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WISCONSIN FARMERS' INSTITUTES



BULLETIN NO. 32

Organizing Agricultural Production





CHARLES E. ESTABROOK

TO WHOM WISCONSIN AND AMERICA OWE THE ESTABLISHMENT OF THE FARMERS' INSTITUTE MOVEMENT WHICH HAS BEEN ONE OF THE GREATEST FORCES IN THE DEVELOPMENT OF PROFITABLE AGRICULTURE OF THIS AND OTHER STATES.

WISCONSIN FARMERS' INSTITUTES

A HAND-BOOK OF AGRICULTURE

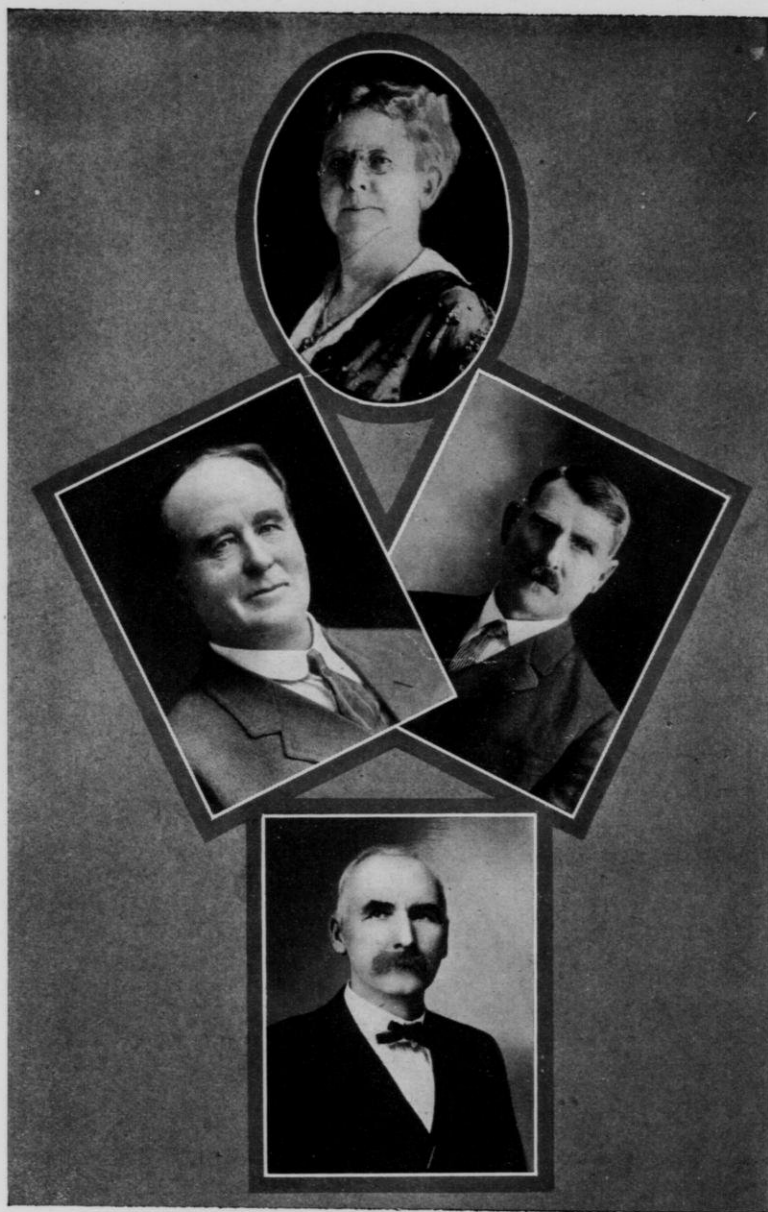


BULLETIN No. 32
1919

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

Edited by
E. L. LUTHER
Superintendent

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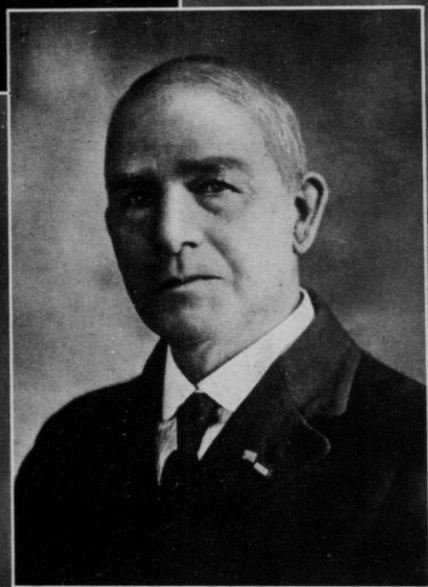
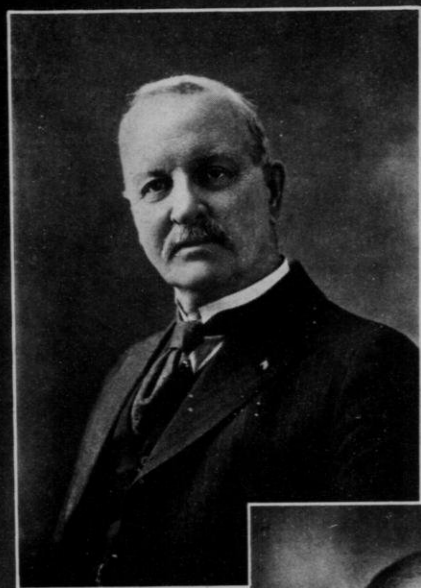
F. L. HATCH

MRS. NELLIE KEDZIE JONES

JAMES DILLON

W. C. BRADLEY

Granted Special Recognition by the University of Wisconsin for their
Services in Upbuilding Agriculture. 1918.



L. E. SCOTT

J. O. PARRISH

Granted Special Recognition by the University of Wisconsin for their
Services in Upbuilding Agriculture. 1919.

CONTENTS

A Warning and a Promise.....	7
Honor to Whom Honor Is Due, George McKerrow.....	9
Wisconsin Farmers' Institute Ideals.....	10
What Farmers' Clubs May Do.....	11
Big Talking Points.....	12
Wisconsin Farmers' Institutes	13
How to Hold a Successful Institute, Ben J. Rohan.....	15
Sample of a Demonstration Institute.....	16
How an Institute Led to Other Things.....	18
The Next Step	21
The Organization of Agricultural Production, E. L. Luther.....	22
The Organization of Agricultural Production—A Splendid Way.....	27
The Organization of Agricultural Production—How Not to Do It.....	29
The Organization of Agricultural Production—A Good Way to Do It...	29
Evolution in Marketing and the Wisconsin Cheese Federation, George F. Comings	31
The County Agent and the Organization of Production.....	37
<u>Marketing Wisconsin Dairy Cattle</u>	38
Organized Potato Growing	47
Organizing the Manufacture of Butter and Cheese, E. H. Farrington...	49
How an Agricultural Fair May Assist.....	51
Here Is an Idea	52
Boys' and Girls' Clubs and the Organization of Production.....	54
Maintaining Soil Fertility on Wisconsin Farms, F. L. Musbach.....	55
Nature Demands Lixé for Light Soils, H. W. Ullsperger.....	63
Sweetening a Whole County, James Lacey.....	67
Alfalfa, Peter C. Swartz	70
Barley, an Important Crop, T. H. Champion.....	79
Soy Beans, C. S. Ristow	86
The Dairyman's Wonder Plant, E. L. Luther.....	91
Self-feeding of Hogs, F. B. Morrison and G. Bohstedt.....	94
Sheep in Wisconsin, W. Woodard.....	103
Shepherd's Calendar, Frank Kleinheinz.....	106
A New Settler's Experience with Sheep, C. P. West.....	107
Organizing Wool Production.....	109
A Milestone of Progress.....	111
How Consolidation Worked out in Polk County, Martin Stenerson.....	112
The Needs of the Vicinity, Mrs. Hattie Kepler.....	119
The University of Wisconsin.....	124

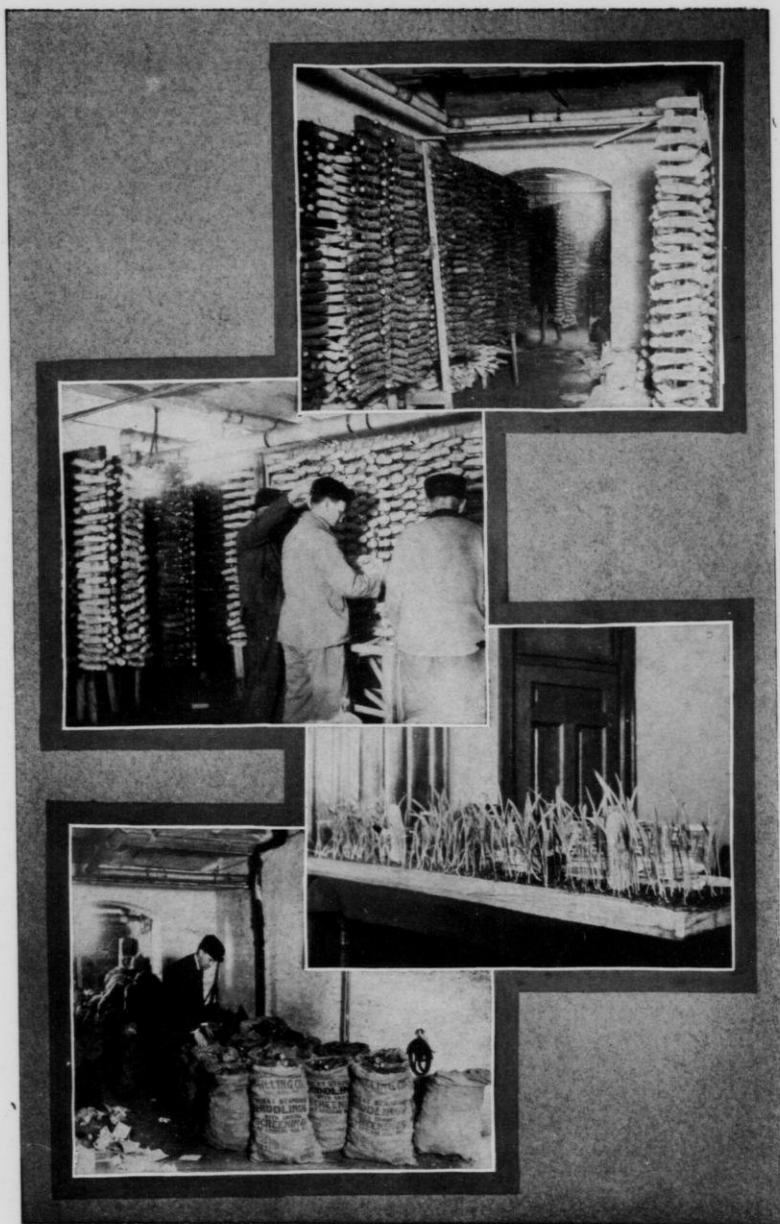
A WARNING AND A PROMISE

The farming people of Wisconsin met a great crisis with credit to themselves. They sent their sons who proved to be the greatest soldiers in the world. They oversubscribed their quotas in the Liberty and Victory Loans. They gave their share in all War Work drives. They produced their share of the food that won the war. They "carried on" and came through.

These now are days of readjustment when about everything seems to be out of joint. Such a condition is to be expected after the sudden and stupendous effort we were compelled to make.

Now is the time for using our heads and for sober counsel. The job is ours to put our affairs and the affairs of our country in shape. We can spoil all of our past splendid effort or we can make our country better and more beloved than ever.

The farming people are still on the job and will meet the new situation satisfactorily. They will "carry on" and come through.



ORGANIZING PRODUCTION

1917 was Wisconsin's poorest year for corn. But County Agent Olson was on the job in St. Croix county and W. C. Bradley, long time Institute Conductor, furnished the funds and a splendid field of seed corn was saved and properly prepared for the farmers of the county. A County Agent pays for his keep.

Honor to Whom Honor is Due

George McKerrow, Pewaukee, Wisconsin

The late Honorable Charles E. Estabrook was a man endowed with those great God-given qualities of head and heart that prompted him to give service to his fellowmen throughout his long and useful life.

In his legislative work he was always a friend of agriculture, looking upon it as the basic industry for the health and happiness of mankind. The law that established the Wisconsin Farmers' Institutes was the product of his practical and fertile mind.

In describing his effort along this line to me, he said that in the fall of 1884 he heard that well-known, successful farmer, Hiram Smith of Sheboygan county, give a very practical talk at the Manitowoc County Fair on his experience of forty years on his own farm. While this was well received by the most thoughtful farmers, the excitements of a Fair were not conducive to the thoughtful consideration of these valuable experiences by the average farmer.

The great value of these experiences of Mr. Smith to his fellow farmers left such an impression upon Mr. Estabrook's mind that in the legislature of 1885-1886 he introduced the bill that became the Farmers' Institute law of Wisconsin. It is possible that he builded better than he knew.

This successful beginning in Wisconsin of a state system of these practical farmers' educational and enthusiastic meetings soon led to the establishment of state systems in all the states, in the provinces of Canada and in some districts in foreign countries.

Mr. Estabrook watched this wonderful development of Institutes with a just and commendable pride and was always much interested in the development of the work along practical lines. The discussion of such practical topics as Crop Rotation, Clovers and Alfalfa, Corn, Soil Fertility, Silos, Better Bred and Better Fed Herds and Flocks, Better Homes, Better Schools, and all kindred topics was very pleasing to him and up to the time of his death his interest never lessened.

This commonwealth is justly proud of her position as a leader in agriculture among her sister states in the breeding of her herds, the extent of her clover and alfalfa fields, the number of her silos, the value of her dairy products, her pleasant farm homes, her practical rural schools and the financial prosperity of her people. Much of all this must be credited to this man of good judgment and clear foresight.

To Charles E. Estabrook the farmers of Wisconsin and every other state owe a debt of gratitude that can never be repaid.

WISCONSIN FARMERS' INSTITUTE IDEALS

- ☐ EVERY SIRE IN WISCONSIN A PURE BRED
- ☐ EVERY DAIRY COW IN WISCONSIN UNDER TEST
- ☐ A SILO ON EVERY DAIRY FARM
- ☐ ALL CROPS GROWN IN A LIVE STOCK SYSTEM OF FARMING
- ☐ WISCONSIN PEDIGREE GRAINS ON EVERY FARM
- ☐ STANDARDIZATION OF WISCONSIN FARM PRODUCTS
- ☐ FARM MACHINERY PROPERLY HOUSED
- ☐ DECENT OUTHouses AT EVERY RURAL SCHOOL
- ☐ FARM ACCOUNTING ON EVERY FARM
- ☐ EVERY FARMER HAVING THE USE OF A ROAD DRAGGED ROAD
- ☐ FEEDS HOME GROWN

WHAT FARMERS' CLUBS MAY DO

An association organized without a well defined and fixed purpose which it goes about to accomplish is usually weak and short lived. Farmers' organizations will be strong and beneficial if they accomplish things. The doing of things is what must be accomplished if time and effort spent upon organizations are justified. Below are some things which farmers' clubs may do to warrant their existence:

1. Improve the country cemetery.
2. Provide better outhouse accommodations for their rural schools.
3. Hold semi-annual clean-up days about the premises of the members.
4. Road drag the roads in the community.
5. Conduct a community fair.
6. Sign-board all road corners.
7. Agitate and enforce the Wisconsin dog law.
8. Improve the landscape about the community creamery and cheese factory.
9. Build a community hall.
10. Make a community exhibit at the county fair.
11. Secure a consolidated school and pupil transportation.
12. Increase the bird population of the community.
13. Secure community growing of crops among the members, that is, the growing of one variety of potatoes, corn, oats or barley.
14. Clean the roadsides of the members.
15. Club buy and club sell.

Standing committees ought to be appointed upon the two or three things which the club proposes to accomplish.

If any assistance is needed inquire of the

Superintendent of Farmers' Institutes
Madison, Wis.

The Big Talking Points

For the institute season of 1919-1920 the state-wide activities will be as follows:

MARKETING WISCONSIN DAIRY CATTLE
THE PURE BRED BULL DRIVE
SOY BEANS, THE DAIRYMAN'S WONDER CROP
BARLEY GROWING AND FEEDING
SELF-FEEDING OF HOGS
SOIL ACIDITY AND POOR CROPS
SOIL FERTILITY AND COMMERCIAL FERTILIZERS
GROW YOUR OWN FEEDS
ORGANIZING AGRICULTURAL PRODUCTION

Other matters affecting local communities and sections of the state will be presented of course. But the above propositions are things which the whole state ought to get in on and line up with. Let's all get into the BIG PUSH and set our minds on these things.

WISCONSIN FARMERS' INSTITUTES

In order that the people of Wisconsin may realize the most good from the Farmers' Institutes it seems wise to set forth the general plan under which institutes are conducted.

KINDS OF INSTITUTES

Regular Farmers' Institutes: These will be of two days' duration and will be conducted for the most part in a regular winter series of institutes. While in these institutes two main lines of work will be carried on, a number of subjects in which it is desired to arouse interest will be presented. For instance, dairying and poultry, dairying and potatoes, live stock and fruit, and so on may be carried on as the two lines. Then subjects like roads, libraries, cooperation, and so on may be introduced to furnish information in regard to single subjects. By carrying on two lines it is hoped to go a little deeply and more thoroughly into subjects.

Regular Women's Institutes: In conjunction with the regular farmers' institutes as many regular women's institutes will be conducted as the two women workers can conduct. These institutes will continue two days and will consist in lectures and demonstrations upon household subjects.

Special Women's Institutes: These institutes will be of one-day duration and consist in lectures and demonstrations upon canning and other household problems.

Special Crop and Live Stock Institutes: To develop in communities community growing of various crops with a view to standardizing them for better marketing, special one-day institutes will be conducted. For instance in communities where the people desire to improve the potato crop a day will be devoted to this one subject and will wind up with the organization of a community potato growers' association. Subjects like the following will be discussed:

1. Potato Growing in a Dairy System of Farming,
2. Varieties of Potatoes for Wisconsin,
3. Selection of Seed Potatoes,
4. Handling the Crop,
5. Potato Diseases and Their Treatment,
6. How to Prepare a Bushel of Potatoes for exhibit, ,
7. The Value of Exhibiting at Potato Shows,
8. Marketing Potatoes,
9. Community Potato Growing,
10. The Organization of a Community Potato Growers' Association,
11. The Wisconsin Potato Growers' Association.

Demonstrations:

1. Well selected exhibits—poorly selected exhibits,
2. How to prepare spray materials,
3. Tuber cutting for seed,
4. Preparing potatoes for market.

If a number of people in a community desire to make more of the poultry business, then a special one-day poultry institute in which the following subjects may be considered will be conducted:

1. Breeds of Poultry for the Farm,
2. Selecting Eggs for Setting,
3. Incubating and Brooding,
4. The Care of the Growing Pullet,
5. Growing a Laying Strain,
6. Feeding for Winter Eggs,
7. Poultry House Construction,
8. Some Common Diseases of Poultry and Their Treatment,
9. Insect Pests and Their Treatment,
10. Community Poultry Associations and What They Can Accomplish,
11. The Organization of a Community Poultry Association.

Demonstrations:

1. Trap nests,
2. Poultry records,
3. Caponizing,
4. Dusting for pests,
5. Dressing poultry,
6. Judging poultry.

Likewise at special institutes the extension of sheep husbandry, swine husbandry, beef production, breeding farm draft horses, cow-testing (with the view of organizing a cow-testing association), horticulture, bee-keeping, alfalfa, drainage and so on may be taken up and enough time put upon them to get the community into active work with them. Special assistance will be given communities taking up this work and definite and sure results arrived at.

