about the salt until I taste it, as I did not make the cheese and do not know just how much it has been seasoned.

Yesterday we had this served in one roll. Now, my suggestion for serving it a little differently will be to cut it into slices after it is made into a roll and put one slice on a lettuce leaf for an individual serving.

Now I have to taste this, a cook has to taste in order to know what she must serve to other people. In

olden times the King had a taster, so he would be sure his food was not poisoned, so if I am not afraid to eat this perhaps you will not be. One function of the salad is to be an appetizer and if it isn't tasty it does not stimulate our appetite and one of the function has been lost. This is just mildly flavored, you do not need to have it very highly seasoned. We will serve it with French dressing, which is a very simple dressing. This same salad can be made from the Neufchatel cheese, which you buy. It costs five cents for a little package; some charge ten cents for the same sized package, but if you make your cottage cheese from the skimmed milk which would otherwise be thrown away, your salad will be very nice and will cost you practically nothing. Cottage cheese fixed in this way is good for sandwiches also, especially with brown bread.

But cottage cheese is not the only economical way of using up the skimmed milk. There are all kinds of cream gravies made with skimmed milk. Used in bread it gives somewhat more nourishment than water. People are too apt to use water where they could use skimmed milk, which is more nourishing.

Now, we will make the French Dressing, you see the recipe on the board.

French Dressing

Four tablespoonfuls olive oil, two tablespoonfuls vinegar, salt, pepper, cayenne, one teaspoonful sugar, onion juice, paprika. Beat until somewhat thick.

Some recipes for French dressing will tell you six tablespoonfuls of olive oil to two of vinegar. This is for people who like a large quantity of the oil. Today I am going to use just four tablespoonfuls to two of vinegar,—just twice as much oil as vinegar. Then add the seasonings

and beat until somewhat thick. When we make a mayonnaise dressing, we beat the olive oil into the yolk of an egg and that makes an emulsion that is permanent, which will last for several days if not allowed to get too warm or too cold, but this just makes a temporary emulsion and may need beating again before it is served. If you let it stand for several days it will do no harm, you will simply want to beat it up again before you use it.

We are going to use a very little of onion. We will just scrape this knife over the surface of the onion in such a way as to get a little juice but none of the onion itself. Then we will want a little salt, I do not know as the recipe gives the exact amount, we will put in about a half of a teaspoonful. The teaspoonful of sugar is quite a large amount and a good many do not use any at all, but it seems to improve the flavor; however, if you prefer to leave it out you can do so. This which I shake in so vigorously is the paprika. It gives a certain reddish tinge to the dressing which makes it very attractive, but it does not make it as hot as the same amount of cayenne pepper would do. Now we will leave that dressing and have it beaten up again before we use it.

Next I am going to demonstrate two meat dishes, a meat soufflé and a cottage pie. The meat soufflé is not properly a soufflé in the sense that term is properly used. A soufflé is something that has folded carefully into it the stiffly beaten whites of eggs and then baked in such a manner as to keep the air in the whites and keep the mixture light and fluffy. This soufflé has not the whites of eggs beaten into it carefully, as is usually the manner in making soufflés, it is meat and seasonings put into a milk or cream sauce.

Meat Soufflé

Two cups white sauce I, one-half cup stale bread crumbs, a little onion, three well beaten eggs, one pint chopped meat, salt and pepper. Bake about 25 minutes.

You will see the recipe says two cups of white sauce I, which means that there is one tablespoonful each of flour and butter to one cup of liquid. The tablespoons are just level for this. We use perfectly level measurements, leveling the spoons and cups off in this fashion to make perfectly correct amounts. There is not supposed to be any luck in cooking, it is supposed to be all science, and it is very much more science, we have to admit, when things are measured correctly.

We have two tablespoonfuls of butter and flour, and as the butter melts it is easy to mix the flour with it. You have all done this way when you have used fat drippings instead of butter.

Now, as we have the butter and flour blended together, we will add the two cups of milk to this slowly. Of course if this milk had been heated first it would come to a boil just that much quicker, though there is no other object in heating it first.

There are different ways of thickening mixtures. I had one woman tell me that she always thickened with corn starch because as soon as it came to a boil it was done. I had to tell her that corn starch is one of the starches that take a long time to cook. You know that animals can eat corn in its raw stage, but we know that people cannot digest raw starch, so if we are thickening with corn starch we must remember this, and allow more time for our gravy to cook than if it is thickened with flour or some starch which does not require so long a time.

As soon as this comes to a boil,

we know it is thick enough, we will put into it a half a cup of stale bread crumbs. And I want to speak of a very convenient way for having crumbs ready at any time. Take the bread that is left from the table, do not use it for scraping off the plates, but save it and any crusts which you have, (if you are making fancy sandwiches you will have a good many crusts) put them in the oven so they get thoroughly dried, then grind them in the meat grinder, or roll them until fine, put them in a glass jar and seal them up, and any time when you want crumbs you will have them all ready.

For most scalloped dishes, bread crumbs are nicer than cracker crumbs. If the bread is not stale enough, put the pieces in the oven so they will dry out, and they can be easily used. Today we have the crackers handy, so we will use them, but you will find that the bread crumbs would brown more evenly and in less time than cracker crumbs, so just save up the scraps as I have described and you can easily have bread crumbs on hand at a moment's notice.