Farmers' Organizations Institutes: Farmers' clubs, farmers' organizations, breeders' associations, cow-testing associations, potato growers' associations and so on hold meetings and desire speakers. In all such cases where associations desire the assistance of the Farmers' Institutes for special information the Superintendent will be glad to supply speakers upon proper consideration of the matter.

Demonstration Institutes: During the regular winter institutes the conductors will secure the names of farmers desiring further information upon or special assistance with any problem developed at the institute. These names will be filed at the office of Farmers' Institutes and the problem will be "followed up" as closely as possible to a successful conclusion. When the problem or problems have been solved by the farmer a demonstration institute will be held at the farm and the neighbors will be invited to inspect the results with a view to adopt the methods which secured the desired result. Thus will farmers' farms become demonstration farms.

HOW TO SECURE THESE INSTITUTES

Assistance through the various institutes named above may be obtained without further expense than furnishing a hall, if one is needed, and heat and light, by filing with the Superintendent an application signed by a liberal number of the people of any community showing that the institute is really desired. Application blanks may be secured by addressing the Superintendent of Farmers' Institutes, Madison, Wisconsin.

HOW TO HOLD A SUCCESSFUL INSTITUTE

Ben. J. Rohan, Chairman of Local Institute Committee

Gillett, Wisconsin

Two prerequisites to a Farmers' Institute are interest and enthusiasm, and in order to insure those the local committee must lay plans and start to work a couple of months before the meetings.

Our local committee decided to hold several meetings to which representative farmers were invited. Here we discussed all questions related to the institute: where it should be held, subjects to be dealt with, the part each had to take in order that it be a success, etc. We decided to have an exhibit and in order that all exhibits might be uniform we asked the Domestic Science classes of the High School to make little grain sacks which were sold to the farmers, three for ten cents, and the Great Northern Pail Company to loan us squat pails to exhibit our potatoes, etc., in. The men who attended these meetings took the little grain sacks and sold them to their neighbors. In this way the sacks were pretty well distributed.

These meetings were held in strategical parts of our territory so that whatever interest and enthusiasm was aroused was quite generally spread.

Besides these meetings we had speakers attend meetings of farmers' societies and give talks on the institute. The rural school teachers were drafted and set to work, telling the children what we expected to have done, and the children in turn told their parents. The men in the cheese factories and creameries were put to work and the last few days before the meetings, reminded the farmers of the time and place of the institute.

The local paper published an article every week and in its last issue before the institute a whole column, on the front page, was devoted to that subject. Then the institute posters were placed in conspicuous places. Finally, the children in the village school helped generate the spirit by being themselves enthusiastic.

Thus wherever the farmer turned he heard or saw something about the institute, so even if he wanted to, he could not forget that there was to be a Farmers' Institute held in the Opera House at Gillett, Wisconsin, December 13-14. The result was a large attendance and an enthusiastic and interested audience.

Another factor which added much is our Pig Club. The Citizens' State Bank of this place is furnishing the money to buy young pure bred pigs. These are to be distributed among the boys who can live up to the rules of the club. All arrangements are not completed but as time goes on the enthusiasm over the club grows.

SAMPLE OF A DEMONSTRATION INSTITUTE

Among the things desired by the farmers at the institute held at Rhine Center, Wisconsin, in February, 1918, was a pretty thorough discussion of potato growing. The work was arranged for and one result of the institute was the organization of the Rhine Center Potato Growers' Association which adopted the Rural New Yorker as the community potato.

Early in the summer arrangements were made with County Agent M. J. Hoppert to hold a field demonstration or "follow-up" institute. Accordingly Mr. Hoppert sent out the following circular letter to the members and other farmers and to the local papers:

On Tuesday, Aug. 6, Mr. E. L. Luther, Superintendent of Farmers' Institutes, will meet with the members of the Rhine Center Potato Growers' Association.

The fields of the following members will be visited in order, beginning at 1:00 o'clock P. M.;



A DEMONSTRATION INSTITUTE

County Agent Hoppert of Sheboygan county and a couple members of the Rhine Center Potato Growers' Association studying potato diseases.

Frank Rothe, Henry Stecker, William Winter, Walter Lindow, Jacob Miller, William Fischer, Phillip Reineck, Walter Bus, Ervin Horneck, A. Mayer, J. Happel, Alb. Eimermann, John Dexheimer.

Members who cannot make the whole trip are urged to be present at a few fields at least. This will be a good time to ask questions about potato growing. Mr. Luther is spending all summer with potato growers throughout Wisconsin and can give valuable help on the care of that big crop.

Farmers who are not members of the Rhine Center Potato Growers' Association are welcome to join in this inspection trip. Members are urged to invite all persons interested in potatoes to be present.

An extra good crowd is wanted for the evening meeting in the Rhine Center Hall at 8:00 o'clock P. M. At that time Mr. Luther will discuss fully the things which were brought out on the trip.

The Institute came off as arranged. The day was extremely hot and the farmers were very busy with harvesting. But from one to five farmers were present at each field visited. General field conditions were noted and discussed.

In the evening an interested group of farmers gathered at the hall and general discussion was entered into and various potato specimens gathered from various fields visited were shown and discussed. This field institute will result in a great improvement in potato culture in 1919.

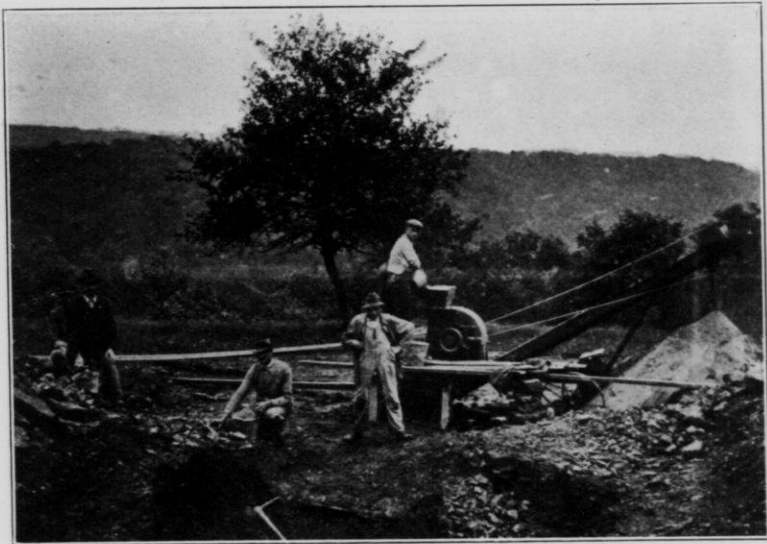
Field demonstration institutes to exemplify what is advocated and started in the regular winter institutes surely tie up a lot of agricultural progress.

Communities desiring winter institutes should plan for the discussion of some community project which will be worked out the following summer and then hold a demonstration or "follow-up" institute. This plan will get somewhere.

HOW AN INSTITUTE LED TO OTHER THINGS

In the institute season of 1916-1917, a place which had been scheduled for an institute backed out. It was necessary to find some place which would take this institute date. A veterinary surgeon at Dodgeville assumed responsibility for an institute at that place and the institute rejected by one place was put on at Dodgeville.

The institute was fairly well attended and it is recalled that there were many interesting features, some of which were rather dramatic. A considerable number of the "old timers" sat in opposition to the "new fangled" notions which were presented. But in the audience were also a goodly number of the rising generation who itched to try out some of the new things.



HOME GROUND LIME

Emergency Agent Springer of Iowa county putting lime rock into a crusher which he got a community of farmers to purchase.

About a dozen of these young men and two or three of the older men signified a desire to organize a cow testing association.

Along about June, 1917, after some correspondence with them, these men's names were turned over to Mr. N. A. Negley, who had in charge cow testing matters in the western part of the state. Mr. Negley canvassed the neighborhood with the assistance of Mr. Ed. Berryman and soon had a cow testing association organized. Mr. George D. Springer was appointed tester for the association.

The association proved interesting from the start. Mr. Springer looked after a lot of other things besides butter-fat and balanced rations. The rising price of feeds made necessary more attention to farm grown feeds. Could alfalfa be grown in Iowa county? The Truog Test was applied to farm soils. They were found sour.

Mr. Springer, in his travels from farm to farm in the association, noticed stone ledges outcropping. One day when he called at the College of Agriculture he had samples of rock from these ledges. One of the professors at the College found the samples rich in lime and magnesium. The next thing was to get the rock crushed and pulverized.

About this time the County Council of Defense needed an Emergency Food Agent and called for Mr. Springer's services. Among other things Mr. Springer looked after farmers' meetings for the coming winter and



ORGANIZING PRODUCTION

Iowa county, Wisconsin, farmers making an excursion into Green county to see how Green county farmers grow alfalfa.

arranged for another institute at Dodgeville. It was planned to make a strong pull for a lime crusher at that institute.

Just as always happens when there is a plan working and the community gets headed in the right direction, fruitful results were realized and a lime crusher was secured. Here it is at work.

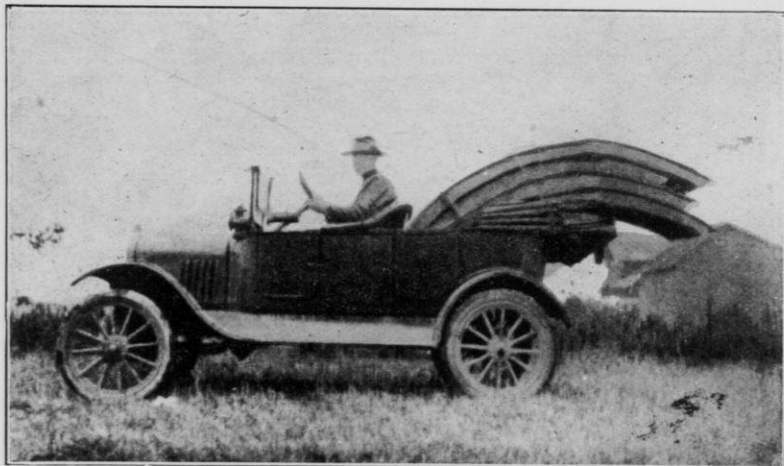
At this same institute Mr. Peter Swartz of Cornalfalfa Farms was on hand to set the farmers on fire for sowing alfalfa and he surely started something.

There is on file a petition for another institute in 1919-1920. As the Department likes to spend money where results are assured, another institute will surely be put on at Dodgeville.

If Dodgeville can do it why not all of Iowa county? So you may soon look to see institutes, crushers, alfalfa and cow testing associations all over Iowa county.

Cow testing associations will surely lead to breeders' associations and organization and improvement of dairy live stock production. It won't be long before Iowa county will be in on sales of car lots of fine dairy cattle to anxious buyers from other states.

As great oaks from little acorns grow, so from small beginnings vast movements for improvement in human affairs result to the everlasting good of communities, counties and states. Better hold an institute in your community.



ORGANIZING PRODUCTION

Yes, fine silage corn will grow away up north in Vilas county and County Agent Gunderson, his little old Ford and the silo forms set up those fine concrete silos to store the crop.

THE NEXT STEP

The great war is over. Readjustments and reorganization are taking place everywhere and in everything. Agriculture cannot and will not be an exception. It cannot go on in the individual manner in which it did before the war.

Wisconsin can produce grandly. What is now needed in production is a better organization of production not only on the individual farm but in a community of farms. A community must come to be understood and considered by the individual farmers of the community as a huge factory for the production of agricultural wares for which the community is aptly fit by reason of natural advantages and especial knowledge and skill of its people.

When the community becomes a huge, well-organized factory for manufacturing agricultural wares it will be in position to provide itself with the most economical buying and selling agencies.

The following pages will carry lessons concerning all of these phases of agricultural production. The attention of the reader is called to these special features.

Superintendent.

ORGANIZATION OF AGRICULTURAL PRODUCTION

E. L. Luther, Supt. of Farmers' Institutes, Madison, Wisconsin

Farmers are giving more attention and study to the problems of farming than ever before. In the last fifteen years important gains have been made by farmers in organizing the industry. Very much attention has been given to the problems of increasing production and of late very substantial progress has been made by an increasing number of farmers organizing for promoting better marketing facilities for farm crops and products. These efforts are commendable. For they are bringing the farmer to a greater appreciation of business practices as an aid to a better and more profitable agriculture.

When we set out to discover how farmers and businessmen have successfully marketed their products and wares, we observe that the greatest successes have been attained by those who have endeavored to produce an article which would satisfy the highest demands of the market. Some farmers have organized the production on their own farms and have succeeded admirably all alone. But other farmers in more or less specialized crop productions have organized into producing and marketing associations and so have met high market demands. Businessmen and corporations have reached the utmost parts of the earth and have captured world markets by organizing their factories to produce certain types of articles true to name and trade mark.

Now while some individual farmers and some groups of farmers have attained considerable success in this way we find that the vast majority of farmers either are individually or collectively giving little or no attention to matters of better production or community production. This is probably due to the fact that it is a lot less bother and requires less gumption to produce scrub and unclassified stuff than a superior article. But the reward is there for any who will strive for the best and for all who will take pains and bother some.

Farmers' organizations now interested in better marketing facilities will do better at handling cars of produce which are uniform and perfect, rather than indiscriminate and imperfect. Farmers' organizations which have become known for certain products find little trouble in marketing satisfactorily.

But when we come to survey carefully the production of an ordinary farm community or the production of a group of farmers in farmers' organizations we find a vast array of all sorts of products. For instance, take oats; some farmers know the names of their oats. They fan the seed oats carefully. They treat the seed for diseases. They keep their fields free from weeds. And at the close of a season have a crop of oats true to name, vigorous and free from foul stuff and disease. But far more farmers do not know the names of their oats; they sow ungraded seed full of seeds of other grains or weeds and untreated for disease. You will find their fields full of mustard and smut. The product is scrub stuff.

It would be an exhibition of considerable nerve to expect more than scrub markets and scrub prices for efforts of this kind. The law of economics will forever react against this sort of thing. If the stamp of large material gain is placed upon scrub effort all the world will go a-farming as the easiest way to get along in the world. This would be calamity.

Some think that the discussion of organized efforts at production is theoretical. This is not the case. The very best of practical experience goes to show that communities which have organized their production so that quality and standard were uniform and high have profited where before such organization their industry was on the verge of ruin. We have passed the day of democracy in production. We cannot any longer depend upon individual freedom in production. Cooperation in production is the indispensable corollary of cooperative marketing.

Dairy Cattle

Wisconsin is a great dairy cattle state. Not a week passes but several calls are made upon the College of Agriculture to locate grade dairy heifer calves and cows in car lots. These calls come from about thirty different states. One state alone took about fifty cars of Wisconsin dairy heifer calves in 1917.

The main calls are for cattle of three great dairy breeds. Not a car of scrub calves or cows, aye not a scrub animal, is called for. Extra good prices are paid for grade animals. These are facts and not theories. These things are actually done. People come to Wisconsin from distant states and are sent into communities where pure bred sires are commonly used. This is one of the greatest direct marketing propositions in the state. Of course it does not help the farmer who still persists in the use of the scrub bull.

There are a couple of funny things about these outside buyers. They want cattle and not tuberculosis and they don't want to pay freight clear across half a continent on cattle which are not good milk and butter-fat producers or which are not likely to be. So they want cattle from herds which are free from tuberculosis and they pay extra good prices for cattle which are in cow testing associations and have proven their worth as producers.

As instances of the profit that comes from this kind of agricultural organization one outside farmer came to Wisconsin and paid the members of one cow testing association from \$135 to \$165 apiece for a carload of grade dairy cows. In another instance a buyer took eight cows from a herd at \$250 apiece.

This is proving a great spur to the wide awake. A movement is on in Wisconsin to rid the state of the scrub and grade bulls. The demand for dairy cattle is so large and the prices which farmers are receiving for their grade stock are so much larger than farmers who are breeding to scrubs are receiving for theirs that all over the state farmers are entering into community breeding and purchasing pure bred bulls. This is a splendid example of what community effort will do.

Perhaps the most unique and conspicuous example of community breeding organization is in progress on Washington Island, Door county, Wisconsin. Here the farmers with the assistance of the Wisconsin Live Stock Breeders' Association and the Department of Animal Husbandry of the College of Agriculture have set on foot the following program:

1. The formation of a Holstein breeders' association on the island, which will have charge of the entire campaign for the formation of better live stock.
2. Elimination of all tuberculosis on the island and the establishment of a provision that no animal may be shipped into the island in the future until it has been given the tuberculin test.
3. Formation of cow testing associations.
4. Elimination of all scrub and grade bulls.
5. The purchase of grade Holstein heifer calves in quantities for the farmers of the island.

Don't you think that your community, your Equity Local, your Grange, your Farmers' Club, or your shippers' association should follow some such plan of organizing your cattle production?

Potatoes

Of all the crops grown in Wisconsin the potato crop would probably be the crop most capable of well controlled community production. But unfortunately the potato is a crop which thrives best upon soils which ordinarily carry least stores of fertility. The crop under ordinary conditions has yielded well and over a period of years has been a profitable crop to produce. But the one crop practice of the cotton states has been approached with the result that soil has been exhausted and yield and quality have been reduced. Another evil of profitable marketing of the crop has been the extravagant multiplying of varieties. One has but to look at the ordinary premium list of a county fair to discover the lack of cooperation and organization in our potato production.

But during the last six or seven years a great change has come over potato production in Wisconsin. This change must be attributed to the excellent leadership of the Horticultural Department of the College of Agriculture. Beginning with a thorough investigation of potato production throughout the state to determine what varieties were best adapted to Wisconsin conditions and which would also meet a large demand upon the market the Horticultural Department of the College of Agriculture determined that the best interests of Wisconsin as far as potatoes were concerned would be best subserved by a great reduction in the number of varieties and the growing of a few standard commercial varieties. Accordingly Rural New Yorkers and Green Mountains, late round white varieties, Burbanks, late, long white variety, Early Rose and Early Ohio, early varieties for local use, and Triumphs and Irish Cobblers, early varieties, for southern seed, were adopted as the varieties upon which to lay emphasis. The Wisconsin Potato Growers' Association was organized

and a system of potato seed certification was arranged. A large number of community and county associations were organized and it was not long until a splendid lot of variety pure, disease free seed was available. The Wisconsin Potato Growers' Association has held a show each year and this has become the greatest thing in the way of a potato show and congress in potatodom. A large number of Wisconsin growers have come to the front and profited well. Southern seed buyers are now looking to Wisconsin for seed. Every community and farmers' association in Wisconsin ought to adopt one or two of the standard varieties and help the cause along. It will facilitate marketing and will put Wisconsin in the lead in profitable potato production.

Seed Grains

No other equal portion of this world produces as fine seed grains as Wisconsin. Nearly every civilized nation on the globe has bought Wisconsin pedigree seeds. This vast industry has been built up by the Agronomy department of the College of Agriculture through developing the pedigree grains and organizing and extending the Wisconsin Agricultural Experiment Association.

The main grains perfected and pedigreed are: Wisconsin No. 7, Wisconsin No. 12, Wisconsin No. 8 and Wisconsin No. 25 dent corns, Wisconsin Pedigree Winter Rye, Wisconsin Pedigree Barley and Wisconsin Pedigree Oats Nos. 1 and 5. There are no more satisfactory seeds than these. The seed demand for them being so large, farming communities ought to organize to produce these. There are now County Orders organized to grow these grains and they are doing splendidly but at very most one will seldom find more than 200 of the 2,000 or 3,000 farmers of a county in the County Orders. What is needed is for neighborhoods, school districts, Equity Locals, Granges and Farmers' Clubs to determine upon which of these grains will do best in their various communities and then get every farmer in the community to growing the same strain of grains. Farmers of Wisconsin, when about every civilized country comes to Wisconsin for seed grains, why do you persist in patronizing vagrant seed agents who only graft upon you and whose success means detriment to your best marketing possibilities? Don't patronize the wandering seed agent who comes your way and urges you to buy seeds grown away off somewhere. Wisconsin farmers grow the best grains grown in this world. Grow these grains and organize your grain production.