One thing about this meat soufflé is that when it is finished it is a great deal like a meat loaf, because it can be turned out of the pan and sliced, but it is not so difficult to make as a loaf. It is good hot or cold. The ordinary soufflé is good only when it is hot, must be served immediately, so it will not fall. The remaining ingredients, two cups of white sauce, a little onion, a cup of bread crumbs and two cups of cold chopped meat are now added. The meat can be of any kind. At home we save meat, pork, beef and mutton, until we have about the right amount then we have a meat soufflé some night for supper. If your men folks are prejudiced against hash, they won't know this under that

name and they will think they have a nice loaf. They won't know but you have just bought the meat from the market, and it will taste just as good. I do not know as much about managing men as probably most of you do, but I have a father and brothers and I think it is well worth our while to fool them a little when they have a prejudice against left-overs.

We are only going to use two eggs. Although the egg is one of the most nourishing foods we have and when we add an egg we add a good deal of nourishment, at the same time, eggs are so expensive in the winter, they are so hard to get for people who do not have their own chickens, that when we know we are not on the verge of starvation it will not do any harm to omit one egg occasionally and reduce the expense somewhat.

Miss Brown—To return to the soufflé. We will put in a half a cup of stale bread crumbs and a little onion, which usually means some very thin slices or some shavings, or just rubbed on the grater or pressed with a knife in such a way as to get a very little. We want just enough to season it slightly, but not enough to make it actually taste of the onion.

Now, the meat has been added to this mixture and we will let it heat throughout somewhat while stirring it, then we will add the well beaten eggs. We will have to stir it carefully when the well beaten eggs go in, so the mixture will be smooth. The easiest way to add the eggs to the hot mixture is to add the hot mixture to the eggs,—then you can just add a little at a time and keep them smooth, but in this case, where the eggs will be stirred in with the meat, the meat will be thick enough to somewhat break up the eggs and I think we will have

no difficulty with the eggs getting too hard. This is to be baked twenty-five minutes in a moderately hot oven.

Question—Do you stand it in water?

Miss Brown—No, not necessarily. It does not need to stand in the water, it is not so hard to bake as a cheese dish or an ordinary meat soufflé.

This is the meat soufflé. It was baked in a dish which was rather shallow, so it will not stand up as it should. If you baked this in a dish that was somewhat smaller around, you could slice it off very nicely. We are going to serve it with some rice croquettes and jelly.

The next thing I am going to make is another form of hash, it is cottage pie, sometimes called shepherd's pie.

Cottage Pie

Cover bottom of small greased baking dish with hot mashed potatoes, add a thick layer of roast beef chopped or cut in pieces, salt, pepper and onion juice. Moisten with gravy, cover with a thin layer of mashed potato and bake in a hot oven long enough to heat through.

With this we are going to use mashed potatoes. We are going to have both meat and potatoes for this, but it is a very easy dish to prepare if you want a combination and you do not need the extra dishes. If you do not wish to have an elaborate meal at supper time, these combination dishes are very nice.

We will use a buttered baking dish for this. We will melt a little butter in a cup and apply it with the pastry brush. Probably, the easiest way to butter your dishes is to have a little five-cent paint brush and use that, but we want it cleaned

very often if we do use it for fat. If you are doing your own work, so you can see that your brush is washed, it is all right, but if you have some one in the kitchen who is a little careless, it won't be very wise to have a brush.

Miss Maxwell—Isn't tissue paper good for that purpose?

Miss Brown—Yes, and it is very sanitary, because you use it once and throw it away.

We have mashed potato. If you have them left from one meal, you can warm them up and beat them up a little more so they will be light. They get heavy when they are cold and so many people think they are hard to use, but you can put a little milk with them and beat them so they are very light.

We have buttered this baking dish because it will be much easier to clean, then we put a layer of mashed potato in the bottom, then on top of that we put the meat. I am going to taste this mashed potato to be sure it is salt enough, because if it is not we would not have so good a chance later to salt it. Then we are going to put in a layer of meat. Now, if you have some gravy, pour that over the meat. This is a pot roast, and if you have some gravy left it will be nice to moisten it and give it flavor. As we have no gravy, we will add a little milk, so this won't be too dry.

This, you will notice, calls for a little onion juice; most of our meat dishes do. We want so little used that people who object to the flavor of onion juice won't know it is there, but will think there is a very nice flavor to the dish.

Then we put another layer of mashed potato on top and we put this in the oven to warm through. I will put just a little milk in it. The potatoes are quite moist enough, but the meat is perhaps just a trifle

dry, so we will moisten it just a little,—using our judgment instead of a recipe.

If you have a pastry bag and are an adept with it, you can put this on in a more fancy way, otherwise do not smooth it down too flat. It will look more attractive if it has some hillocks which will brown in spots. Now this will be placed in the oven.

Question—Couldn't onion extract be used?

Miss Brown—Yes, it could be used very nicely for those who like it.

Question—An onion sliced would answer the same purpose, also, would it not?

Miss Brown—Yes, it would answer the same purpose, also. Next we are going to make some Swedish timbale cases.