Seed Corn

There are whole communities of Wisconsin which should buy seed corn every year. The success of the corn crop in their localities depends upon their being able to secure well selected kiln dried seed corn. As it now is they go to the local dealers and get seed out of a bag grown no telling where and cured in most any old way. The results are doubtful. There are communities in Wisconsin which can mature corn every year. What is needed now in these communities is for every farmer to adopt the same

variety of Wisconsin pedigree corn and grow and mature it under the best conditions and select and kiln dry it. If we can get communities to do this, we can also get other communities which will be ready every year to take the seed corn supply.

Poultry

What is possible with poultry products is well exemplified by some farmers in Jackson county. With the assistance of the County Agent, these farmers decided to produce eggs under certain conditions and up to certain specifications. In the winter of 1917-1918 these farmers produced from 60 to 200 eggs a day apiece and they were all taken by a certain hospital at 56c a dozen. These farmers did not complain about markets or the middlemen. They organized their production. The road to direct marketing will be open to farmers who organize community production.

Boys' and Girls' Clubs

Next to saving boys and girls to agriculture and the best that is in them is the bearing which this splendid boys' and girls' club work is having on organizing agricultural production. This grouping of boys and girls around grains, potatoes, sheep, pigs, dairy calves, baby beef and poultry is going to develop the new phase of agriculture, the organization of agricultural production by communities.

Don't you, you who have just read this article, want to get your community ready for a better and more profitable marketing system for your agricultural products? Don't you want your community to embark upon the plan of producing in a community way some agricultural product for which it is best adapted? If so, write the Superintendent of Farmers' Institutes and he will connect you up with some one who will assist you to the desired end.

THE ORGANIZATION OF PRODUCTION

—A Splendid Way—

Here is the report of a cow-testing association. Please read it carefully. These farmers are organizing their dairy production. They are buying feed at the lowest price and are feeding it to cows which will utilize the largest amount of the feeding value and turn it over into high priced milk. Funny isn't it that only one-fiftieth of the farmers and one-thirtieth of the cows of Wisconsin are in testing associations? No wonder the dairy business is not more profitable. Get into a cow testing association and begin to organize the dairy production business on some sort of economic foundation.

Cedar Grove Cow Testing Association's First Annual Report May, 1917 to May, 1918

SOME RESULTS OBTAINED BY ONE YEAR OF COW TESTING IN THE CEDAR GROVE COW TESTING ASSOCIATION, OF SHEBOYGAN COUNTY, WISCONSIN

The results obtained by the first year's testing in the Cedar Grove Ass'n have been excellent; among some of the things that have been accomplished during the year are the following:

Eleven "Bred For Production" Sires have been placed at the head of as many herds; Some of these sires replaced "Scrub Sires" which were being used before the Testing Association started. By having the heifers tested each month these farmers realized that in order to increase the production through breeding, they must use something better than the ordinary scrub sire which is frequently purchased at the yards on shipping days.

Sixty-nine unprofitable cows were sent to the Stock Yards where they should have been a long time ago. The fact is that the majority of these cows would have been occupying stalls and giving the farmer the pleasure of feeding them just for the sake of their company, besides being detrimental in the way of pulling down his herd thru breeding from them if they had not been tested.

The Champion Cow for the year is a Gr. Holstein owned by Will Nyhof, of Cedar Grove. Below are the figures for the five highest producing cows;

Owner	Lbs. of milk	Lbs. of B. F.	Year's Val. of Prod.	Breed
Will Nyhof	15,637	554.1	\$374.00	Gr. Holstein
Huenink & Lubach	13,933	547.3	327.83	Gr. Holstein
Huenink & Lubach	15,125	518.5	376.72	Reg. Holstein
Will Lohuis	13,344	489.5	336.91	Gr. Holstein
Will Lohuis	12,472	460.2	319.72	Gr. Holstein

The average cost per cow was \$138.40 for feed and they returned an average profit of \$208.64 and still some farmers will tell you that it does not pay to feed.

The three highest averaging herds for the year are owned by the following men:

Owner	Breed	No. of cows	Lbs. milk per cow	Lbs. fat per cow.
Huenink & Lubach, Gr. & Reg.	Hol.	Eleven	11,827	410.2
Will Lohuis,	Gr. Holstein	Six	11,166	385.3
Will Nyhof,	Gr. Holstein	Seven	10,646	376.2

The average value of product per cow was \$273.58, cost of feed \$129.38, profit \$144.20, another example of whether it pays to have good cows or not.

The 324 cows that completed the full year's test produced an average of 273.1 lbs. of butter-fat, which is about 100 lbs. more than the state average per cow. Thirty-four of these cows qualified for the Register of Production by making above 365 pounds of butter-fat for the year, this being the highest number in any one association in Wisconsin to receive those credits.

The association members have sold over One Hundred and Twenty-five head for dairy purposes and received at least \$20.00 more per head than the untested cows brought, which were sold from the same community. Some of our members have refused offers of \$200.00 for certain grade cows.



ORGANIZING PRODUCTION

On occasions farmers have to buy hay. Hay enters into the manufacturing process on the farm. When it has to be bought by the farmers about Amery, Wisconsin, the Equity warehouse gets it for the farmers.

THE ORGANIZATION OF PRODUCTION

—How Not to Do It—

The other day this letter came to the office of the Superintendent:
Aug. 16, 1918.

Mr. E. L. Luther,
Madison, Wisconsin.

Dear Sir:—

Will you please give me the name of the cheesefactory inspector for B_____ County? I know of a man who never takes his night's milk out of the barn. The horses stand within six feet of the milk cans. The gutter has not been cleaned in two months. I think that we should have some one look this matter up.

Yours very truly,

The Superintendent thought so too and called up the office of the State Dairy and Food Commission and put the inspection force upon the trail.

From what the Superintendent knows of agricultural thought in that county he knows that the farmers are almost a unit in condemning present marketing conditions and consider the spread between production and consumption prices too great.

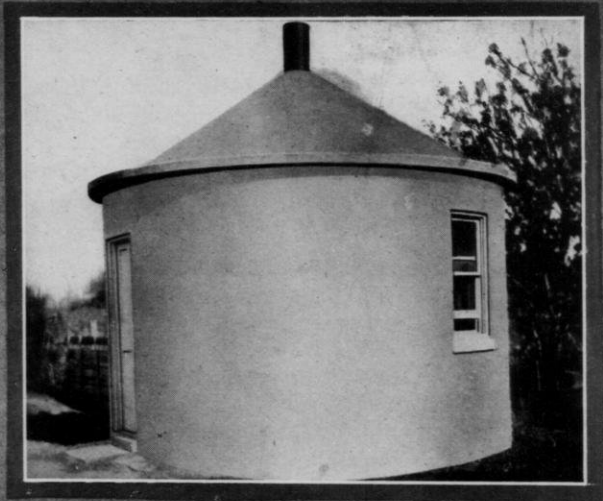
But few of them stop to think that the spread will be all the greater on account of such work as this man above is doing. One batch of milk like this going to the factory every day spoils the cheese and lowers the price of the whole output, no matter how particular the rest are.

Organize your community for cleaner and better milk, make better cheese and cut down the spread of price between production and consumption in that way at least. Make such fellows as the one mentioned above stay out or clean up their milk. That is one way out.

THE ORGANIZATION OF PRODUCTION

—A Good Way to Do It—

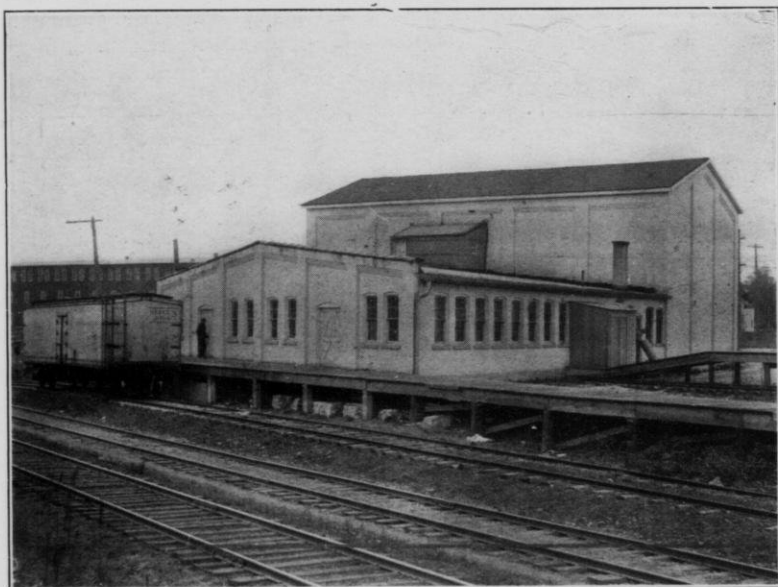
If the farmer mentioned in the previous article would only do like the farmers who have recently built milk houses like these below and all of the other dairymen would do likewise, Wisconsin would lead the world in the production of quality cheese. The spread of price between producers and consumers would probably be lowered, at least the farmer would secure a better price.



EVOLUTION IN MARKETING AND THE WISCONSIN CHEESE FEDERATION

Geo. F. Conings, Farmers' Institute Lecturer, Eau Claire, Wisconsin

"Farmers are the only merchants who have practically nothing to say concerning the prices received for their goods. The prices of all commodities, excepting farm products, are or may be fixed by those who offer them for sale. Farmers produce most of the necessities of life, and yet trade instrumentalities over which they have little or no control deter-



ORGANIZING PRODUCTION

Storage is a part of the process of production. Here is the splendid warehouse of the Wisconsin Cheese Federation at Plymouth. This federation should be the example for Wisconsin in agricultural production. In Wisconsin thousands and thousands of bushels of potatoes are grown every year with no other storage in sight than the sky. There is a splendid chance for better organization of production in Wisconsin.

mine the prices which they receive. What is sauce for the goose is sauce for the gander.

"Some day through **organization** farmers will stand pat on their own prices. Price fixing commissions will then be constituted and a little more of justice and fairness in the relations of men will follow."

The above statement was made by the editor of the Breeders' Gazette,

a trained economist. It strikes a responsive chord in the heart of every intelligent farmer.

In the following short discussions let us note some of the evolutionary steps already taken, and some necessary to be taken if we would bring a "larger degree of fairness and justice" into the relations of men. It is interesting to note how similar the experiences of producers have been who live in widely separated sections of our country and whose products are of very diverse quality or kind.

Early in the eighties, oranges were being produced in marketable quantities in California, a section far removed from our large central and eastern markets. Eastern buyers flocked to California. The orange producing area was laid out in zones to which buyers were assigned, a single buyer to a zone. Competition thereby among buyers was eliminated and



oranges that had cost from thirty-five to fifty cents a box to grow were bought at from eight to twelve cents a box. Disaster stared the orange grower in the face. "Trade instrumentalities" — grading, packing, price fixing, marketing, were all in the hands of the buyers. Out of this forlorn condition has developed since 1890 the best organized co-operative selling agency on this continent, with the advertising, grading, packing, marketing, price fixing — "trade instrumentalities" — in the hands of the producers. A turn-over of fifty million dollars a year and at a cost of only one and three-fourths per cent is proof of efficiency and economy.

During this period the north west was surging to the front as the wheat producing section — the great bread basket of the country. Fertile land for the asking or at government prices made possible the bonanza grain farm. This situation was also the opportunity for the great grain combination; lines of elevators in combination with railways, banks, milling companies and commission houses with "trade instrumentalities" — grading, weigh-

ing, dockage, marketing, price fixing,— all in the hands of the traders, who used them for their own enrichment, until an agrarian revolt swept over North Dakota and seems spreading to adjoining states. The cotton planters of the south, the tobacco growers in Kentucky, have traveled or are still traveling the same tortuous way to market. Very similar are the experiences of dairymen in Wisconsin, a state claiming first place of all our states in the production of cheese and ranking second in the total production of dairy products.

A long step toward standardizing was taken when the individual production of butter and cheese was removed from the farmstead and centralized in the large units of creameries and cheese factories. Because



ORGANIZING PRODUCTION

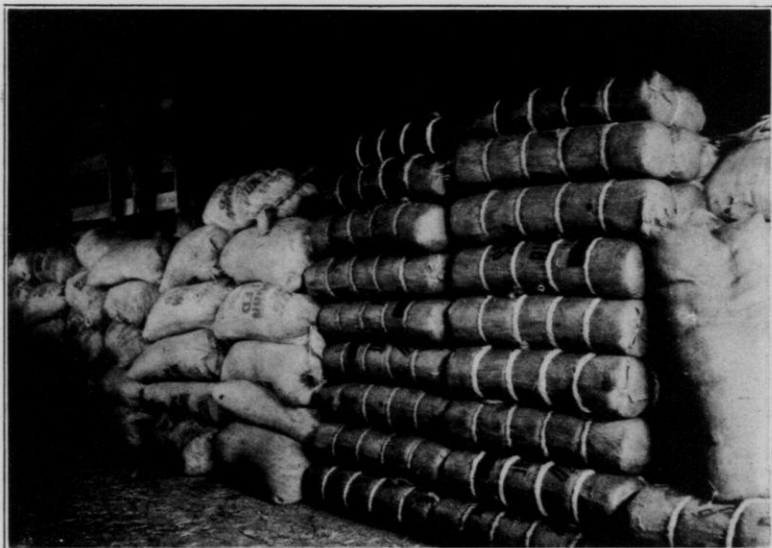
The farmer is a manufacturer and as such figures that the cost of the manufacturing process must be kept as low as possible. Hence co-operative buying of some of the main staples which enter into his manufacturing process is becoming very common in Wisconsin. The above is the interior of the warehouse of the Chippewa County Shipping Association, a branch of the American Society of Equity.

the milk producers were wholly unorganized, the marketing of their product has drifted along lines of least resistance and along lines very similar to those of the wheat producers; namely, cheese factories and warehouses, where the farmers' raw product, milk, was manufactured, stored, cured, graded, etc., all controlled by the traders. Not a single "trade instrumentality" was in the hands of those producing more than one-half of all the cheese in the United States.

On the traders' side are the packers, operating through their dummies, the cheese dealers. A fine bit of camouflage. This combination that has

borne the name, and has played the role, of a cheese board, where ostensibly buyers and sellers met and open competitive bidding was made, was simply a blind carrying out of a secretly prearranged program of price fixing and allotment as infamous and unjust as that which has controlled the markets for cattle and hogs.

This, then, until a few years ago was the situation for all of Wisconsin's immense milk and cheese business. The manufacture, the weighing, docking, curing, warehousing, grading, price fixing, marketing, these "trade instrumentalities", were none of them in the hands of the manufacturers who produced many million of dollars' worth of goods.



ORGANIZING PRODUCTION

The interior of American Society of Equity warehouse at Amery. Feed, binder twine, salt, nails and such things enter extensively into the farmer's manufacturing process.

The whole situation could not have been more efficiently arranged to tempt to crookedness had the most noted criminal lawyers been set at the job. The cheese maker is paid by the pound for making and selling the cheese; if he makes cheese forty-eight per cent water and thereby increases his day's output forty to one hundred pounds each day his wages automatically increase and the price of milk will be correspondingly increased to his patrons. Thus while on Sunday and on retiring, the cheese maker and the farmer might each repeat the prayer of his childhood, "Lead us not into temptation", on Mondays and through the activities of the week, business was arranged to tempt everyone to be a crook. That the temptation has not been resisted is made manifest by tons and tons of cheese on the market containing forty-four to forty-eight per cent of water. The

situation became so bad that a law was passed fixing a standard of forty per cent of moisture as the maximum.

The packers having all the "trade instrumentalities" in their hands, used this power for their own advantage. In the early summer, when the flush of milk was on, the price for cheese was forced down to the minimum. Many warehouses capable of holding millions of pounds of cheese were filled with the low priced products of early summer. Cheese bought in June for twelve or thirteen cents a pound, a few months later was marketed at fifteen to twenty-two cents a pound; the entire cost for the curing and marketing was less than one-half cent a pound. A few men regularly made more net profit than all the milk producers in the state. Is it strange that farmers grew suspicious when cheese early in the summer of 1911 was bought of the farmer for eleven to thirteen cents and in the winter was sold for eighteen to twenty-two cents per pound? When again early in 1912 the price gradually fell to fifteen cents and then a sudden drop of three cents in a single day? Coincident with this growing power of monopoly to manipulate prices was developing a spirit of discontent among the farmers. In 1912 it culminated in an agrarian revolt incited by the sudden drop in one day of three cents per pound in the market for cheese. Stung by prices on their products fixed so low that even day wages could not be obtained a real revolution of methods was set in motion. Since that time the cheese federation has been developing and has come to be recognized as a strong factor in bringing more of "justice and fairness" to all Wisconsin dairymen. Only a few, those in charge of the organization, realize the experiences the federation has passed through. At first the farmers' organizations found no customers among the packers or among other big customers. The federation had to start at the bottom. The buying competition was made as stiff as possible. The trust hustled to keep trade away from the cooperative warehouse. The second year, however, saw a splendid increase in the volume of business and at decided economies to the farmers. In addition a campaign of education was instituted to improve the quality and to do away with petty trade graft.

The plan of operation for the federation is to have the cheese factories cooperatively owned and managed by the farmers whose products go there-to. These cooperative factories have federated and collectively own a fine warehouse and refrigeration plant at Plymouth. This collectively owned plant is capitalized at forty thousand dollars, the stock of which is all owned by the patrons. In its hands or in the hands of the farmers are the "trade instrumentalities" — manufacturing, weighing, curing, warehousing, marketing. As an illustration of the good it does, the old practice of docking boxes of cheese five-eighths to seven-eighths of a pound each when bought by the dealers, has been entirely abolished. This practice was quite similar to the old elevators docking the wheat farmers three to six pounds a bushel because some flax seed was mixed in the wheat, notwithstanding that flax seed was worth one hundred per cent more than the wheat. Because of the methods adopted by the cheese federation the

packers' dummies, the dealers, of Sheboygan county no longer dock in weights. Through this item alone millions of dollars will be saved to the farmers of our state.

Last year after all overhead charges had been provided for a surplus of twenty thousand dollars was distributed as a patronage dividend by the cheese federation. Can any one for a moment question that this is in line with "fairness and justice" in returning to the ones who produce, the product of their labor? It is hardly possible to give too great credit to Henry Krumrey for his leadership in helping to develop and organize the teamwork spirit of the farmers in Sheboygan county. It is the greatest service rendered to the farmers of the state in the last quarter of a century.

May the writer close with a bit of the vision he has for the future of the cheese business? It is a permanent business, is it not? Why not then provide as rapidly as possible fine brick or stone, sanitary, modern buildings for cheese factories with the number considerably reduced. With good roads and the auto truck and teamwork spirit, milk can be gathered into larger aggregations, to fewer factories, and overhead charges thereby be greatly reduced and standardizing made more easy. With our new modern factory let a house and land for a nice garden be provided for the cheese maker. Our next step is organizing 60 to 100 factories into a federation that shall own its own warehouse and refrigeration plant. By and by these warehouse associations may put their cured standardized products on the market under recognized trade marks, through one centralized selling agency.