Swedish Timbale Cases

Three-fourths of a cup of flour, one-half teaspoon salt, one teaspoon sugar, one-half cup milk, one egg, one tablespoon olive oil.

Mix dry ingredients, add milk gradually and beaten egg, then olive oil. Shape, using hot timbale iron, fry in deep fat until crisp and brown. Take from iron and invert on brown paper to drain.

We cannot make these of old material, but we use them in combination with old material, with anything we have in the house that can be creamed.

I would like to show the timbale iron. This is the iron on which we make the cases and there is quite a trick to using it. First we will make the batter, and, by the way, some of the batters that you will find will not be successful, they will soak fat, or sometimes they will be a little too thick on the bottom, but this particular one seems to be very good.

This iron has a hole inside and the handle screws into the bottom. In buying a timbale mold, do not buy one that is solid inside, for two reasons,—they are very much heavier to handle and will make your arm ache,—and the heat cannot get through as quickly as it can with this.

We will now make the batter, which calls for three-fourths of a cup of flour, one-half teaspoon salt, one teaspoon sugar, one-half cup milk, one egg and one tablespoon of olive oil.

Just mix the dry ingredients, add the milk gradually, then the beaten eggs and the olive oil.

The three-fourths of a cup of olive oil is easily measured in a glass measuring cup. When you are measuring flour, it is much better to take it up with a spoon than to put the cup into the bin and press it in that way. It should be measured lightly. Three-fourths of a cup of flour measured after it is sifted, one-half teaspoon salt and then a teaspoon of sugar, and a half a cup of milk. We haven't any sugar, so we will have to omit that.

Question—Miss Brown, don't you think the only difference is that the sugar makes them brown a little quicker?

Miss Brown—Yes, anything which has a little sugar in it will brown a little more readily and a somewhat prettier shade.

Have a perfectly smooth batter, so there will not be any lumps. For that reason we add the milk gradually. We will have the iron heating in the fat, meanwhile.

Now we are letting the iron heat in the fat, and I wonder how many know a definite way of testing fat? The dried bread test is as good as any. If a piece of dry bread put into the hot fat browns in forty seconds, two-thirds of a minute, then it is all right for a cooked

mixture; any mixture which has been cooked previously doesn't need to be left in the fat so long, doesn't need to be given a chance to cook through, but for uncooked mixtures, which need some time to cook through, you will want the fat not quite so hot, you will not want the bread to brown in less than a minute, sixty seconds. For the timbale cases you want it just about right for cooked mixtures, you want it to brown in about forty seconds.

When you are using fat for deep fat frying, you will want to use it for this sort of thing first, then for croquettes and warmed over dishes, and then for fish and meat and such things, so today we are going to use this deep fat for two purposes, we are going to make some rice croquettes after we have used it first for the timbale cases.

The easiest way to utilize all your mixture is to put it in a cup. You see you are going to want your iron to dip down into the mixture so that the batter only comes up about three-fourths of the way, does not entirely cover the mold. When it is put into the fat the batter will rise and if the mold is all covered with the batter it will come over the top and you will have trouble removing the case. If they soak fat, the iron is either too hot or too cold, you will have to find out which.

Now, you will want to be a little bit careful about the mold. As you put the iron down into the lard, you will want it to strike the fat evenly, so the timbale case will rise evenly on all sides. As you remove it from the fat, you will want to turn it over, so if there is any lard in between the case and the iron it will run out. Then turn the case upside down in a dripping pan on brown paper, so the excess of

fat will drain out, leaving the case crisp.

If these timbale cases are made with nice sweet, fresh fat, they can be kept for some time and used whenever you desire. They are especially nice for serving creamed dishes, which are too thin to have on the same plate with other foods. With these cases you can serve a very ordinary creamed dish and have it look quite fashionable.

Fat, when it is used for deep fat frying, will have to be clarified very frequently. To clarify it, melt it and put in some raw potato, let it gradually heat until the potato becomes brown. This will collect some of the sediment and many of the odors and leave your fat much fresher. Let the fat cool enough so the remaining sediment will settle to the bottom and pour the fat off. You can clear it in that way quite easily.

We are going to cream some peas for the sake of serving some creamed dish here and we are going to use what we call white sauce II. We take two tablespoonfuls each of flour and butter to each cup of milk, and for creamed dishes that you want fairly thick, it is better to use a little more thickening than the II. When you want a very thick sauce, use three tablespoonfuls each of butter and flour to each cup of liquid, and that is called white sauce III, so it is easy to remember them in that way. We are going to thicken this cup of milk with two tablespoonfuls of butter and flour and cream some peas to serve in the timbale cases, because we have already served the meat in two ways and would like to serve a creamed vegetable. You will often have some cold vegetables and a nice way to serve them is to have some of these timbale cases ready to serve them in.

We have the flour and butter in here, we heat them together to blend the two and add one cup of milk. For each cup of milk we allow one-fourth of a teaspoonful of salt in making white sauce.

Now we will make the rice croquettes.

Rice Croquettes

One-half cup rice, one-half cup boiling water, one cup scalded milk, one-half teaspoonful salt, yolks of two eggs, one tablespoonful butter.

Wash rice, add to the boiling water with salt, cover and steam until rice has absorbed water. Then add milk, stir lightly with a fork, cover and steam until the rice is soft. Remove from fire, add egg yolks and butter; spread on a shallow plate to cool. Shape in balls, roll in crumbs, then shape in form of nests; dip in egg, again in crumbs, fry in deep fat and drain. Put a cube of jelly in each croquette. Arrange on a folded napkin and garnish with parsley or serve around game.

I think croquettes are a good way of warming up left-overs, but perhaps we do not think of rice or potato croquettes quite so often as meat croquettes, so we will show the rice croquettes today, garnished with jelly.

A few things to remember in cooking rice. In the first place, it should be washed thoroughly, not entirely because it might have dirt on it, but for another reason. The American people demand a polished rice and the wholesale merchants find that they can polish an inferior grade of rice and sell it for a higher price, so we are apt, in demanding a polished rice, to get an inferior grade, while that which is unpolished will have a better flavor and be more nutritious. The rice is polished by being shaken up in

cylinders with talc and chalk, so if we buy this polished rice we want to be sure that we wash off this foreign material before we cook it. With this talc and chalk there will be a good deal of loose starch which would cook in a solid mass, so by washing it thoroughly you can remove this difficulty also. Put it into a sieve and let the water run through it until it loses its milky look. Cook it in a large quantity of boiling water, twelve times as much water as rice is a good proportion, and in that way if the water is boiling rapidly the grains will dance separately from each other and not cook in masses. If you use this method there will be some water to drain off. Pour cold water through the rice and then set it in the oven to reheat.

We are going to take it for granted that we had some rice left from yesterday and are going to make it up to serve with our meat. Rice tastes best with things that have a great deal of flavor of their own, because it is not very highly flavored. Now we add an egg to this rice to bind it together. Rice croquettes are a little bit hard to handle because the kernels properly cooked are thoroughly separated and fall apart readily.

I am going to use my hands for shaping these. We will measure a certain amount, so they will be uniform in size, then make them into little balls, handling them just as little as we can. Put them right into the bread crumbs, rolling them over so they will dry somewhat on the outside, then take them up again and form them into little nests. When they are cooked we will put a little piece of jelly into them as a garnish and you can see how pretty they would be served on a platter around a fowl or meat.

Then we will dilute one egg beaten up well with a little milk,

because we want to have such a crust that it will not soak fat at all. If the croquette cracks and soaks fat, we are lost, so we want to be sure that they are thoroughly crumbed. "Crumb, egg and crumb" is the old rule. This will make a good, tender crust.

One thing to be remembered in using crumbs and egg for your croquettes is that it is much better to season the egg and the crumbs somewhat, because we want the outside to be tasty.

We are going to have some of these rice croquettes to serve around our meat soufflé. This is not the kind of meat with which we would usually serve the rice croquettes. We would probably have roast fowl, or some other kind of roast.

Now, the easiest way to fry croquettes in hot fat is to have what they call a frying basket, a basket which would fit closely on your kettle and in which you can put your croquettes and then lower them into the hot fat. Then you wouldn't have to bother with the fork and be apt to pierce them, letting the fat soak in. If you do much deep fat frying, you will find the basket will pay for itself in a short time.

Perhaps you would like to see what I mean by putting the croquettes around the meat. You can see if it was a higher, thicker loaf, it would be more attractive. We have the parsley, then the rice croquettes and a little cube of jelly in the middle of each croquette.

We have one thing more that we want to cook this afternoon and it is quite simple.

Goldenrod Eggs

Three hard cooked eggs, one cup white sauce I, one teaspoonful salt, one-eighth teaspoonful pepper, five slices toast, parsley.

Make one cup thin white sauce. Separate yolks from whites, chop

whites finely and add to white sauce, cut four slices toast in halves lengthwise, pour over sauce, put yolks through potato ricer, or strainer, sprinkling over the top. Garnish with parsley and remaining toast cut in points.

The goldenrod eggs are made, supposedly, from eggs that have been boiled for other purposes. We do not properly say boiled eggs nowadays, but cooked eggs. For each egg you allow one pint of boiling water, cover it so it will keep hot and set it back where it will not boil. It takes forty-five minutes to coddle a hard cooked egg and seven for soft cooked eggs.

Separate the whites from the yolks, cut the whites up very fine and put them in the white sauce. We will have the toast cut in squares and use the yolks to garnish the dish.

How many of you know that a hard cooked egg, with the white cut in slender strips or used in the form of a flower or some such form as that, is one of the most economical garnishes to use the year around? One hard cooked egg used in some attractive shape will garnish more salad than a similar amount of any garnish I know of.

We are going to make one cup of white sauce I. This is what is usually spoken of as thin white sauce, and when you see thin white sauce you will know it is white sauce I, one tablespoonful each of butter and flour to one of milk.

The cream sauce with the whites of the egg in it is poured over the toast and then garnished with the yolks put through a ricer.

This ends my demonstration and I thank you for your attention.

This cheese display was in connection with yesterday's demonstration, and Miss Maxwell will be glad to dispose of it to defray the expense of the display.

THIRD SESSION

Thursday Afternoon, March 19, 1914

SERVING A FOUR-COURSE VEGETABLE LUNCHEON

Mrs. Nellie Kedzie Jones, Auburndale, Wis.

The lesson this afternoon is a four-course vegetable luncheon.