When 50 to 60 per cent of the cheese is thus controlled, the farmers become a recognized factor in price fixing because they control the products and the major part of the "trade instrumentalities". This systematic, efficient, cooperative policy will eliminate waste duplication of effort and both producers and consumers will be greatly benefited. It also will eliminate unearned profits and the danger that menaces our country through the concentration of wealth in the hands of a few. After all overhead charges are provided for, a surplus can be returned to those who have created it as was done with the twenty thousand dollar surplus secured by the cheese federation last winter. Sixty to one hundred factories acting collectively can set aside say one-thirtieth part of a cent on each pound of cheese, or one cent on a box and create a fund with which an inspector may be employed through whose help rapid progress may be made toward manufacturing a fine standardized quality of cheese. This the writer believes is a method to put in effect the following words of Lincoln:

"Inasmuch as most good things are produced by labor, it follows that all such things of right belong to those whose labor has produced them. But it has so happened in all ages of the world, that some have labored and others have, without labor, enjoyed a large proportion of the fruits of labor. This is wrong and should not continue. To secure to each laborer the whole product of his labor, or as nearly as possible, is a worthy subject of any good government."

THE COUNTY AGENT AND THE ORGANIZATION OF PRODUCTION

Probably one of the most important means in the organization of agricultural production is the County Agricultural Agent. On July 1, 1919, there may be forty-five County Agricultural Agents in the state and on July 1, 1920, there may be fifty County Agents in the state.

The counties having these agents are rapidly outstripping the counties not having them and those in a position to know what is going on over the state see how hopeless is the contest of counties not having County Agents in the race with counties having them. This is an age of cooperation. The old individual, go-the-way-each-one-pleases practice of farmers cannot keep pace with farmers pulling together with an efficient County Agent.

BOOST THE COUNTY AGRICULTURAL AGENT

MARKETING WISCONSIN DAIRY CATTLE

Two things now ought to furnish fresh impulse to Wisconsin's greatest industry: First, the fact that the world has come to a full knowledge that dairy products furnish the best food that is obtainable for man and beast; and second, that a system of general farming such as is required in dairying is about the only insurance of a permanent and profitable agriculture.

Wisconsin is the first dairy state in this nation. Other states coming to realize what has been said above, now look to Wisconsin as their example and are coming to Wisconsin for their foundation dairy stock.

Calls for Dairy Cattle

In one two-week period calls came to the College of Agriculture for car lots of grade cattle to go to sixteen different states. On one occasion a group of institute workers was shown a stack of letters a foot high from other states which inquired where to secure car lots of grade cattle. One year later another company of institute workers was shown another stack



MARKETING WISCONSIN DAIRY CATTLE

Taking their last drink of good Wisconsin water before their departure for a distant state.

of letters fully eighteen inches high, making like inquiries. In one certain period of time fifty carloads of grade dairy heifer calves went to one state alone. On one occasion twelve men were in Wisconsin from one state looking after grade dairy cows, heifers and heifer calves. Reliable information discloses that in one six-week period one hundred thirty-five buyers visited one well known dairy cattle section to secure cattle of a

certain breed and could not secure them because the cattle were not to be had. These are the calls.

Scrubs not Wanted

In all these calls only the descendants of pure bred dairy bulls are wanted. There is not a call for a scrub cow, heifer, heifer calf or scrub bull. What is the use in using scrub bulls or growing up scrub cows if no one wants them?

Prices Paid

Grade bred heifers are selling at from \$75 to \$125, according to age and quality. Grade cows at from \$150 to \$200. Cow testing records add from \$10 to \$25 per animal. One buyer went into one herd and took out eight



MARKETING WISCONSIN DAIRY CATTLE

We are going to supplement our beef brethren on the plains and in the valleys of the Great West.

cows at \$250 apiece. One farmer sold \$1200 worth of grade cattle. Before that time he had been accustomed to sell his excess stock on the Chicago market. He figures that he made fully \$300 by this deal. Had he had scrub stock he would have been compelled to employ the Chicago market; but he had been using a pure bred dairy bull. These are the prices.

Buyers' Demands

Buyers want cattle sired by pure bred bulls. If you want to sell your excess cattle at fancy prices, you must use a pure bred bull.

Buyers want cattle known for large milk and butter-fat production.

Wisconsin has 115 cow testing associations, about as many as all the rest of the country combined; but for the best interests of Wisconsin farmers right now there should be ten times as many cow testing associations in Wisconsin. Join cow testing associations.

Buyers want disease free cattle. They don't want tuberculosis. Study the tuberculin test. It is reliable if used discreetly. Look up the accredited herd plan and the district eradication plan of the Wisconsin Department of Agriculture. Let's clean up Wisconsin.



MARKETING WISCONSIN LIVE STOCK

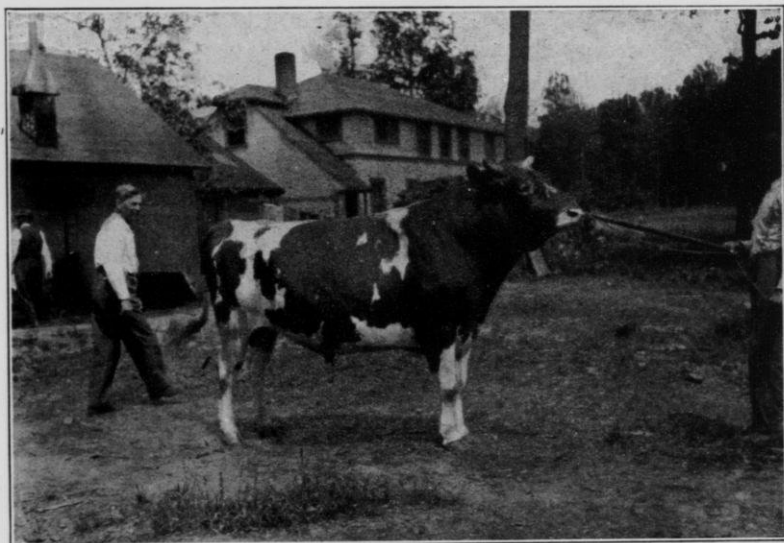
Grade and pure bred dairy cattle of Wisconsin with tickets on their "Dixie" special for the land of cotton.

Finally

Buyers want to be sent where the cattle of the breed they want are plentiful. Somewhere around twelve farmers out of every hundred in Wisconsin own pure bred dairy bulls. That means that if you were a buyer you would have to drive by at least seven farms on the average before coming to a farm where dairy cattle can be found. It means that if all the farmers using pure bred bulls gathered in one part of the state only about eight or ten counties would comprise dairy Wisconsin. Where dairy cattle are scattered as they are it makes assembling them for car lot shipments very difficult. Why aren't buyers sent to see your cattle, you are using a pure bred bull? Because all of your neighbors are using scrub bulls.

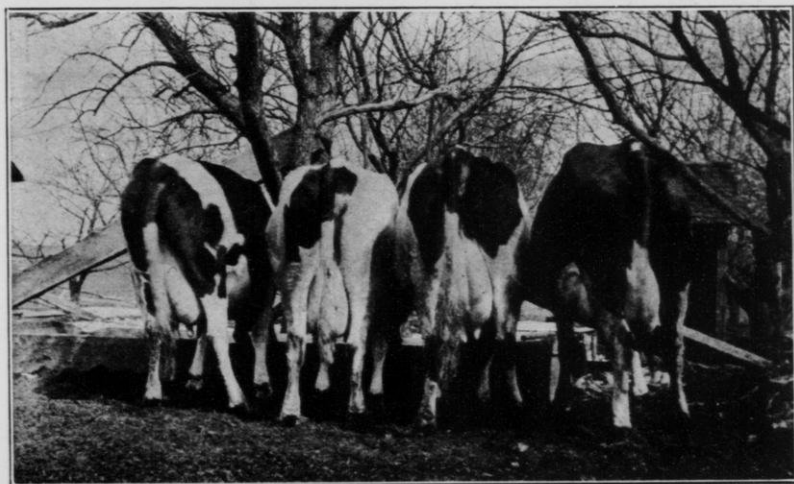
The Need

The market for dairy cattle is here and will be here for some time. What is needed is grade dairy cattle to supply the demand and these dairy cattle must be in groups to facilitate loading. The foundation of the whole business is the PURE BRED BULL. There is a great drive on in Wis-



ORGANIZING PRODUCTION

Yes, Upper Wisconsin is doing it. Here is the splendid bull used on the Guptil Farm near Elcho, Langlade county.



ORGANIZING PRODUCTION

These cows are half sisters and the get of a pure pred bull. How any farmer in Wisconsin can any longer argue for the scrub bull and the disorganized production which accompanies him is beyond comprehension.

consin to eliminate scrub bulls and get PURE BRED BULLS universally used. This drive is meeting with success and many school districts, towns, and counties are coming through and will be 100 per cent users of PURE BRED BULLS. They are going to get this profitable business.

Nail this sign up on your front gate:

* * * * *
 * PURE BRED BULL *
 * Used on this Farm *
 * * * * *

Get all the farmers of your school district to do the same. All commence to use the same breed of pure bred bull. Organize the production



ORGANIZING PRODUCTION

Studying better breeding at the picnic of the Langlade County Jersey Breeders. The northern farmers are standardizing their production very rapidly.

of dairy cattle in your school district, in your Equity Local, your Grange, your Farmers' Club, and you will get in on the greatest marketing proposition now enjoyed by farmers.

JOIN THE PURE BRED BULL DRIVE!

* * * * *
 * PURE BRED BULL *
 * Used on this Farm *
 * * * * *

In Barron county there are seventeen live stock shipping associations, thanks to the County Agent. In a series of meetings up in that county

in the PURE BRED BULL DRIVE a farmer said that farmers are realizing about \$60 apiece for their scrub cows sold on the live stock market. That is the only market for scrub cows.

On the other hand, those who were using pure bred bulls were selling their surplus cows to outside buyers for an average of \$150 apiece.

Now, Mr. Farmer, when you drive along the road and see the above sign nailed up in front of a farmer's place, you will know that he is selling cows for \$150 apiece.

But when you see this sign at the front gate

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ORGANIZING PRODUCTION

Scene on the Martiny farm at Chippewa Falls at the organization of the Chippewa County Guernsey Breeders' Association, with L. P. Martiny as president and County Agent Southworth as secretary. There were 27 charter members. In one month the membership had grown to 60 and these 60 had signed up for 72 heads of female Guernseys. In the second month one of the most unique and successful sales of pure bred Guernseys was held. That's the way to organize production.

you will know that the farmer is selling his cows for \$60 apiece. Watch for the signs. That's all.

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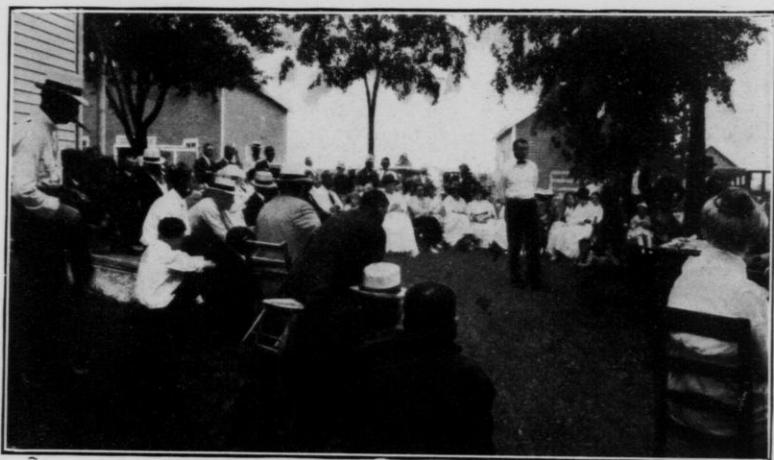
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Too Much of this Sign



ORGANIZING PRODUCTION

County Agent Coyner of Portage county and his Boys' and Girls' Calf Club of Stockton holding a local contest. Don't you think the live stock situation of a county will improve with this kind of team work?



ORGANIZING PRODUCTION

County Agent Southworth discussing the organization of a County Holstein Breeders' Association at a picnic held at the Kelley Farm, near Chippewa Falls. That day a splendid association was formed to push the breeding of Holsteins in the county.

At one time in one county of the state an advance payment of a sum sufficient to buy five car loads of grade dairy cows at an average price of \$150 apiece was deposited in one of the banks by outside buyers. The farmers of a certain state had purchased one shipment of cattle in that county and were so pleased that they had deposited this advance payment and had sent word to pick up the cattle.

But there was a difficulty. And what was it? Only twelve per cent of the farmers of that county were using pure bred bulls and only 36 per cent of the bulls were pure bred and the 36 per cent of pure bred bulls had not been in use long enough to supply the demand for grade cattle. There were more than enough scrub cows to supply this demand. But the buyers did not want scrub cows. There are enough \$60 scrub cows at home. You can believe that the farmers of that county are rapidly nailing up this sign:

* * * * *
 * PURE BRED BULL *
 * Used on this Farm *
 * * * * *

BOOST BETTER BULLS

HONOR ROLL OF COUNTIES

Ashland	Clark	Oconto	Walworth
Barron	Crawford	Portage	Washington
Bayfield	Door	Sauk	Waukesha
Brown	Fond du Lac	Shawano	Waupaca
Buffalo	Jefferson	Sheboygan	Winnebago
Calumet	La Crosse	St. Croix	Wood
Chippewa	Monroe	Vernon	

These counties have regularly organized plans in progress May 1, 1919, in the

PURE BRED BULL DRIVE

to eliminate the scrub bull from Wisconsin.

FOR OBJECTORS

Every movement has its "knockers". This marketing dairy cattle and PURE BRED BULL DRIVE have their "knockers" who say that it is all for the "big" fellow and not for the "poor" and "little" fellow.

Well, first, no one can be blamed for the demand except the outside farmer buyers who want to improve their cattle in other states and the farmers in Wisconsin must use the services of pure bred bulls if they want to get in on this profitable business. No one will be benefited more by employing the services of a pure bred bull than will the "poor" and "little" fellow.

No, no, this marketing of Wisconsin dairy cattle does not shut out the poor man and is not for the rich fellow only. It is not a pure bred cow

proposition. The buyers want grade stock in car lots. There is no farmer in Wisconsin who is too poor to use a pure bred bull at a service fee of \$2 when it is going to bring him a cow worth \$150 rather than \$60. See?

No, no. There are no middlemen getting rich off the farmer with this greatest marketing proposition now enjoyed by farmers of Wisconsin. Outside farmers meet Wisconsin farmers face to face and complete the



ORGANIZING PRODUCTION

The best sign of successful farming in Wisconsin. Back of this sign are the fine family, farm and herd of J. F. Stoller, Greenwood, Clark county, Wisconsin.

deals. There are no commissions. Stop all the "ifs" and "buts" and use a good pure bred bull and you will be happy. Don't let any wiseacre or halting fellow discourage you. Nail up this sign:

* * * * *

* PURE BRED BULL *

* Used on this Farm *

* * * * *

ORGANIZED POTATO GROWING

Here is the Wisconsin farm crop grown especially for human consumption, but most of the time produced in a manner far inferior to the general manner of producing food for farm animals, with the consequences that much of the crop is not fit for human consumption at all.

Here and there individuals working alone have improved their potato crop but were discouraged at marketing time because the few potatoes of a really fine crop had to go in with the great mass of scrub stuff. These individual good growers received no more for their effort than did the careless, easy-going producer.

Here and there it has occurred to farmers in communities to get to-

**PRODUCTION POORLY ORGANIZED**

The farmer who was operating this potato field left out of his plans the necessary process of poisoning "bugs". "Bugs" are a very common cause for loss of profits in the potato field.

gether and grow table stock potatoes of uniform variety and under more or less uniform conditions. Almost invariably these communities have done well in the marketing of their crop. Communities should organize.

Certified Seed Potatoes

Under the aggressive and consistent direction of the Horticultural Department of the College of Agriculture, Wisconsin is coming to know that it is one of the best seed potato growing sections in the world. A good many farmers have adopted the plan of growing certified Rural New Yorker, Green Mountain and Burbank seed for farmers who want good seed for growing table stock.

Certified Triumphs and Irish Cobblers

But a new and large field is opening up for Wisconsin potato growers. Every year the southern potato grower must purchase new seed stock. He cannot grow his own seed. He has been buying his seed from sections which have not taken pains to keep down potato diseases. Through the certified potato work which has been going on in Wisconsin the southern grower has come to know that Wisconsin is a fine place from which to secure his seed.

The southern grower wants very early maturing potatoes so as to get in on a good northern market. He plants his fields in January and so along in May and June he has his new crop on the northern markets. He wants Triumph and Irish Cobbler potatoes variety pure and disease free and grown under conditions which make the seed likely to return large crops.

Now Wisconsin potato growers in sections of the state especially adapted to growing Triumph and Irish Cobbler seed potatoes should get together to produce certified seed of these varieties under conditions which will make the potatoes highly desirable for seed purposes. You see there will be an almost constant yearly demand for stock of this kind.

Certified Seed Potato Growers' Association

There is a good strong certified seed potato growers' association in Wisconsin. It maintains a regular system for keeping track of the needs and desires of the southern potato grower. This is bound to furnish the very best marketing facilities for the members.

At one Farmers' Institute in March, 1919, a certified seed potato grower was in the audience. He was asked about how he got along with selling his crop. He said that all of his Triumph potatoes for this year were gone at a fancy price and that all he could grow for next year were also sold. Think of it! A farmer's crop yet to be grown already sold! This farmer is not worrying about markets. He is worrying about growing the crop. And this by the way is the main place to worry. Crops decently grown will move along at good prices.

How community production of a well graded and standard lot of potatoes would affect the farmer's pocketbook is well illustrated in the report made by the Bureau of Markets for the Chicago market for May 6, 1919.

Wisconsin, Minnesota and Michigan, bulk sacked Round Whites, U. S. Grade No. 1, \$1.75 to \$2 per cwt., bulk mixed red and white varieties and sacked, partly graded, \$1.60 to \$1.74 per cwt., sacked Round Whites, ungraded, \$1.50 to \$1.65 per cwt.

Better organize community potato growing.

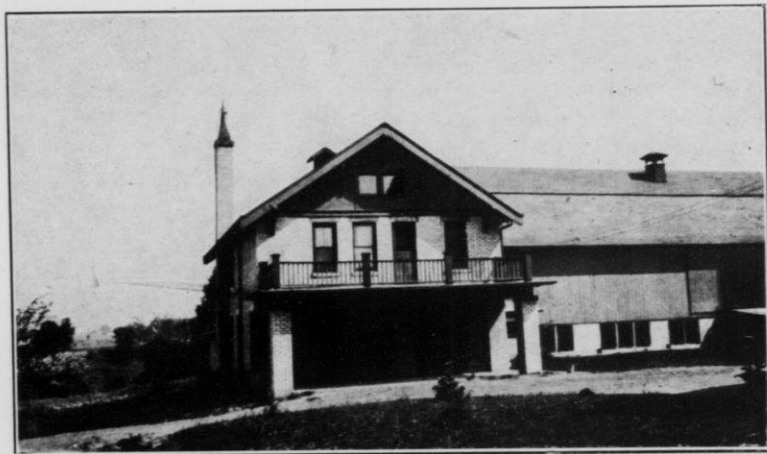
ORGANIZING THE MANUFACTURE OF BUTTER AND CHEESE

Professor E. H. Farrington, Madison, Wisconsin

For several years we have been discussing in Wisconsin a plan of forming mutual benefit organizations among the cooperative creameries and cheese factories in a given territory.

The names of two organizations now formed on this plan are:

- (1) The Associated Cooperative Creameries of La Crosse River Valley, now two years old, and including eight creameries.
- (2) The Chippewa Falls Cooperative Creamery Association, started May 3, 1918, including twelve creameries.