When planning a four-course luncheon, you may use a color scheme or not, just as you please. Today, because we have some yellow flowers and because we have some very nice carrots, we are going to have a yellow and white luncheon, there will be a little brown and some other colors, but the predominating colors will be yellow and white.

Green and white is very easily planned, especially in the summer if you have green peppers in the garden, parsley for the soup, and for the dessert you can have pistachio nuts ground up if you want them.

This will be today's menu: cream of corn soup, wafers, bean chicken, carrots, rice, browned potatoes, pear salad and orange charlotte.

The soup is white, garnished with a little whipped cream and some riced egg yolk. Then I shall make a bean chicken, because this is a vegetable luncheon, and we will have carrots because we want the yellow color to garnish the bean chicken, and browned potatoes; they are better to go with the bean chicken. Then we will have pear salad with a yellow dressing, making the yellow and white, and an orange charlotte.

I want first to see what is going to take the longest to get ready. I have already put on the stove some of the things which take a little time and they are being cooked.

The potatoes are being baked in the oven, the onion is being cooked to make the dressing for the bean chicken, the rice is on the stove boiling.

Usually I do not care to have three vegetables, but in this case I wanted the white rice to put the carrots on for a garnish, so I have both rice and carrots.

I want to say just a word about the four-course luncheon to begin with. A large proportion of the people who entertain are serving too many kinds of food at each meal. The practice of hospitality is going out a little because people are afraid of so much work, especially those doing their own work. The simpler we serve our meals, the better off we will be and the more guests we can have in our homes.

We are very busy on the farm and if I have guests I give them very simple meals. When we first moved out there we were visited by some friends from California. I knew how well they lived. The first dinner I gave them was simply fricasseed chickens, mashed potatoes, warm rolls, jelly, chopped pickle, creamed peas, then I gave them custard pie for their dessert. That was all they had to eat, it was enough. I think it was rather a relief to them to go to a place where they didn't have to have four or five courses. I know they did not feel they had been starved. However, once in a while we like to

serve a formal dinner or luncheon and I am bringing such to you today.

This is not a very heavy luncheon, but a very nourishing one. Quite a good deal of nourishment will be gotten from the cream of corn soup. The bean chicken has much protein in it, also carbohydrates, for the vegetables we have the carrots, which are not only pretty to look at, but contain some salts, they also carry a great deal of water. The potatoes and rice are both carbohydrates, it is not necessary to have both. The pear salad is light and the orange charlotte with the cream in it is rather a nourishing and filling dessert, but not a heavy one.

I will make the orange charlotte first, because it will take the longest time. It is a very simple dish which can be made of oranges, or of cherries, raspberries or strawberries; grape fruit and oranges make a very nice combination.

Orange Charlotte

One-third of a package of gelatine, one-half cup cold water, one-half cup boiling water, one cup of orange juice, one cup of sugar, the juice of one lemon, one cup of cream.

It is made, you see, with a foundation of gelatine, and gelatine always needs to soak in cold water, a package of gelatine to half a cup of cold water. In all these gelatines (this is Knoxes) the gelatine comes in two envelopes and each envelope will make a quart of jelly. You needn't ever ask how much gelatine to use if you will stop and reckon a little. If you are going to make about two quarts of pudding, you must use the whole box of gelatine with a cupful of cold water. After the gelatine is softened, the

fruit juice and the cream are added. If you want to make four cups, you must use one envelope of gelatine.

When planning to use gelatine, always allow time for it to soak up in cold water. Gelatine comes from the bones of animals, from the tendons, the edges of the meat that are discarded, and the muscles that are pulled off. These are boiled at high pressure, treated specially to separate out the gelatine, which is run rapidly over great metal plates; when cool, it forms in sheets. These sheets are run through a grinder to make them fine. It is perfectly clean, because it has been subjected to such a high temperature no bacteria could be left to work. It is perfectly wholesome, but I suppose it is indigestible. When you prepare a dish for your family with gelatine in it, do not think you are giving them food, but gelatine is a good carrier of many things, it is a good carrier of fruit juices. If you want to make some kind of jelly for a patient who needs certain fruit juices, you can give him a delightful food sometimes by gelatine when he has tired of them in a liquid form. The same thing is true of milk. People who are required to take a large quantity of milk grow weary of it, but they will often enjoy a milk jelly made with gelatine.

After it has been in the cold water and soaked well, put in the boiling water in order to dissolve it.

The gelatine has soaked sufficiently. I will add the boiling water and see that it dissolves all the gelatine, then the orange juice, lemon juice, and sugar go in and the material is ready to go out of doors to cool. While it is cooling, I will whip my cream, and when the jelly is slightly stiff I will beat in the whipped cream, pour the material into molds lined with sections of

orange, and stand it in a cold place until I wish to serve it.

I am putting the charlotte in small dishes, because it will stiffen sooner.

In the summer, when you have the fresh strawberries, this is one of the nicest dishes I know how to make. It is a little different from straight strawberries and cream.

Question—Could jello be used in that way?

Mrs. Jones—Yes, but jello is very much more expensive, you pay ten cents for enough jello to make a pint and you are paying twelve and one-half cents for enough gelatine to make two quarts, nearly four times as much. Of course you have added your fruit juice and sugar, but it does not cost nearly as much as jello.