**ORGANIZING PRODUCTION**

This, one of the finest milk houses in Wisconsin, is on the Hoppert farm near Sheboygan. Mr. Hoppert's assistant lives in the splendid apartment above and enjoys every modern convenience. Milk and cream of high class are produced here.

Briefly, the objects of these associations are:

1. The prevention of duplication of milk and cream routes
2. An economical buying of supplies
3. Cooperative selling of the product
4. Employing the services of a field man who will visit all the farms supplying either milk or cream to the factories belonging to the organization
5. The production of a large amount of butter and cheese of uniform quality.

The first one of these associations, (La Crosse), was organized by call-

ing together the directors of eight different creameries following a general discussion of the subject at a public meeting attended by both officers and patrons of the creameries in that territory.

In discussing the work of this association, Mr. J. F. Moran, of West Salem, one of the managers, has stated that he feels highly encouraged with the work their field man has done so far; that an improvement in the richness of the cream delivered to the factories has already been noticed; that the patrons now agree the plan is a good one and that the creameries are working together harmoniously, although at first there was some fault-finding on the ground that this was another salary-paid job which the farmers must support.

The La Crosse organization voted \$2,000 for the services of a field man for one year, and collected this amount from the creameries by apportioning it according to the butter-fat received at each factory. This apportionment amounted to one cent for each 15½ pounds of butter-fat.

It has been suggested that the expenses of the field man and other funds needed for general promotion of the enterprise, may be raised by a contribution from each creamery of a tenth of a cent for each pound of butter-fat received by it.

One of the important agreements among the members of the organization is that no creamery will accept the cream which has been rejected by another creamery on account of poor quality.

It is a little early to record the benefits that have already been derived from this plan by the organization at Chippewa Falls, but a field man has been employed, and he is now at work.

A great deal could be said in an illustrative way of the benefits to be obtained both by the producer and the consumer of dairy products, from such organizations as these. Each of the five points mentioned as the objects of these associations could be easily elaborated, and the possibilities of making this plan of mutual benefit to a large number of farmers are great; it seems like an effective method of improving the quality of the butter and cheese made in the state.

It will also reduce the waste caused by excessive competition for milk and cream by a large number of small factories in a given territory but the plan is so new that the full benefits of its operation have not yet been fully realized.

The success of the plan, when applied to any locality, depends first upon the creation of a desire, on the part of the farmers and operators of a number of factories, for such an organization, in order that they may obtain the advantages afforded by it; and, second, success depends upon the ability of the field man and his adaptability to the duties of his position.

When a group of factories will cooperate in this way the butter and the cheese made by them will undoubtedly have an improved and characteristic quality that will attract buyers willing to pay advanced prices for the product of these factories. This suggests the use of a brand or a

trade mark for the butter or cheese made by the factories in each group as it will furnish a protection and acts as an incentive to keep the quality up to a high standard.

There is little question but that such an organization of cheese and butter factory production would facilitate marketing the products at better prices and prove very satisfactory to the producers and consumers as well.

HOW AGRICULTURAL FAIRS MAY ASSIST IN ORGANIZING AGRICULTURAL PRODUCTION

For years the ability to produce a vast variety of crops and crop varieties has been considered the very best advertisement a county could have. Agricultural fair premium lists have exploited this notion.

But the results have been destructive of the best marketing interests of the farmer. For instance, we are coming to know that it is not necessary for a county to produce every known variety of oats in order to be considered a good oat county or to make success with oats certain. If it can produce one variety better than it can produce all other varieties, and if it can produce this variety as well as any other county can produce any other or all varieties, then this county should be encouraged to specialize with this variety and should be considered an A No. 1 oat county.

With the view of encouraging this idea, the Department of County Exhibits of the Wisconsin State Fair has adopted the following score card for county exhibits:

SCALE OF POINTS

Wheat, threshed,	4 samples, 4 farms	100
Oats, threshed,	5 samples, 5 farms	150
Barley, threshed,	4 samples, 4 farms	120
Rye, threshed,	4 samples, 4 farms	100
Buckwheat, threshed,	1 sample	25
Peas, threshed,	4 varieties	60
Beans, threshed,	5 varieties	50
Grains, in sheaf	18 samples, from at least 10 farms.....	300
Corn, in ear, Field	5 10-ear samples, 5 farms	150
Sweet	3 10-ear samples, 3 farms	30
Pop	2 10-ear samples, 2 farms	20
Clover seed,	3 samples, 3 farms	75
Grass seed,	2 samples, 2 farms	30
Clover in sheaf,	5 varieties, including alfalfa and sweet clo- ver	200
Grasses in sheaf,	5 samples, 5 farms, not including wild grasses	150
Forage Plants,	6 varieties	120
Potatoes,	5 samples, 5 farms, to be chosen from the following varieties which are recognized by the Wisconsin Potato Growers' Ass'n.	
Late: Rural New Yorker, Green Mountain, Burbank, Peerless.		
Early: Early Ohio, Early Rose, Irish Cobbler, Triumph.....		150
Stock vegetables,	1 specimen of each variety if over 6 inches in diameter; 3 specimens if under 6 inches in diameter	150

Culinary vegetables,	See Rule 12 for number to be shown.....150
Fruits	Twenty-five plates of fruit, not more than five plates from one farm nor more than one plate of a variety from a farm.....200
Miscellaneous,	Score to be only on raw agricultural prod- ucts100
Taste and design in arrangement100

Take wheat for instance; if a county can grow Marquis wheat very well, the thing to do is to secure a four-quart sample from each of four farms scattered about the county, tag each sample with the name of the variety, and the name of the farmer and his address. The requirements of the county as far as wheat is concerned are satisfied.

This explanation of the wheat score will explain that of oats, barley, and so on.

County agricultural fairs may well use some such score for town and community exhibits. It will help to secure more uniform and standard production and facilitate marketing the farm crops.

HERE IS AN IDEA

One group of farmers about to engage in cow testing work is thinking of securing a tester competent to do more than cow testing, and of organizing the testing group into a producing, buying and marketing organization. This sounds like business.

How About This?

One hundred farmers can be found around almost any trading center in southern Wisconsin who have an average capitalization of \$25,000. This would mean a combined capital of \$2,500,000. In any business enterprise such a combination of capital would employ a business manager. Production would be uniform with all operatives.

As it goes now, each one of these farmers is going it alone. He produces as his fancy dictates. His idea of a crop and the way to produce it is vastly different from that of his neighbor. His idea of what constitutes a salable product is different from that of the other ninety-nine. Consequently when the one hundred crops of hay, oats, wool, and so on, come into the dealer's warehouse, these 100 varieties or qualities of the same crop are mixed together and will bring but little more than the grade of the poorest. Each one buys his fencing alone, his twine, his cement, his feed, and so on. How expensive to buy that way and what a losing game to sell that way.

Here is the Idea

These 100 farmers could revolutionize all of this by incorporating and putting into a common fund a sum of \$5,000 to \$10,000. From this sum they would hire a man who would serve them in the capacity of a County Agent but much more efficiently as he would have a smaller territory to cover and many less individuals with whom to deal.

This agent would locate supplies, assist in standardizing crops and run the advertising. The manager of a manufacturing corporation capitalized at \$2,500,000 is at trade gatherings and shows and thus finds a good market. This agricultural agent of these farmers would do the same. He would be their agricultural secretary.



ORGANIZING PRODUCTION

County Agent Coyner of Portage county and the Agricultural Committee laying plans for a campaign.

Let's Try It Out. What Community Will Be First?

Yes, let's try it out. Let's limit the number of farmers to one hundred. If any more want to come in, let's keep them on the waiting list. Just one hundred who are willing to cooperate and who will study, take suggestions and learn the game. Some experimenting must be done. This will not cost much. The idea is right. It can be made to win. It will pay big.

Should any group of farmers want to talk this over, address E. L. Luther, Superintendent of Farmers' Institutes, Madison, Wisconsin.

BOYS' AND GIRLS' CLUBS AND THE ORGANIZATION OF PRODUCTION

How rapidly boys and girls learn to act co-operatively! The farmers of the next generation will act together. Boys' and girls' clubs are going to have them grow into the habit of acting collectively. And note what they are now doing. See the fine calves, pigs, sheep, baby beeves, grains and potatoes which boys' and girls' clubs are growing, all well bred stuff and community in breeds and varieties. What effect is it going to have on a county's potato prospects when boys' and girls' potato clubs have an exhibit of 250 peck-samples of one variety of potatoes at the County Fair? The agricultural products of these boys and girls make present day products, produced under the individual, go-as-you-please practice of farmers look like a crazy patch quilt.

BOOST BOYS' AND GIRLS' CLUBS

MAINTAINING THE SOIL FERTILITY ON WISCONSIN DAIRY FARMS

F. L. Musbach, in Charge of Marshfield Branch Station,
Marshfield, Wisconsin

Does the average dairy farmer maintain the fertility of his farm? This question has invariably been answered in the affirmative. Six years ago the State Soil Laboratory was organized and since that time a considerable number of farms have been examined and reported upon. This work involves the collecting and analyzing of a number of samples of soil from each farm and getting information with reference to the system of farming engaged in. This general information includes such data as the kind of crops grown; acreage and yield; the disposition of these crops, whether fed or sold as cash crops; the purchase of concentrates or feeding stuffs and the handling of manure, — in short any information that may be of



DO COMMERCIAL FERTILIZERS HELP?

Here is one of a number of trials which County Agent Brown got going in Clark county. Corn planters in that county will carry two attachments next year, one for soy beans and one for commercial fertilizers.

value in throwing light on the question of the income and outgo of phosphorus, for it is recognized that the critical element as far as plant food supply is concerned on every farm, be it dairy or otherwise, is phosphorus.

In northern Wisconsin during the last six years, 150 farms have been

examined, most of which are devoted to what might be classified as dairy and live stock farming. These farmers as a rule maintain that since they are engaged in this system of farming their soils are not being depleted, but are being built up. While this is true in some instances, yet it will be shown that a large proportion of average dairy farms in the state are not maintaining the supply of phosphorus.



WHY NOT GROW CLOVER?

F. S. Campbell of Three Lakes, Oneida county, Wisconsin, in his splendid field of clover in 1918. There were few fields of clover like this in Wisconsin in 1918. Mr. Campbell uses farm manures supplemented with commercial fertilizers. On some parts of his field where he did not use fertilizers he had little or no clover.

In order to get first hand information on this question, twenty farms in northwestern Wisconsin were selected at random and the income and outgo of phosphorus computed. These farms were divided into two groups, A and B. Group A includes farms which have been cropped for a period of about thirty to thirty-five years and during this time raising live stock and dairying has been the principal business. These farms are situated in the creamery section and hence cream was the principal product sold.

Group B includes farms which have been grained to a considerable extent in the early period of their development which started about forty years ago. During the last fifteen years dairying has been substituted in a large measure for grain raising though some grain is still being marketed as a cash crop. These farms are located in a cheese factory section, therefore whole milk is the main dairy product sold.

GROUP A. AVERAGE INCOME AND OUTGO OF PHOSPHORUS
FROM 10 DAIRY FARMS IN NORTH WESTERN WISCONSIN,
WHERE CREAM IS THE PRINCIPAL CASH PRODUCT

Crops grown and fed	No. acres	Av. yield per a.	Lbs. phosphorus removed
Corn	17.5	43 bu.	173
Oats	19	44 bu.	117
Barley	7.4	30 bu.	50
Mixed hay	15	2 tons	120
Clover	2.5	2 tons	25
Alfalfa	1	3 tons	13
Millet	.4	2 tons	3
Total phosphorus			501
Loss, 15%			75

Products sold	Average number	Av. weight or amt.	Lbs. phosphorus removed
Old cows	4	1,000 lbs.	32
Hogs	23	200 lbs.	14
Cream		9,700 lbs.	6
Fat cattle	1	600 lbs.	4
Hay		1 ton	4
Oats		35 bu.	4
Potatoes		50 bu.	2
Total loss			66

Feeds Purchased	Amount	Lbs. phosphorus contained
Bran	3.2 T.	80
Shorts	1.7 T.	22
Oil Meal	.6 T.	9
Cotton Seed Meal	.05 T.	1.3
Gluten	.1 T.	1
Distiller's Grain	1 T.	6.5
Corn	58 bu.	9.5
Oats	70 bu.	7.7
Total phosphorus		137.0
Loss, 15%		21

Total losses	162
Total gain	137
Net loss	25

It will be noted that in the table there are given first the crops such as corn, small grains and hay, which are fed through the animals on the farm. The acreage and the average yield for each crop on the ten farms are indicated together with the amount of phosphorus required to produce them.

In addition to these home grown products, the farmers purchased, on an average, feed stuffs as shown in the table. Bran, shorts, oil meal and cotton seed meal are the principal concentrates used. The phosphorus content of each is also indicated and since these are brought from outside sources, the farm is a gainer as concerns phosphorus.

In the feeding of these various crops and concentrates, considerable losses are incurred. The growing animal requires phosphorus for bone building; milk production requires phosphorus and finally the losses incurred in the handling of manure are to be considered carefully.

The manurial losses will be considered first. The losses vary, depending on how manure is handled after production. Fifteen per cent it seems is a conservative average for the ten farms. Recently the Ohio Station studied this matter both in the chemical laboratory and in the field and the following table will be of interest.

	Lbs. per ton manure		
	Nitrogen	Phosphorus	Potassium
Composition of fresh stable manure	12	2.7	9.1
Composition after three months' exposure in open yard	7.4	2.3	3.4

More than one-third of the nitrogen and two-thirds of the potassium have disappeared and about one-sixth of the phosphorus, that is, for manure which has been exposed in the open yard for a period of three months. In the table above, fifteen per cent loss has been assessed against both the products grown, and the feeds purchased. The total loss from this source amounts to ninety-six pounds.

A second loss comes in the products sold off from the farms, cream, old cows, hogs and a small amount of grain. These removed from the farm sixty-four pounds of phosphorus. The total losses indicated from all sources amount to 162 pounds. This is offset in a large measure by the gain in concentrates, amounting to 137 pounds, leaving a net loss of twenty-five pounds for the year. This is a fair average condition found among the better class of dairy farmers. In many instances no concentrates were purchased whatever, simply the crops grown on the farm were fed and the manufactured products sold only. The loss incurred in this way for any one year is of course not a striking amount but it is the continual drain, year after year, of this system of farming, which is bound to lead to soil depletion.

GROUP B. AVERAGE INCOME AND OUTGO OF PHOSPHORUS FROM
10 DAIRY FARMS, ON WHICH IN ADDITION TO WHOLE
MILK SOME SMALL GRAINS ARE SOLD

Crops grown and fed on the farm	No. acres	Av. yield per a.	Lbs. phos. removed
Corn	31.7	46 bu.	335
Oats	37	51 bu.	264
Barley	10	37 bu.	83
Mixed hay	16	2 tons	128
Rye	5.8	12 bu.	33
Clover	2.3	2 tons	23
Wheat	2	24 bu.	16.6
Alfalfa	.2	3 tons	2.7
Speltz	.6	35 bu.	9.7
Total phosphorus			895.0
Loss, 15 per cent			134.0

Products sold	Average number	Av. weight or amt.	Lbs. phosphorus removed
Hogs	36	193 lbs.	20.8
Old cows	4	1,000 lbs.	32
Beef animals	4	650 lbs.	17
Whole milk		89,700 lbs.	74
Cream		3,400 lbs.	2.2
Oats		230 bu.	25
Rye		42 bu.	9
Wheat		48 bu.	13
Potatoes		110 bu.	4
Barley		170 bu.	30
Total loss			227

Feeds Purchased	Amount	Lbs. phosphorus contained
Bran	4 tons	100
Shorts	2.6 tons	33.8
Oil Meal	.5 tons	7.5
Cotton Seed Meal	350 lbs.	4.4
Ground Oats	.6 tons	4
Total phosphorus		149.7
Net loss		22.4

Total losses	383.4
Total gain	149.7
Net loss	233.7

Turning now to group B, it will be noticed that the system of farming is quite similar, judging from the crops grown and fed through animals on the farm, and also from the amount of feeds purchased. On the average there is about the same amount of concentrates used. In the sale of products from the farm, however, it will be noticed that whole milk is the main dairy product. Considerable small grain is marketed.

The total losses incurred in the handling of manure from the stuff grown on the farm and also the feeds purchased amounts to 156 pounds, which together with the losses from the products sold, amounts to 383 pounds. This loss is again partly offset by the gains in concentrates, amounting to nearly 150 pounds, yet leaving a deficit of over 230 pounds for the year, on the average, for the ten farms. These farms, however, are raising much better crops at the present time than were raised fifteen to twenty years ago when grain raising was the principal business. The table shows, however, that there is only a difference in degree between the present system of farming and that of the exclusive grain farmer.

The farmer is often slow to accept these facts, for has he not been told again and again that dairy farming means maintenance of soil fertility? But still more convincing, where dairying has followed grain farming, the yields have increased very markedly.

One of the farmers in group B was asked how the yields compared at the end of a ten year period with the yields obtained the first few years on a typical grain farm in St. Croix county. He replied, "Almost double." His individual balance sheet, however, showed a considerable loss of phosphorus from year to year. Why the increase? Before taking up this matter it should be borne in mind that **increasing the yield is not necessarily synonymous with maintaining soil fertility.** This man had increased the yield markedly but as far as the phosphorus supply of the farm was concerned he had followed in the tracks of his predecessor. The increase in yield is due to a number of causes. Rotation of crops is one. Repeated trial plots have shown that alternating crops will increase yields per acre. The rooting habits of crops differ; some are shallow and some are deep rooted. Insect pests and fungus diseases are checked to considerable extent where crops are rotated.

Introducing clover in the rotation as this dairy farmer did brings in a crop which differs indeed from any of the cereals or grasses ordinarily grown. Clovers and alfalfa are absolutely necessary and important crops to keep in the rotation. No dairyman will succeed unless this valuable group of plants occupies a prominent place in his rotation. Besides furnishing valuable protein feed for the dairy cow it also brings to the soil under normal conditions a very valuable plant food element, nitrogen.

Where this crop is fed through the animals on the farm and the manure returned, the soil is enriched unquestionably from year to year. Through the decomposition of the clover roots in the soil, mineral plant food, phosphorus, potassium, etc., are made more readily available. The succeeding crop is therefore benefited and larger yields result. This point, however,

should not be lost sight of, that the increase in yield brought about through the growing of clover and the introduction of a rotative scheme of farming tends to extract larger amounts of phosphorus from the soil than would be the case otherwise, and consequently the soil is being depleted more rapidly. Phosphorus, as is generally known, can only be brought in either through concentrates purchased and fed, or through the use of a phosphorus bearing fertilizer.

Mention, of course, should be made also that stable manure is used judiciously and returns to the soil a large percentage of plant food which came of course originally from the soil (except part of the nitrogen). In the transaction though several losses have occurred as noted under groups A and B, so that never is an equivalent amount of phosphorus returned. Rotation of crops, growing of leguminous crops and use of stable manure, necessary as each is, will not maintain soil fertility but on the other hand will lead to soil depletion eventually.

The phosphorus content of both groups ranges from 1,000 to 1,500 pounds per acre to a depth of eight inches, and on the average is low, considering the soil type. The nitrogen supply, on the other hand, runs between 3,000 and 5,000 pounds and is satisfactory. The nitrogen balance in nearly every case where clover and alfalfa or other legumes were included in the rotation, showed that the average dairyman can not only maintain but increase the supply of nitrogen on his farm. Indeed, on quite a number of dairy farms which have been examined it was found the nitrogen supply is being so rapidly increased in the soil through the growing of legumes and the use of high powered proteins, that the plant food supply is becoming unbalanced and small grains go to straw without filling properly. Lodging of grain is a serious problem on these farms.