Miss Maxwell—And it has a very much better flavor.

Mrs. Jones—Yes, so I do not think it is a very wise use of jello unless you are in great stress for time. Occasionally there might come times when one is pressed for time, then you might use jello, just whipping the cream and beating it into the stiffened jello, but I rarely use it on account of the fact that it is so much more expensive.

The next thing to make will be the bean chicken.

In making a dressing for chicken or turkey, or anything of the sort, I usually season freely with boiled onions. A great many people dislike onion, especially raw onion, but most people will eat dressing seasoned with boiled onion, even when they think they do not like onions at all. I may use sage or summer savory also, but I nearly always have a little boiled onion for the foundation of the flavor.

I use bread, and I do not use the outer crusts of the bread. That looks as though I might be very ex-

travagant to cut off big pieces like that of the crust. The crumb of the bread makes so much nicer dressing that I do not use this brown crust at all. At home that brown crust goes into the warming oven and is dried out thoroughly, then some day when I have a little time I run it through my meat grinder and sift it; the fine crumbs go into one can and the coarse into another, then when I want to make croquettes or hash or anything of that sort, there they are, right on my shelf. A friend of mine said, "My crumbs are always getting moldy." I said, "Did you put new crumbs on the old ones? Didn't you read in your Bible long ago that you mustn't put new wine in old bottles?" There are always little mold germs hunting for some place to grow and because the crumbs have stood there so long they make a good place. Always put new crumbs in a clean can and use the older ones first; then when you have used to the bottom of the can, wash it, put it on the shelf and have it ready for new crumbs again.

Bread for dressing may be broken up fine or cut in small cubes. Add the boiled onion, which has cooked until the onion is soft, and put milk enough in the liquid of the onion to wet up this dressing. I do not want to put in the hot liquid, it will make it pasty, cold liquid will make it grainy. It should be about blood warm. Salt and pepper are added. A good general rule for salting is one teaspoonful to each quart, but that depends entirely on what else you have. If you are going to have butter in, less salt will do, if you are not going to put in anything else but salt, you will have to put in a little more.

The chicken consists of the baked beans that were left over from day before yesterday with the dressing

I have just made. You had beans for dinner and yesterday you had them warmed over for supper and there were still some left, so we will make a bean chicken out of them, they have been warmed up once, so they are somewhat out of shape, but that doesn't hurt them any, you can take the potato masher and mash them, then spread them out on a well buttered pan. The dressing will go right along on top of the middle of the beans.

Miss Maxwell—Did you put onion in that dressing?

Mrs. Jones—Yes, the cooked onion and the liquid in which it was cooked, the milk and the seasonings. Sometimes I put in some butter, but I didn't today, because these beans are pretty good and rich.

The beans are pushed over the edge of the dressing, piled over the top and shaped into something as near a chicken as we can make. You will at once see that it is a good nourishing dish, it makes a very good meal for luncheon or supper, and is a good way to dispose of beans after they have been warmed up.

There is my chicken, it is ready to go into the oven to bake. It will cook in about a half an hour.

The rice is cooking. I washed it and put on it five times as much water as rice. If you will put that into the oven, you needn't watch it. Rice has only thirteen per cent water. It is the driest vegetable we have. If you will remember to use five times as much liquid as rice when you are cooking it you will have no trouble.

Miss Maxwell—Doesn't the age of the rice make a difference?

Mrs. Jones—Yes, but not very much. If it has been kept in a very dry place it will be a little drier and sometimes it takes six times as

much liquid, but as a rule five times as much is sufficient. It is always wise to take the cover off the rice after it begins to rise, so it won't boil over, because there is so much steam, and after it gets to simmering put the cover on again, and you will not lose so much water by evaporation.

The carrots are cooked, the potatoes are getting brown, next we will make the dressing for the pear salad.

Take equal quantities of vinegar and egg. It doesn't make any difference how much, just an equal quantity of each. When you put together vinegar and egg and cook it, you can put it in a covered dish in the cupboard and keep it for two months. I use the yolks of the egg; I like it better, but at our house when broken eggs or eggs that are cracked come in, I simply open them, put them in a cup, measure out as much vinegar as I have egg, cook it, put it in a can and cover it up.

I will break the egg right into the cup, so I can measure it, then I will measure just as much vinegar as we have egg.

Miss Maxwell—What kind of vinegar do you prefer?

Mrs. Jones—Cider, I like it better than I do sulphuric.

I want to beat this up enough to mix it well. Then I put it over hot water on the stove and stir it until it thickens. It must be cooked because otherwise it would mold.

Miss Maxwell—Don't you find that the vinegar is sometimes too sharp?

Mrs. Jones—No, I do not find that makes any difference. I thin it with the cream, making the flavor right.

Miss Maxwell—Couldn't you thin the vinegar with water and use a smaller amount?

Mrs. Jones—Yes, then you will use less cream when you come to thin it down.

Miss Maxwell—The same amount of liquid, but have the diluted vinegar.