Based upon a study of a large number of farms in the state, the following conclusions seem warranted:

1. Carefully conserve the manure produced. The liquid part contains nearly half the value of the manure. When once spilled, it is like spilled milk. A careful estimate of the loss in Wisconsin in the wasteful handling of manure shows that it amounts to at least \$25,000,000. As a general rule the best plan is to haul directly from the stable to the field. Where this is not practicable, manure should be stored in leach proof pits. Applications should be frequent and light rather than heavy and less often.

2. Maintain and if possible increase the phosphorus supply. Good business judgment demands this. For the sake of our children yet unborn, we can do no less. Concentrates contain phosphorus as well as other elements of plant food. A phosphate bearing fertilizer will be found profitable. On soils well supplied with organic matter the finely ground rock phosphate is the cheapest form to use. Two or three pounds per animal per day in the gutters of the stable is an ideal method of using. Acid phosphate at the rate of 250 to 300 pounds per acre will give results more quickly but costs considerably more.

3. Approximately two-thirds of the soils of the state are acid. This

condition affects the dairy farmer profoundly since he must depend on leguminous crops for his protein forage crops and also to supply nitrogen needed by other crops in the rotation. No dairyman can afford to use a nitrogen carrying fertilizer.

4. The fertility balance (phosphorus especially) should be checked as

APPENDIX

AMOUNTS OF FERTILIZING CONSTITUENTS IN FARM PRODUCTS, FEEDS AND FERTILIZERS

Crop	Amount	Phosphorus	Nitrogen	Potassium	Calcium
Corn	50 bu.	8.5	50	9.5	.4
	2 tons stover	4	36	35	20
Total		12.5	86	44.5	20.4
Oats	50 bu.	5.5	33	8.0	1.8
	1.5 tons straw	3	19	31.2	6.8
Total		8.5	52	39.2	8.6
Wheat	20 bu.	5.3	28.4	5.3	.4
	1.5 tons straw	2.4	15	31.2	6.5
Total		7.7	43.4	36.5	6.9
Barley	35 bu.	6	30	7	.7
	1.5 tons straw	2	13	21.5	5.7
Total		8	43	28.5	6.4
Clover	2 tons	10	80	60	53
Timothy	2 tons	6	34	48	4.8
Alfalfa	3 tons	14	150	72	100
Potatoes	900 bu.	13	33	90	3.4
Fat cattle	1,000 lbs.	6.8	23.4	1.46	
Fat hogs	1,000 lbs.	3	18	1	
Whole milk	25,000 lbs.	20.7	132	37.4	23.5
Cream	3,000 lbs.	2	12	3.2	8.2
Cotton Seed					
Meal	1 ton	25	135	36	
Oil Meal	1 ton	15.1	114	22	
Hominy	1 ton	11	34	16	
Gluten	1 ton	10	80	5	
Rock phosphate	1 ton	250			
Acid phosphate	1 ton	123			

painstakingly as the financial balance at the end of each year. The appended table, though incomplete, will be of some assistance in working out the balance sheet for various elements. The yields are only average ones. When larger yields are obtained correspondingly more plant food is removed.

5. The nitrogen supply is being maintained as a rule on dairy farms. This is true in every case studied where leguminous crops occupied one-fourth of the land under cultivation. The chemical analysis also substantiates this statement.

NATURE DEMANDS LIME FOR LIGHT SOILS

H. W. Ullsperger, Soils Specialist, College of Agriculture,
Sturgeon Bay, Wisconsin.

If your clover or alfalfa winterkills badly, although planted early and inoculated; if it dies out in spots, with the appearance of horse or sheep sorrel in the bare places; if it makes only a short growth and then turns



ORGANIZING PRODUCTION

Wisconsin can produce honey and every farm should have a few swarms of bees. But "foul brood" must be prevented or the hive stands will be vacated as are some here.

yellow and dies; it is an indication that Mother Nature is trying to notify you that your soil requires lime to sweeten or correct this sour condition or disposition. If the warning is not heeded at this time Nature still tries to warn you by smaller wheat or barley crops and eventually by smaller

corn crops. When on black sandy soil particularly, you find that your corn grows only a couple of feet high and then turns yellow and dies, it is further proof of the need of lime in your soil. Nature is plainly saying, "Change your method of farming, return some of the elements of plant food you have taken from the soil; if you do not return them, I will punish you by crop failure and finally starvation."

The successful farmer today is the man who cooperates with Nature, studies her laws as indicated by crop conditions and combines with the data thus secured, the knowledge of those men who have made a special study of the needs and requirements of the soil. Nature shows in a general way the needs of the soil, but the chemist has invented a method whereby the farmer can test his soil and find out to a fair degree of accuracy the amount of lime to apply to secure the best crops. Before lime is applied it is advisable for all farmers to test their soils with a Truog Acidity tester to determine the requirements in regard to lime. In the past many mistakes have been made in applying lime to soils. In many instances, it was applied when not needed; in other cases, small applications were made when heavy applications were required and often heavy applications were put on where a light application would suffice. In other words, the plans were made without a study of the actual field conditions, and quite frequently considerable money was wasted or spent injudiciously.

In general it may be said that nearly all light soils in central Wisconsin that have been cropped for any length of time need lime in different amounts. New land of this kind is usually not very acid, but the longer it is cropped the more acid it becomes, for every crop grown removes some lime. A ton of alfalfa hay, for instance, when grown and sold, removes 40 pounds of lime; a ton of clover hay, 32 pounds; and grains remove smaller amounts; but the total becomes very large when carried on for a long period of years. Timothy is not a heavy feeder on lime, which partly explains why timothy when seeded with clover lives through the winter while the clover kills out. The clover plant is weakened and improperly nourished, while the timothy plant can get sufficient lime for its needs and remains in a healthy condition. Different plants have different relations to lime. The most extensive experiments along this line were conducted by the Rhode Island Experiment Station where the work demonstrated that such crops as the potato, corn, oats, rye, timothy and alsike clover were only slightly benefited by a direct application of lime, while most of the garden crops, wheat, barley, red clover, alfalfa, peas, buckwheat, sweet clover, etc., were very materially benefited. The indirect benefit of an application of lime on all crops, however, was very noticeable when it produced a better legume crop, which in turn added nitrogen to the soil and made a large amount of this important element of plant food available for the next growing crop.

The addition of lime to the soil will, through increased bacterial activity, make more plant food available to the plants. In other words, the lime will aid in "cooking" the food in the soil, making it more digestible or

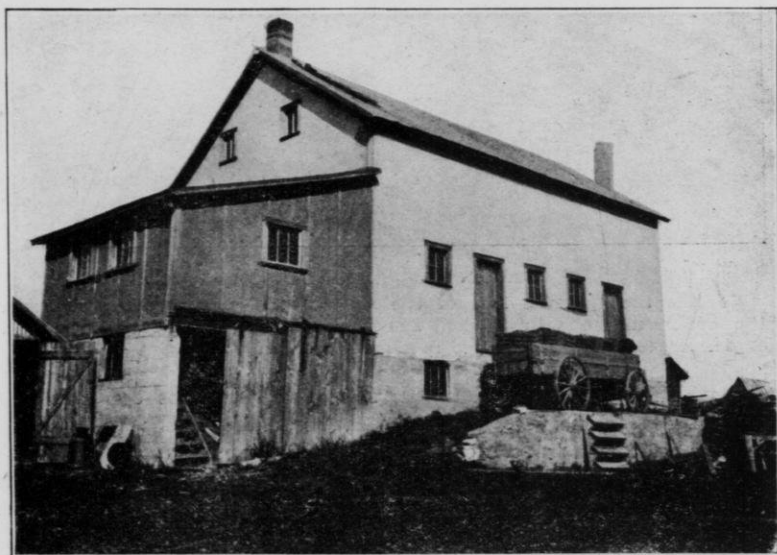
soluble for plant use. An extremely acid soil has no bacterial life and is a dead, non-productive soil. When all these facts are considered, it is plainly evident that lime must be used as the foundation for the building up of light soils, bearing in mind the old saying:

Lime alone, without manure,
Will make both farm and farmer poor.

In a rational system of building up light soils, lime should be used on the field planted to clover or some other legume crop on which the usual application of manure is made to give the clover a good start. Both lime and manure should be applied as a top dressing on the plowed ground and disked in, the rate of the application to be determined by a test made with the apparatus indicated previously.

Kinds of Lime

Ground lime rock is ordinarily used for neutralizing the acidity in the



ORGANIZING PRODUCTION

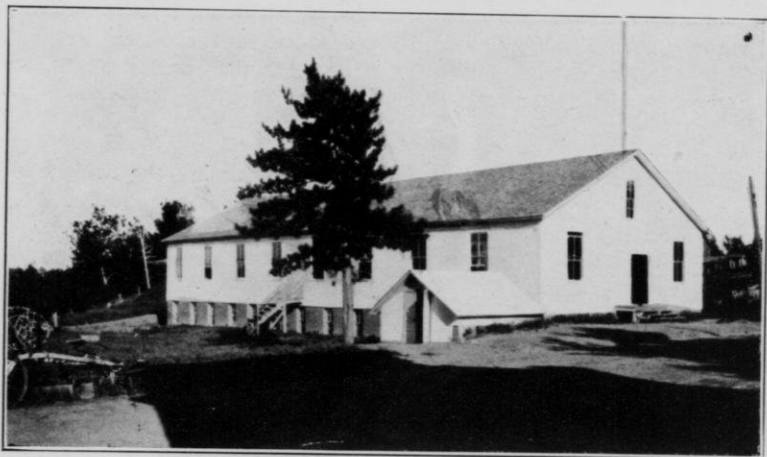
Good seed is the greatest essential to a successful corn crop in Wisconsin. Here is the seed corn curing house on the farm of Henry Michels near Malone, Wisconsin. Warm air is driven to all parts of the house by a power driven fan. This assures uniform drying.

soil; the more finely the rock is ground the more quickly will it do its work. For light soils a grade of lime which contains both fine and coarse material may be used; the fine material will dissolve immediately, while the coarser particles will go into solution more slowly, thus preventing losses by leaching and at the same time keeping the soil in a neutral condi-

tion for a longer period of time. The more finely limestone is ground the higher the cost will be.

Burnt lime and air slaked lime are often used with good results on the heavier soils but they cannot be recommended on the light soils as they have a tendency to burn out the humus or organic matter. There is no harm done in using these forms of lime if they are completely air slaked.

Ashes can be used for the same purpose as lime, for ashes are made up of from 40 to 50% lime carbonate. Ashes also contain phosphorus and



ORGANIZING PRODUCTION

Here is the splendid hall of the Holcombe Community Club. From the community meetings held here the people go out inspired and organized to grow better live stock and grains.

potash which add plant food to the soil. All the ashes that can be secured at a reasonable price should be used on sandy lands.

Marl is another form of calcium carbonate, found in the bottoms of old lake beds in central Wisconsin, which can be used for correcting acidity in the soil. Some of the marl is easily obtainable and should be used more extensively. Marl, when wet, appears similar to blue clay, but when dry turns ash color, or when absolutely pure, clear white. A simple test for marl is to buy ten cents' worth of muriatic acid at the drug store and pour a little over the sample of marl; if it bubbles up, it is marl; if it does not, it is blue clay. If enough acid is added, a sample of pure marl will almost entirely disappear.

The Use of Lime

During the past season of Institutes held throughout central Wisconsin, many farmers gave their experiences with the use of limestone, and a large variety of results was obtained. One man said, "I used a carload of lime and never secured any increase in crops." We tested his soil and

found it was not acid and did not need lime. The reason why his soil was not acid, while other soils in the locality were, was that Nature had placed a limestone bluff near his farm, and lime was continually washed onto his soil. It pays to test your soil first and lime afterward.

Another man said, "I limed a two rod strip across my field, but saw no results on the clover grown that year or the next year, but three years after the application was made, the only clover I had on that 40 acre field was where the lime was applied. It convinced me that I needed lime".

Another man said, "One spot in my clover field had clover two feet high; the rest of the field produced clover six inches high, then it turned yellow and died. A test showed this one spot was not acid; the remainder of the field needed lime very badly".

Another user of lime stated that he applied lime with a manure spreader, but did not spread it evenly and strips of good alfalfa were seen on the field where the lime was applied and in between the crop was a failure. Numerous other illustrations could be given. That lime is needed to improve light soils has been definitely proven. That the farmers are realizing the importance of using limestone is shown by the good results they are getting when using it properly and by the increasing demand for lime for agricultural purposes. One dealer writes that he has been working his plant to capacity and has been unable to keep up with his orders.

The farmer who is located on sandy soils must first find out his needs in regard to lime, then supply those needs with lime, if required, as well as manure; after doing this he will find that his crop yields will increase instead of decrease, he will be more prosperous, he will be able to give his children a better education, farm life will be happier and the family more contented, and instead of finding abandoned farms growing up to weeds in central Wisconsin, we will find good dwellings and prosperous communities.

SWEETENING A WHOLE COUNTY

James Lacey, formerly Emergency Demonstration Agent,
Monroe, Wisconsin.

While doing research work in Green county, Wisconsin, some four or five years ago, one of the men from the State College of Agriculture at Madison, found that the limestone subsoil in Green county was composed very largely of magnesium and calcium carbonates. Previous to that time, men who had attempted to grow alfalfa had found that the surface soil in that section was too sour to produce that valuable crop to the best advantage. The discovery of this limestone, with its high percentage of carbonates, suggested a new idea. Why not grind this high testing lime rock and use it as a neutralizing agent on the surface soil? And that's just what they are doing in Green county today.

The number of quarries which contain these carbonaceous deposits is almost unbelievable. Since May 4, 1917, twenty-two quarries, in as many different parts of the county, have been tested for percentage of carbonates. This work has all been done at the request of farmers who live in the localities where the quarries are located; and furthermore, the testing has all been done with a view to using the limestone as a neutralizing agent for correcting acidity in the surface soil.

After a quarry in a certain section of the county has been analyzed for percentage of carbonates, the farmers secure the services of the demonstration agent for the purpose of determining the amount of limestone



HOME GROUND LIME

Ex-Emergency Agent Lacey of Green county inspecting the work being done by a crusher which he inspired a community of farmers to purchase.

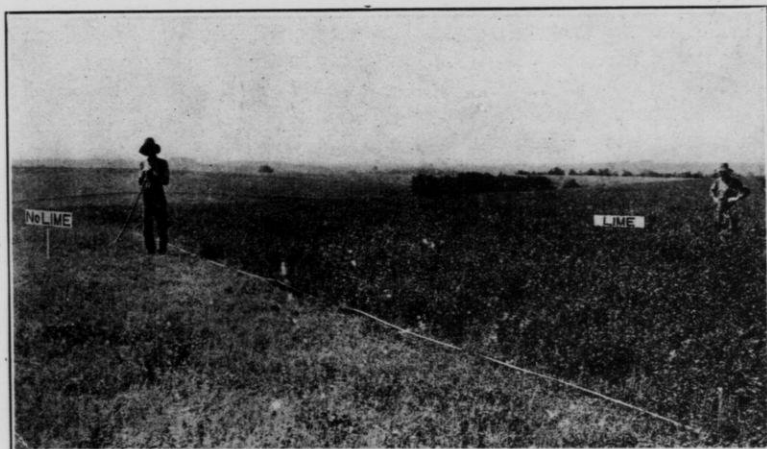
needed on the land which they intend to treat. By means of the Truog Test this work can be accurately performed, and unnecessary expenditure of labor and money can be prevented.

The rapidity with which the grinding work is progressing has not been entirely satisfactory. The severity of the past winter, together with the shortage of labor in this section, has greatly hindered the grinding and spreading of the stone to be used as a neutralizing agent. However, the work has begun, and as it becomes more widespread it will undoubtedly gain in popularity and importance.

The first real step in the right direction was taken in September when Mr. Douglas of Brodhead purchased a lime crusher and grinder, and installed it in the Preston quarry in Jefferson township. Mr. Douglas intends to devote most of his time during the coming year to the lime pulverizing work, and he believes that with efficient help he can crush and grind the soft lime rock at a cost of \$1.25 a ton. He furnishes all the necessary help, and the farmers have merely to haul the finished product away from the machine.

Several farmers in the vicinity of Monroe have purchased a grinding outfit and they intend to do the work with their own help. During the past summer these men have worked at the grinding when weather and soil conditions would not permit the performance of other farm work, and in these spare moments they succeeded in producing enough of the finely ground carbonate to treat twenty acres of acid soil.

As I have stated above, the importance of this valuable work is just beginning to be realized. In nearly every locality we find some man or some group of men who strongly advocates the purchasing of a limestone pulverizer. There are only two such machines in the county now, but before



LIME OR NO LIME

Do you want to grow alfalfa? Then use lime. But does it pay to use lime and grow alfalfa? Let's see. Alfalfa is equal to bran in feeding value. An average cut of alfalfa would be around three tons to the acre. Will it pay then to put on from \$5 to \$7 worth of lime to the acre? Figure the cost of bran and the cost of lime. Grow alfalfa.

a half dozen years have elapsed we are hoping to see lime grinders almost as numerous as threshing rigs are today. Farmers are anxious to have the work progress rapidly, and if weather conditions will permit and labor can be secured, more than 1500 tons will be ground during 1918.

Alfalfa growers here in Green county no longer doubt the good results

to be obtained from liming the soil. Many of them have in former years limed small plots for experimental purposes, and they are the men who are doing a great deal to promote the lime-grinding industry today.

Mr. Arthur Preston of Jefferson township applied 150 tons of ground lime two years ago and he intends to use 200 tons this year. Last fall when I was doing soil testing work on the farm of Sever Severson in Jordan township, Mr. Severson stated that if he could secure the necessary labor he would lime every one of his 145 acres within the next two years.

Another ardent advocate of the liming proposition is Mr. Fred Dettwiler of Monroe township. "I limed part of my alfalfa field two years ago" he told me, "and after the alfalfa became ten to twelve inches high I could tell the limed from the unlimed portion at a distance of half a mile. The alfalfa on the limed portion was much larger, had a dark green, healthy appearance, and when it was cut for hay gave a much better yield than did that from the unlimed section. The cost of liming was slight, and an increase of only one quarter ton per acre more than paid for the cost of liming."

In some parts of the county alfalfa growers have no trouble in securing a good stand, and these men are somewhat skeptical about the value of lime. In some of the sections where lime is most needed we also find men who are not exactly in sympathy with this new phase of agricultural development. Fortunately the detrimental influence which they have on the progress of the work is almost negligible. The task which Green county has undertaken is a big one, but if we are to judge from present conditions, the men within the county are going to put it across.

ALFALFA

Peter C. Swartz, Farmers' Institute Lecturer,
Waukesha, Wisconsin.

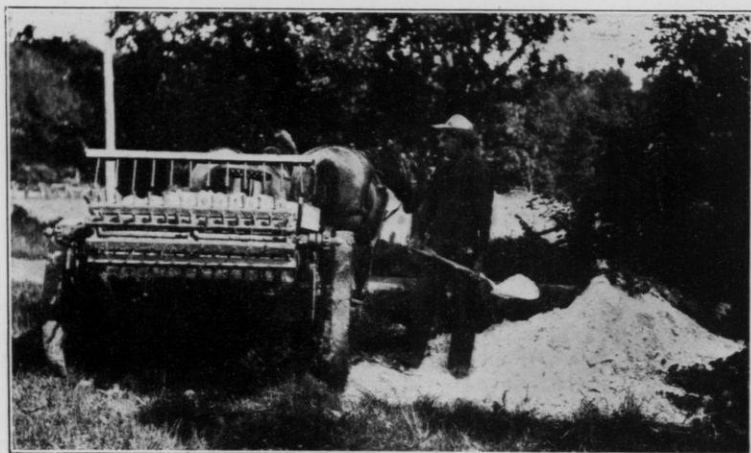
The very sound of the word alfalfa sends a thrill of love for the plant through the nerves of every farmer who is a stock owner. Far and wide in Wisconsin, alfalfa is recognized as a most precious plant for hay and as the greatest soil builder known, sending its roots down to great depths and bringing to the surface leached, untouched fertility. We can no longer grab up free land; it has all been discovered, and we must now look forward to digging deeper for fertility. Here is where alfalfa shines; it sends its roots down through the skin of the soil into the subsoil where there are stores of phosphate and potash, making these two elements of plant food more available, and draws the third element of plant food, which is nitrogen, from the air.

Certainly alfalfa is a precious plant and called Queen of all clovers; and yet many only know the value of alfalfa as a food product when fed to live stock. Do we stop and think what alfalfa has done to our soil



ORGANIZING PRODUCTION

On most farms in Wisconsin where alfalfa is grown it is done in a small way and the crop is more or less incidental. But alfalfa may be a major crop as it is on Cornfalfa Farms. The beginning of successful alfalfa is fertility. See the rock phosphate being poured onto the manure.



ORGANIZING PRODUCTION

Yes, lime must go along with fertility to make success with alfalfa sure. Swartz Bros. use plenty of lime.

when we plow up a field, besides giving us the best hay that grows? It mellows up a hard soil; it holds a light soil from washing; it stops erosion on hilly soil; it drills holes in the subsoil so more moisture can come to the surface from farther down in the subsoil through all these holes. The decaying alfalfa roots add tons of humus, organic and vegetable matter to the soil which is filled with available nitrogen, phosphate and potash. That is why all crops on a plowed alfalfa field outyield other crops. Alfalfa really transforms worn out soils into deep, rich, high producing soils for growing all kinds of farm crops.

The question which now arises and is asked by all of us, is, "Can Alfalfa be made to grow on my farm?" The answer is "Yes." I am going to sift it down to only four essential things which alfalfa must have in order to thrive, and look green and happy, no matter what kind of a soil formation you have. These four things are, drainage, humus, lime and inoculation.

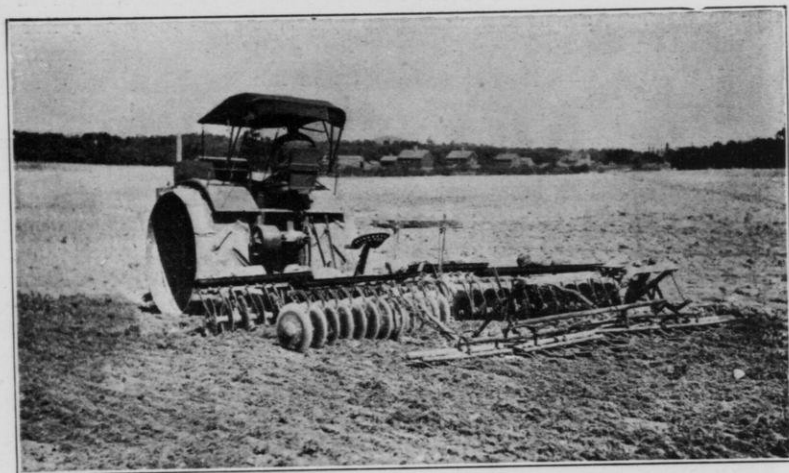


ORGANIZING PRODUCTION

The ordinary manure spreader with a little fine manure in the bottom will scatter the lime all right.

Why drainage? Because alfalfa loves a dry surface; its crown is the life of the plant and if the crown is submerged in water or a sheet of ice for any length of time it soon decays and dies for want of air. Select the highest, driest, or most rolling fields and try to have the water level at least three feet below the surface. Such a field where surface water drains off immediately will make an ideal home for alfalfa as far as drainage is concerned.

Now, humus; what is humus? The roots, stubbles, weeds and manures that we plow under or work up in the soil produce humus. Humus opens up a heavy soil, lets air into it and binds together a loose, sandy soil and



ORGANIZING PRODUCTION

Tillage and a good seed bed help some in assuring an alfalfa crop. The Swartz Bros. use a good stout horse and giant soil tearers to prepare the field.



ORGANIZING PRODUCTION

Of all things Swartz Bros. don't forget inoculating the field for alfalfa. They do it by the wagon load too, following right after with a smoothing harrow.

keeps the fertility from leaching. All kinds of bacteria work in humus, making plant food available so the little rootlets of plants can feed on the available fertility; a soil full of humus is rich, has air in it, is a live soil and will hold more moisture during a dry spell. Humus aids greatly in giving the tiny alfalfa plant a good start in life towards growing into a strong, sturdy plant.

Why must we have lime for alfalfa? Because it is a sweet, lime loving, leguminous plant. Not only does alfalfa love lime, but nearly all other crops are benefited by having plenty of lime in the soil. It is a known fact that many of our soils are becoming deficient in lime, especially the top soil as deep as we plow. Farming for the past fifty years has drawn heavily on the lime supply, for every crop that has been taken off during all these years has taken with it some lime, and soils upon which green



ORGANIZING PRODUCTION

After inoculating the field come the sowing, rolling and light harrowing.

crops are plowed under and which receive heavy applications of manure, take an enormous amount of lime to sweeten the acids which they bring about and to neutralize them; and lime is the only thing that will sweeten sour acid soil.

Alfalfa is a leguminous plant. This means that bacteria live and work on the roots of the plant. Alfalfa will not thrive or live long unless these bacteria are on the roots. Now these bacteria cannot live, thrive or multiply in a sour acid soil; the soil must be sweet. The little white bunches or nodules you see on the alfalfa roots or on the roots of any legume, are not the bacteria but are the homes in which the bacteria live and when these homes have been built on any leguminous plant and cling to it, that plant is inoculated.

How can we tell whether our soils are sweet or sour? The simplest way is to get ten or fifteen cents' worth of sensitive blue litmus paper of the druggist. Push a spade down into the soil and insert a piece of the litmus paper where it will come in contact with the moist soil, tramp down, and leave for about a half hour; repeat this in several places in the field. When you take the paper up if it is still blue, the soil is sweet and has plenty of lime; if it shows pink spots or the blue has turned reddish, the soil needs at least four tons of ground limestone to the acre. No more lime will be necessary for several years. You can never get too much limestone worked up in your soil.

Air slaked lime can be used and should be used where it is handy to haul direct from a kiln; but it should lay in the open air for nearly a year to become thoroughly air slaked before being applied to the soil. You must get rid of the causticness before you apply or it will burn and eat up a great amount of humus in your soil. Two tons of air slaked lime is plenty on one acre. Lime refuse from sugar beet factories is



ORGANIZING PRODUCTION

Then cometh the harvest. Farmers of Wisconsin wonder how 200 acres of alfalfa can be cut two and three times a season and not have the hay spoil from rain. Swartz Bros. "make hay while the sun shines."

good. Where clover is not doing well it is affected with clover sickness and in many cases it is caused by a lack of lime.

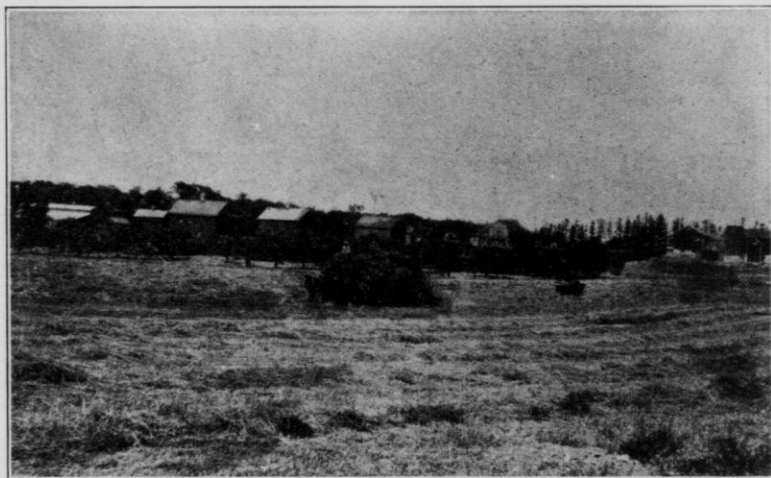
Now, inoculation. If your alfalfa turns yellow and looks sickly and puny, make up your mind you will not find the little white bunches or nodules on its roots and bear in mind that these alfalfa bacteria are a certain kind that live only on the alfalfa and sweet clover roots. So a field that has never grown alfalfa should at once when seeded to alfalfa be inoculated.

There are two methods of inoculation, the soil transfer and inoculation

of the seed with commercial cultures. Where sweet clover or an old alfalfa bed is handy you can get plenty of inoculation. Plow as much of the ground as necessary, then throw dirt, roots and all upon a dump board wagon; if the sun shines this should be covered with a canvas as the sun's rays will kill the bacteria. Drive into the field to be inoculated and broadcast from the wagon, throwing from both sides, by hand; 500 pounds or more of the dirt to the acre will be necessary and if the sun is bright have a drag follow up to work the bacteria in.

There are several commercial cultures advertised for inoculation and these are good if the cultures are fresh. Our Experiment Station at Madison makes these cultures and I believe for only twenty-five cents an acre.

I am going to add two more important things which must not be overlooked to make a success with alfalfa. One is the seed. In buying seed, secure a good grade of seed, some that has quality to it when you look at it; that means plump, well matured seeds, free from sand, dirt and weeds. Such seeds are generally higher in germination and stronger in vitality. Don't buy any that contains much shrunken or dead seed. If alfalfa has winterkilled easily for you try some Grimm alongside the common and see which is hardier.



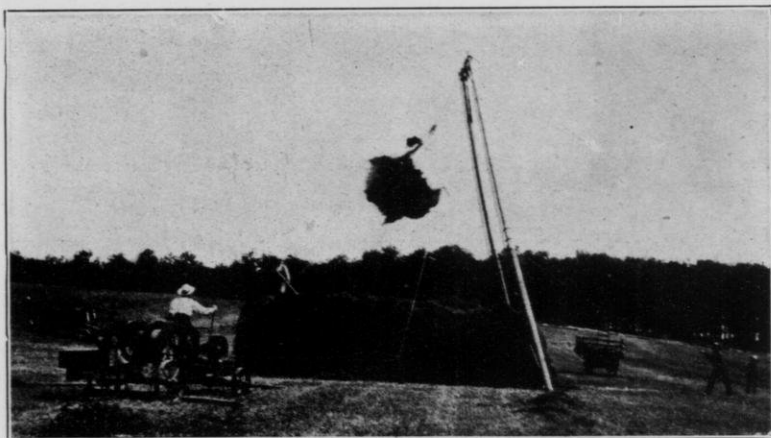
ORGANIZING PRODUCTION

The side delivery rake and the hay loader come right along. The big barns are filled in this way.

The second important thing is the seed bed; and many failures can be traced back to a poorly made seed bed. At Cornfalfa Farms we had a failure one year by not using the roller. Alfalfa needs a fine, firm seed bed and a roller or cultipacker does really three things in one operation; first, it crushes all lumps; second, makes a firm bed; third, prevents bury-

ing too deeply the tiny alfalfa seeds. To make a success with alfalfa it is wise to plan nearly a year ahead on your field. Get the field as rich as you can and plow it in the fall, one or two inches deeper than it has ever been plowed before. The weather is cooler, the horses used to hard work and nothing rushing as in the spring, so the man behind the plow is bound to do a better job. This one or two inches of new soil will be mellowed up during the winter by thawing and freezing; it will contain more lime and will be free from weed seeds; and it makes a deeper soil so the alfalfa tap root will be longer and stronger when it hits the compact subsoil in which it must bore.

This gives one all the winter to get the heavy lime home on nice sleighing. If the snow is deep, put a pile in the field and spread it just as the snow is leaving and the ground is still frozen. A tight bottom manure spreader half full and run on a low gear works nicely and even broadcasting it with a shovel from a wagon isn't bad. Then in early spring



ORGANIZING PRODUCTION

When the barns are full, stacking begins. Note the machinery and the horses on the sweep rake at the left. No time is lost.

when the ground works nicely, disc or cultivate it thoroughly, which will work the lime in. Just ahead of the drag, be sure to inoculate if you are going to use the soil transfer.

Next comes the roller or packer and then the field is ready for the nurse crop and alfalfa. We use one bushel barley and twenty-five pounds alfalfa seed broadcast, where alfalfa never grew before, and from sixteen to twenty pounds alfalfa seed where it has grown before; then a light dragging and the job is finished. We cut the nurse crop for grain or if it is extra dry we sometimes make hay of it soon after it heads out. If it lodges, it should at once be cut and taken off the field to keep the alfalfa from smothering. If you intend to work the ground to kill weeds and sow



ORGANIZING PRODUCTION

When barn filling and stack building become monotonous, the baler is set going in the field and the baled product at once carted to market as an immediate cash crop.



ORGANIZING PRODUCTION

After five or six years of this then the old alfalfa fields on Cornfalfa Farms set out such grain fields as make even the hired girls smile. Thus it is seen that a single farm may so organize its production as to win economic fame.

alfalfa without a nurse crop along in June or any time be sure you kill the weeds before you sow alfalfa as no amount of clipping with the mower will kill them.

Years ago alfalfa did not seem to grow well at Cornalfalfa Farms and many times we were discouraged but we stuck to alfalfa and sowed some every year until today it grows like weeds wherever we sow it. The best salesmen for alfalfa hay in all the world are all the live stock on the farm; it is the greatest bone and muscle builder known for young stock, and a dairy cow that is fed alfalfa produces nearly four times the food value in milk that the steer does in meat. With prices of mill feeds soaring, every stock owner should aim to grow more alfalfa which will give more and better feed, raised at home, off less acres, and will show the patriotism of the farm in the production of an over-flowing measure of foodstuffs.

NOTE:—Be careful to secure your Grimm alfalfa seed from a grower known to have the real Grimm seed. Better write the Secretary of the Alfalfa Order, Madison, Wisconsin, for advice in this connection. You want good seed that will resist winterkilling. Get the real Grimm.

If you want inoculation for your seed, address Professor E. B. Fred, College of Agriculture, Madison, Wisconsin, and be sure to tell him when you will sow and how many acres and send him twenty-five cents for each acre you will sow, and he will send you freshly prepared inoculation a few days before you wish to use it.—Supt.

BARLEY — AN IMPORTANT CROP

T. H. Campion, West Salem, Wisconsin.

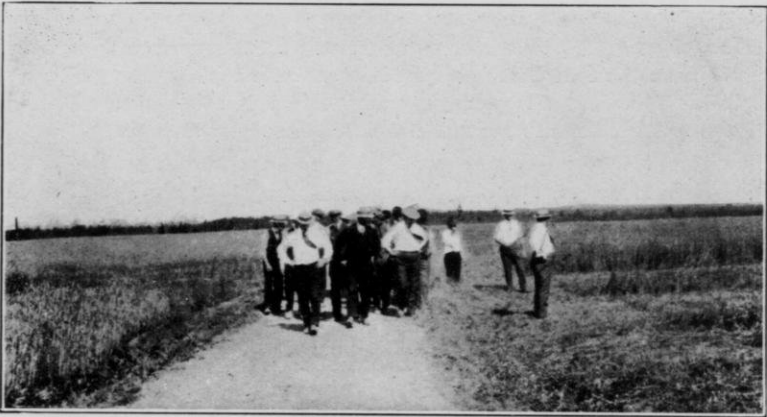
Barley has always been an important crop in Wisconsin. In 1918, more than 25,000,000 bushels were grown within the borders of the state. It is a fact, that Wisconsin grows one-eighth of all the barley produced in the United States. Coupled with an ideal soil and climatic conditions, there are two main reasons for its production. First, a good cash market which has always been near at hand. Second, the growers have had a superior barley to grow. Over 95% of the barley grown in the state is of the pedigreed variety. This barley has not outyielded other barleys, but it has a much higher protein content which gives it greater feeding value.

Has barley been a profitable crop? The ten year average (1908–1917), showing the acre value of small grain crops, proves that it has.

Grain	United States	Wisconsin
Barley	\$16.74	\$21.38
Wheat	15.80	21.03
Rye	14.32	15.48
Oats	13.63	15.22
Buckwheat	16.65	13.26

Now that the props have been knocked from under the brewing industry, it is a question as to whether the barley raiser who heretofore has been possibly dependent upon a cash market, will continue to grow it. Is barley going to continue to be a profitable crop? That is the question which the farmer of Wisconsin is asking himself today. If he has given the problem careful study, there is no question about his continuing to grow barley. He is going to grow it for feed.

Professor R. A. Moore, originator of the Pedigreed Barley, says "Twenty years ago Wisconsin fully realized just what would happen to our state in a few more years if we continued growing barley and putting it upon the malting market, so consequently in our efforts to improve the barley of the state, Wisconsin bred for quality as well as for yield. We bred a barley that has a protein content of from 13 to 15. This is considerably



ORGANIZING PRODUCTION

County Agricultural Agents of Upper Wisconsin at the Sub-station Farm of the University of Wisconsin at Ashland Junction studying the crops which have been developed especially for northern conditions.

higher than corn, as the protein content of corn runs from 9 to 10. We felt that by breeding into the barley this high protein content, our farmers would soon fully realize the importance of this great crop as a feed and would discontinue the practice of putting it on the general market. We felt very keenly that Wisconsin would profit by using this great crop for the production of meat, cheese, butter, cream and milk. Wisconsin gave to the world the pedigreed barleys which are now not only grown throughout this country, but throughout European countries as well. These high protein barleys have become noted far and near, and more and more are being used for food. The sudden rise in price of concentrates has forced many farmers to use barley as a feed, and they know practically for the first time of the great value of this crop as a feed".

It has even been said by good authority that if every bushel of barley

that has been placed upon the market during the past fifty years had been marketed thru the farm animals, the farmers would have had a much better return than thru any other market. Recent experiments have proved its value as a dairy, poultry, sheep, hog and beef cattle feed. For fattening purposes, it ranks close to corn. The conclusions listed below are those of leaders who have carefully experimented with barley as a feed.

Barley an Excellent Feed for Swine

Barley is the most common feed for hogs in Great Britain, northern Europe, and even in the western part of this country. Because it has until this year usually been high in price compared with other feeds, it has been used relatively little for feeding hogs in this state. Now barley is the cheapest grain feed for hogs.

A number of experiments at different stations comparing barley with corn where both were hand-fed to pigs have shown that it requires about 10 per cent more barley than corn to produce a given amount of pork. Trials we are now carrying on show that pigs self-fed barley with some protein-rich supplement make large and very economical gains. Taking all the results together it is safe to say ground barley is worth fully 90 per cent as much per 100 pounds as shelled corn for hogs. For swine feeding it pays to grind this feed.

Pigs fattened on barley yield firm carcasses with meat of excellent quality, even better than those finished on corn.

For fattening purposes barley is much superior to oats in that it has less fiber. For this reason, when properly balanced by a protein feed, barley may be fed as the only grain in a fattening ration, whereas oats gives too much bulk to a fattening ration when fed to a greater extent than one-third or at the most one-half of the feed mixture.