Mrs. Jones—When the cooked vinegar and egg is cold, add as much whipped cream as will make the flavor of the dressing I want to put on my pears. I cannot tell exactly how much it will be until I taste it. Probably it will take four times as much cream as I have of the cooked dressing. It depends a great deal on the flavor of the vinegar. I want this to be rather yellow, because the pears are white. Then I will add salt and paprika and a tiny bit of pepper maybe, being careful not to get too much salt, because sweet salads need very little salt, I will put in a little bit of sugar, just to soften the flavor of the vinegar, not to make it very sweet, very little of the sharp seasonings for a sweet salad. Sometimes you will find that you do not want to put in so much cream and it may be pretty stiff. Then the juice of the pears or pineapple will be good to put in the dressing. You see you do not have absolute rules, for instance, you never can tell how sour your vinegars are, you never can tell just how big your egg was, you never can tell just how much flavor there is in your canned fruit. The salt in the shaker is not nearly as strong as the salt you get in the bag. When you taste that you will find there will be just a little touch of sour, a little touch of the pepper if you watch carefully for it.

On the individual salad plate, put a lettuce leaf, then a piece of pear flat side up and the shredded almonds go on that. A spoonful of salad dressing is piled on the nuts.

Sometimes it is convenient, if one is serving a luncheon or dinner by

herself, to have the salad put on a large platter or a low bowl and then it can be arranged like this half an hour before sitting down, put right into the ice box and the salad may be passed and the guests take their salad out onto their individual plates. It makes a very pretty salad, is easily served, when the hostess has it all to do; however, for individual service, the little salad plate with the salad on will always be prettiest.

The corn is cooked, I will make the corn soup by taking one cup of corn and two cups of milk. The corn is boiled in one cup of water till soft, then add one tablespoonful of flour rubbed up with one tablespoonful of butter and let it boil up. Then add the milk, let it get hot, season and serve.

Sometimes when you are serving corn soup, if you have some children around who are popping corn, you can sprinkle over the top of it some popped corn, which makes a very pretty soup. It is quite palatable too.

Serving the Luncheon

The table must be set, as I think everything is ready.

In the first place, we must think how many are going to sit down. We must allow not less than two feet for each person.

There should be a silence cloth on every table in every home. It may be a cotton blanket, or it may be the table felt which we buy; it may be any sort of heavy white material which can go over the table under the cloth. There are two reasons for this. You know that your table cloth wears out right here on the edge of the table first, and a silence cloth will save your table cloth very much more than the cost of it. Second, it is to be a "silence cloth." We people

have plenty of things to wear on our nerves. If you have a silence cloth the dishes come down without any noise. It saves the family nerves just that much. In putting on the table cloth, it is well to have it hang down perhaps a third of the way if you can.

In laundering, every one has her own way of folding. As a rule, it should be folded straight down through the middle, so the crease will stand up in the middle of the table. One may fold her table cloth any way she likes, provided it is folded so the corners come together, and is smoothly ironed.

For the napkins, there is an old rule which is a good one. Put the hem on the napkin down on the other hem when you are ironing it. There is a reason for that. When napkins are woven, they are woven in a long strip, you cut them in two and hem those ends. The warp is stronger than the woof and the warp is what you fold against. The last foldings are not as tight as the one on the warp is, that is the one that causes most of the strain, and they will last longer if folded in that way. It doesn't make any difference how you fold your napkins if you fold them all alike, so in your linen drawer they will pile up evenly and look tidy. Always put the napkin on the table so the upper corner shall come next the edge of the table. I sit down at the table and pick up my napkin, it will drop out that way, so. We put the napkins at the left. Whichever way you put them, put them all alike, do not put one at the middle and one at the left and one at the right, put them all the same way and then your table will have a tidy appearance.

In setting the table, I will have the soup spoon, the knife and fork and salad fork, and I shall have

some coffee, which means a teaspoon, and dessert, which will be eaten with a teaspoon, so I add two teaspoons.

The knife is always placed at the right, with the sharp edge next the plate so you won't have to turn it over to use it. A good rule is to have all your silver just an inch from the edge of the table.

The general rule for using silver at the table is to begin at the outside and use in. The soup spoon is to be used first, so that will go on the outside. The general rule is to put the fork at the left and the knife and spoons at the right. The coffee today will be served with the luncheon. People so often say, What is the right way? The right way is to make your guests as happy as you can. If you are entertaining elderly people who like their coffee with their luncheon or dinner, give it to them with their dinner. For more formal company, give them their coffee afterward, or in the parlor, or wherever you want, but if you know that some of your guests want the coffee with the meal, do not bring it on afterward just because it is stylish. It is never stylish to make people any less happy than they might be.

Here is my soup spoon, the knife and fork for the meat course, a salad fork, which goes next the knife, the coffee spoon, which would be with the knife, and another spoon which will be for the dessert.

Some people do not like the looks of the table set this way and they think it is rather pretty to put their spoons at the top of the plate. Every once in a while you will find a table set that way. It doesn't make any difference how you put them on if you only put them on all alike, make every place just like every other place.

The glass goes at the point of the

knife, the bread and butter plate goes at the point of the fork. If you have a spreader, that can be put on the bread and butter plate, or can be laid outside the bread and butter plate, or right inside the knife. I like it on the bread and butter plate.

I have all the things on the table and I will bring my flowers, which have been kept in a cold place, and put them on the middle of the table. You can use a linen doiley for a centerpiece. Remember that, unless you have worked out a pretty color scheme, white centerpieces are in better taste than colored ones. If you have worked out a color scheme and have a colored centerpiece, all well and good, but white is always in good taste and always suitable.

The flowers should never be so large or so tall as to obstruct the vision of the people. They do not want to be dodging a big bouquet in order to see the people across the table. The Japanese way is a very pretty one, to have just one flower. We will have this little bouquet in here because we like it.

The little dish of yellow and white candies may be put here, the bread put on the bread and butter plate. It is well to cut it into small slices. Sometimes we put the wafers on also. I shall just put on two little slices and a pat of butter.

The chicken is ready to come out. It will go in the center of the platter, I put the rice around it, then the carrots, which I have buttered, salted and peppered, on the rice. Sometimes a little lemon juice, just to sour them up a little bit, is added to the carrots. The rice being perfectly white and the carrot yellow, will make a yellow and white garnish for the chicken. If I were using this for a green and white luncheon, I should use parsley

around the edges instead of the yellow and white.

The soup is ready to strain. That can be strained into the bowls or cups and can be decorated with a bit of yolk of hard boiled egg, making it yellow and white.

The potatoes may be on a platter or on a dish, and in order to make a little variation, so as not to have everything too yellow and too white, too monotonous, I am going to put some parsley in my potatoes. Do not be afraid to use the thing that would relieve the combination and makes your table all the prettier, so a little bit of parsley in this, just as green in a salad, makes a relief from the yellow and white.

Now the dessert may be fixed. It is going to be served in these glasses. This orange charlotte will come out in a mold and I want you to see how pretty it looks when it is brought to the table.

Whenever you have a gelatine dessert or an ice cream, if you wet a towel in hot water and just put it over the mold for a moment or two it will slip out easily. Even if the hostess does not serve anything else at the table, it is often pretty to serve the dessert, because it is so pretty when brought to the table. Now this should be cut so as to get a piece of orange with each serving.

Miss Maxwell—Isn't it wise to have a paper doiley or a tiny linen doiley under the glass?

Mrs. Jones—Yes, it keeps the glass from slipping and there is much less danger of breaking the bottom of the glass.

We may have white cake with an orange filling, or frosting, or it may be a yellow cake to serve with this to complete the color scheme, an angel cake with orange filling, gold cake, or sunshine cake, will any of

them make a very pretty addition to the luncheon.

As the guests sit down at the table, the first course served is the soup, which is set down over the right shoulder of the guest. The wafers are passed over the left shoulder, in order that the guest may use the right hand to help himself.

When the soup is eaten, the spoon is put in the saucer and the waitress removes the soup dish over the right shoulder.

The main course of the luncheon may be served on the plate, or a dinner plate may be placed in front of the guest and each dish passed so he may help himself.

We have the bean chicken passed and the guest takes a slice of this, which gives beans and dressing, he also takes a spoonful of rice and two or three pieces of carrots. The potatoes are passed, the pickle also. When this course is eaten, the dishes are removed and the pear salad is placed before each guest. If one likes, a little cheese might have been grated on the wafers for use with the salad, then they should be put in the oven just long enough to melt the cheese and crisp the wafers.

When the salad course is removed, the dessert is served in the glasses which are set on small plates, each having a tiny doiley. The cake is passed and the coffee may be served now or may be taken to the parlor.

I will have it served in the parlor today. Just a word here. I want to speak about the dishes and to recommend them to you. These are the white and gold. If you are not expecting to buy very many sets of dishes, I want to say that it is always in good taste to have the gold band china. Our grandmothers knew that. People enjoy

looking at them, generally it is open stock and you can replace any that are broken. People do not tire of looking at them. There are beautiful Haviland and Dresden china, not to say anything about the more expensive ones, but the gold band china is always in good taste and if you only expect to buy one set of china in the course of several years, remember that the gold band china will always be a delight.

We are having a good time in the parlor and the daughter goes around with the cups. The coffee is poured. I will take my cup of coffee and one or two of the little yellow candies, putting them on the saucer. Perhaps there are a couple of cubes of sugar on it. I have been asked if I would like black coffee or cream and sugar. I am not drinking it for taste, but I have eaten a good deal of that luncheon, so if I drink my coffee black and nibble at my candies, I can sit there half an hour with my cup of coffee. Black coffee helps food to digest. It helps me to talk better and think better and gives sociability, and if I do that I am helping to entertain the guests. The hostess has not invited you to fill you up, to show off what she can cook, she can show off at the county fair, she has invited you to have a good time with her guests and when you and I are invited out to dinner we should help everybody have a good time. I know one wise woman who reads up something interesting and has that to talk about. On the other hand, sometimes people come to a dinner party and sit around waiting to be entertained. That's no way to do, entertain everybody the very best you can, then you will be wanted again. I hope and pray the spirit of hospitality will grow stronger and better in this western country. I do not know how you feel in this

neighborhood, but I have sometimes found that people are backward about entertaining, they think they cannot cook well enough, or it is so much work they have not entertained as much as they ought. You do not need to have a four-course luncheon, have whatever is best and

easiest for you. If you plan to have fried mush and molasses have it the best that ever was made. Whatever you have, see that it is well cooked and then your guests will have a good meal in your house and be glad to come again.