Very good results are obtained by self-feeding ground barley, with either tankage in another compartment of the self-feeder, or with skim milk or buttermilk fed approximately pound for pound of dry ground barley consumed, or with a liberal allowance of whey. When linseed oilmeal or middlings are used as the supplement, the results are not quite so good. More skim milk than indicated had best be fed to young growing pigs, while even less is needed to balance the ration of those nearing market condition.

Since the present market price of barley is relatively low, and since the price of hogs promises to continue high for some time in the future, a farmer may well consider the possibility of feeding his supply of barley to pigs before selling it.—G. Bohstedt.

Barley an Excellent Feed for Sheep

Barley is extensively used for fattening sheep in districts where but little corn is grown. Good varieties of barley have been found nearly equal to corn for fattening lambs or older sheep when alfalfa or other legume hay is available. Where other hay or roughage must be fed, barley plus 10 per cent of oil meal or cotton seed meal will produce very satisfactory gains.

Barley for breeding ewes: Equal parts of barley and wheat bran, by weight, will make an excellent grain mixture for breeding ewes during the winter if their condition or the quality of the rest of the ration requires grain feeding. One-half pound or more of this grain mixture per head daily will answer all requirements nicely. Ewes require a larger amount of grain in their ration after lambing. Ten per cent of oil meal added to the mixture of barley and bran will stimulate milk flow. The amount of grain should be increased to three-fourths of a pound or more per head daily, depending upon the judgment of the feeder.



ORGANIZING PRODUCTION

County Agent Gunderson distributing several thousand bushels of pedigree grains among the farmers and thus standardizing the grain production of Vilas county.

Barley for young lambs: The following grain mixture is recommended for little lambs: ten pounds ground barley, ten pounds ground oats, twenty pounds bran, one pound oil meal.

This mixture is excellent for little lambs that have access to a separate trough by means of a lamb creep. It is recommended, when it is desirable to grow the lambs rapidly for early market.

Sheep fitted on rations containing barley and shown in dressed carcass competitions, have won numerous prizes, which indicates that barley produces mutton of excellent quality.—Frank Kleinheinz.

Barley for Beef Cattle

By growing and feeding more barley Wisconsin can greatly increase its beef production. All experiments with ground barley as a feed for

beef cattle point to this feed as an important one for both breeding and fattening beef cattle. Because of the low cost of barley during the present winter, a considerable quantity was purchased and fed to the University of Wisconsin beef herd with excellent results. It has, during the present winter, formed the most important part of the grain ration for all classes of breeding stock, including eight baby beeves which have made a very creditable increase in live weight as the result of being fed a grain ration composed of 80 per cent ground barley and 20 per cent oil meal. For several weeks these baby beeves, averaging about 900 pounds live weight, consumed a ration of twenty pounds of corn silage, ten to twelve pounds of barley-oil meal mixture and two pounds of hay. During a period of eight weeks they gained on the average nearly two and one-half pounds per head per day. Suckling beef calves of late fall calving have also taken well to barley as a grain ration. They consume on the average three pounds of silage, four pounds of the ground barley-oil meal mixture and one pound of hay per day per animal.

The condition of the animals' appetite and the gain in live weight all indicated that barley can be used to advantage as the grain feed for growing and fattening young cattle.—J. G. Fuller.

Barley as a Feed for Poultry

Some of the barley crop may be fed to poultry to good advantage. It can be used as a part of the scratch feed and also when ground as a part of the mash. It should never be fed alone; it should always be combined with other grains such as corn and wheat, corn and oats. It contains too large an amount of fiber to give the best results unless combined with such grains as corn, or corn and wheat.

During the past winter some of the flocks at the Experiment Station farm have been fed a mixture of four parts of corn, one part oats and one part barley with good results.

Feeding Practices

One of the most satisfactory methods of feeding barley that has come to our attention has been feeding soaked barley for the noon feed. Barley is placed in a pail or other receptacle and boiling water added. This is usually done in the morning and the feed then covered with a sack to retain the heat and left standing until noon when the soaked barley is fed in place of a moist mash. This method of feeding has seemed to give uniformly good results.

Barley can also be successfully used as a part of the scratch feed. I would suggest three parts of corn and one of barley, this to be fed in a deep litter of straw on the floor of the poultry house. When meat is available wheat could be substituted for part of the corn if desired.

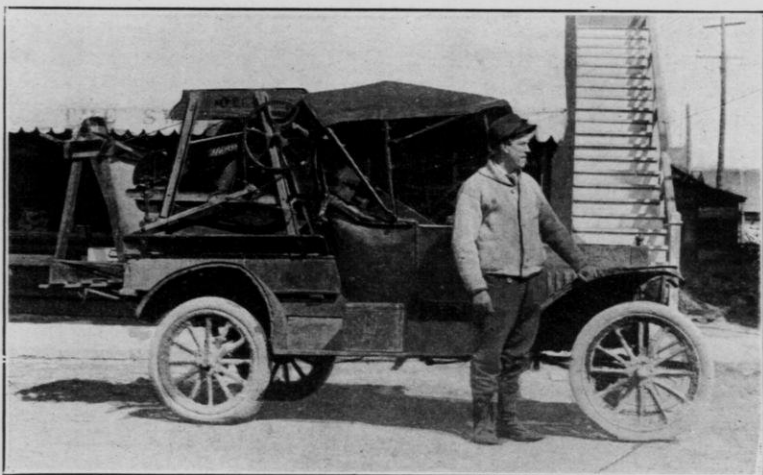
Barley can also be incorporated as a part of the mash to good advantage. As a standard mash, I would suggest equal parts of bran, middlings, ground corn, ground barley and meat scrap.

For fattening fowls, barley can undoubtedly be used to much better advantage than is usually realized.—J. G. Halpin.

Barley a Good Feed for Dairy Cows

Tack this statement up in your dairy barn and try one of the following mixtures on your cows:

- No. 1—Ground barley, 200 pounds; ground oats, 200 pounds; wheat bran, 200 pounds; oil meal, 100 pounds.
- No. 2—Ground barley, 100 pounds; ground oats, 100 pounds; ground corn, 100 pounds; oil meal, 100 pounds.
- No. 3—Ground barley, 400 pounds; gluten feed, 300 pounds; wheat bran, 300 pounds.
- No. 4—Ground barley, 400 pounds; wheat bran, 200 pounds; gluten feed, 100 pounds; oil meal, 100 pounds.



ORGANIZING PRODUCTION

County Agent Gunderson carried on a seed grading and seed treating campaign among the farmers of Vilas county and thus helped that county to do its bit in the war.

- No. 5—Ground barley, 200 pounds; ground oats, 400 pounds; gluten feed, 200 pounds; oil meal, 100 pounds.
- No. 6—Ground barley, 400 pounds; ground oats, 400 pounds; oil meal, 100 pounds; cotton seed meal, 100 pounds.
- No. 7—Ground barley, 200 pounds; ground oats, 200 pounds; gluten feed, 200 pounds; wheat bran, 300 pounds; oil meal, 100 pounds.
- No. 8—Ground barley, 600 pounds; wheat bran, 150 pounds; Dr. Brewers' grains, 100 pounds; oil meal, 75 pounds; cotton seed meal, 75 pounds.

Mixture No. 8 includes an unusually large amount of barley for a dairy

ration. It has been fed, however, in combination with alfalfa hay and corn silage with good results to cows at the Wisconsin Experiment Station.

Barley contains 9 per cent digestible crude protein and 79.4 per cent total digestible nutrients and falls in a class with corn meal for dairy cows. It should be finely ground and fed with other concentrates like some of the foregoing mixtures. The more timothy or mixed hay there is in the ration, the more necessary it will be to choose a mixture containing a large proportion of oil meal and other high protein feeds.

Barley at 35 cents per bushel costs \$1.77 per cwt., while corn at \$1.35 per bushel costs \$2.41 per cwt. At these prices, barley is the more economical feed.

Put the corn crop in the silo and the barley crop into the feed bin. This practice will materially increase the profits from milk production at present prices of feeds.—George C. Humphrey.

To further determine its profitableness, we shall compare it with its competing crop, oats. The following comparison of oats and barley is a 10 year average for Wisconsin:

1. Pounds of Feed per Acre

Barley	1,455 lbs.
Oats	1,133 lbs.
Difference in favor of barley, 322 lbs.	
2. Total Protein Yield per Acre

Barley	166.1 lbs.
Oats	140.4 lbs.
Difference in favor of barley, 25.7 lbs.	
3. Digestible Protein per Acre

Barley	130.0 lbs.
Oats	109.9 lbs.
Difference in favor of barley, 20.1 lbs.	

It not only yields more pounds of feed per acre than oats, but it is less apt to have disease and is without question a better crop with which to seed clovers and grass seed.

For those counties that cannot ripen corn, barley can readily supply its place. It would seem to be unwise to attempt to grow corn where there is any element of danger providing barley can be grown successfully.

With all feed prices likely to be high for a period of years if not always, the future outlook for barley as a feed is bright. It will and should continue to be grown on all Wisconsin farms where soil and climatic conditions are adapted to its productiveness.

SOY BEANS

C. S. Ristow, Farmers' Institute Lecturer

Black River Falls, Wisconsin.

The soy bean was introduced into the United States from Japan some fifty-five or sixty years ago and has since been grown successfully in the Southern States. In Japan and China it is grown as a human food but in this country it is generally raised for seed, forage and as a soil builder.

The soy bean withstands the drought exceedingly well and gives a good cutting of green forage when other feeds are wilted and shriveled up. It is also a great nitrogen gatherer and enriches the soil for the succeeding crops. As far as I know, it is the quickest and best soil builder of any plant that can be grown on our farms. What I mean by the quickest is that the seed sown in the spring will have gathered in three or four months more nitrogen than any other known plant, this nitrogen being a great benefit for the soil.



ACRES OF SOY BEANS

Cattle food equal to bran growing by acres on the farm of C. S. Ristow, Institute Lecturer, Black River Falls. A bran crop above ground and \$75 worth of fertility to the acre returned below ground in the roots of the beans.

Then, too, the soy bean is what we might call a true friend in time of need, for in case the ensilage is gone or the pasture is short, it makes an excellent soiling crop in case the hay crop fails—cut for hay it is equal to alfalfa but if hay is plentiful the bean crop should be saved for seed. The soy bean is also valuable mixed with corn for ensilage—mixing at

the rate of one part of soy beans to four or five parts of corn; as corn silage is rich in carbohydrates and low in protein, by mixing the two we have practically a balanced ration. In case the clover and alfalfa winter kill, as they did with us in the winter of 1915-1916, and if soy beans were sown in these fields with a grain drill for hay the clover or alfalfa would not be missed much if at all.

Until very recently it was thought that the soy bean could not be grown as far north as Wisconsin but I have found that it can be grown in this state wherever corn can be raised. Even in the vicinities where the beans



SOY BEANS FOR SEED

Soy beans growing for seed on the Ristow farm at Black River Falls. Around 20 bushels of Ito San beans to the acre at \$4 or \$5 a bushel is not so bad. And the threshed straw is equal to timothy hay as a feed and much preferred by dairy cows.

are liable to be killed by frost, they still will make excellent hay. So you see one cannot make a mistake by planting soy beans in Wisconsin.

When the soy bean is to be used for silage, it may well be planted in with the corn. This will not reduce the yield of the corn—in fact if any difference is discoverable it is for the better. To plant the beans thus with the corn there should be an attachment for the corn planter so that the beans may be in a separate hopper in order to drop in shoe with the corn. If the beans are mixed in the corn hopper they seem to work down much faster than the corn, the result being an uneven stand of beans and corn. Some men object to the planting of soy beans with the corn because they think they cannot gather them all with the corn. Even though some of the beans are left in the field, if the cows are turned in they will find them and the result will be an increase of milk, or if some of the beans

should have shelled, the hogs can be turned into the field and they will pick the beans up clean and will make splendid gains.

When the beans are not planted with the corn use the grain drill, closing the drill spouts so as to plant in rows thirty inches apart, having first prepared the soil as carefully as for corn. Then harrow the field and continue the use of the harrow or weeder at intervals so as to kill the weeds—this can be done without injury to the beans as I have used the weeder until the plants were ten inches high without any injury to the plants whatever. By this frequent harrowing and using the weeder when beans are too high for harrowing, you will be able to keep the weeds down.

The past season my field of soy beans was killed by the frost when they still needed ten or fourteen days to mature. The day after the frost I cut one-third of the field with the grain binder, tying the bundles as far from the butt as possible so as to insure a wide butt—standing two



SOY BEANS ON LIGHT SAND

County Agent Coyner did a splendid work with soy beans in Portage county. Note this fine crop coming along on very light sand.

bundles together, they dried out well without much mould in the band. Ten days later I cut the remainder with the exception of six rows. This second cutting was seemingly as good as the first, the plants still having nearly all of the leaves on. I found no difference in the curing and feeding of the two cuttings—part of each cutting was in the field for twenty or thirty days on account of rainy weather and they seemed none the worse for it and the cows ate them greedily. I left the six rows to see if they would make seed. They were left until early in November (being frozen when green the beans had not shelled any) and were cut with the mower, gathered up and put into the shed. They were then dry enough

to thresh. There being but a few I flailed them and even this straw was relished by the cows. I tested these beans and found the germination test to be 96%. This was the Ito San variety of soy beans.

Thus it can be seen that we cannot make a mistake by planting soy beans; even when planted with the corn valuable returns are insured for the corn yield is not reduced and the value of the fertilizer added to the soil is much greater than the cost of the seed used, one bushel of beans planting about ten or twelve acres when planted with the corn.

Many farmers make the mistake of not inoculating with soy bean bacteria. Do not attempt to plant soy beans without some method of inoculation; either inoculate the field with soil from another field that has



SOY BEANS IN UPPER WISCONSIN

Griffith Richards, ex-County Agent of Price county, at a demonstration meeting at his plots on the county fair grounds lecturing to the farmers on this great crop. Note the height of the beans. Yes, soy beans will come through in Upper Wisconsin.

successfully grown soy beans or treat the beans with soy bean culture. The latter is easily done. Take a common wash tub, put in the beans to be planted that day and pour over the required amount of culture and stir thoroughly; in ten minutes they will be ready to plant. Do not allow the sunlight on the beans after they have been inoculated as sunlight kills the bacteria which are necessary to the successful growth of soy beans. Properly inoculated, the beans should grow tall enough so that the corn binder will take the greater part of them along with the corn.

Now to illustrate how cows like the soy bean hay, I shall tell you

of my experience: A few days after I had cut the frosted beans my ensilage was all gone and I wanted to give my new clover seeding more of a start. So I started to feed the soy bean bundles; I had an old Buick touring car made into a truck which I used to haul the beans into the pasture and it was not long before the cows learned to know the sound of the truck for whenever this car was started the cows began to bellow, for they knew what was coming or, rather, they thought they did. Now we could go and come with the other car and the cows never paid any attention to it. Later I turned the herd into the new clover seeding where they had an abundance of fine clover but I recall going out with the truck when the cows came running and bellowing from the farther end of the field, doubtless fully expecting a treat of soy bean hay. This convinced me that soy beans were surely relished even though the cows were enjoying a new clover pasture.

Then I say—plant soy beans, but do not forget the inoculation.



SOY BEANS IN CORN

Here is County Agent Brown of Clark county holding back the young corn so that the coming crop of soy beans may be photographed. This young man has a total of 15,000 acres of corn on the farms of Clark county with soy beans growing with the crop.

THE DAIRYMAN'S WONDER PLANT

Superintendent

NEVER PLANT SOY BEANS WITHOUT FIRST INOCULATING THE SEED OR THE SOIL WITH THE PROPER SOY BEAN BACTERIA.

Planted in rows from 24 to 26 inches apart, soy beans can be cultivated, weeds kept down and the soil moisture retained. They will then make a wonderful crop.

Plowed down they will enrich the soil, filling it with nitrogen, the most expensive fertilizer. Doubly large crops will follow.

They may be cut for hay when the plants reach their greatest growth. A fairly good growth will yield about two tons of hay per acre. Or they may be cut and run into the silo with corn at the rate of one load of soy beans to two loads of corn.



SOY BEANS INSTEAD OF WEEDS

In drilled corn you will usually see plenty of weeds. Why not have a crop pound for pound equal to bran, growing in place of the weeds?

Many farmers plant them right in with their corn in the proportion of one part of soy beans to two parts of corn. Then they are cut right along with the corn and ensiled. In this case use a variety of seed which will produce tall plants.

They may be left to mature for seed. From ten to twenty bushels of seed should be secured from an acre. The price in ordinary times was around \$2 a bushel; it is now \$5 or \$6. It is a paying crop.

Hogs turned onto a patch will make from \$50 to \$100 worth of pork to the acre at present prices with no work on the part of the farmer to

harvest the beans. Then the succeeding crop on that patch will be a big one.

Ground soy beans are nearly equal to oil meal in feeding value. The dairy farmer must find a way to avoid buying so much high-priced protein feed.

Drought does not hurt them as much as it does other hays.

Planted after the last frost in the spring they will mature before the September frost.

They may be planted with corn.

They are a fine, pleasing crop to watch grow.

They are a great crop, especially for light soils.

Clover and alfalfa are not always dependable on account of winter-kill-



A SPLENDID BATTLE

Corn and soy beans fighting it out to the benefit of each and also to the benefit of the stock on the farm.

ing, and clover is hard hit often by droughts; but the soy bean may with the greatest assurance be relied upon to produce a crop equal to either in feeding, and nearly equal to either in fertility value.

Do Dairy Cattle Like Soy Beans?

See what Mr. Ristow says in his article on soy beans.

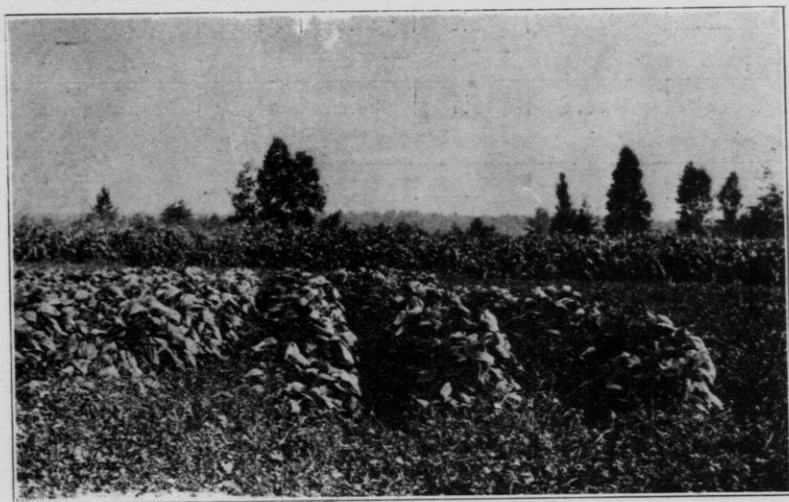
On the Asylum Farm in Portage county the straw from threshed beans was used for bedding the cows. Pretty soon the cows were observed to leave the hay in their mangers and to be eating the bedding. Bean straw

was then placed in the mangers and hay under the cows to the entire satisfaction of the cows. Yes, cows like soy beans.

One farmer up in Chippewa county sowed soy beans in his barley. He harvested and threshed the barley and reported that the cattle simply devoured the straw stack.

A farmer in Clark county reports that he threshed some soy beans and fed the straw to his cows. The cows showed their appreciation of the soy bean straw by promptly increasing the herd milk production.

A farmer up in Polk county grew soy beans for seed. He threshed the beans and stacked the straw. An old sow took possession of the stack and brought up her litter of pigs there. There was something about that home



SOY BEANS FOR HAY

Yes, drill them in in rows about 24 inches apart so you can cultivate and hold the moisture.

that the pigs liked, for by the time they weighed 90 pounds apiece they had eaten up the stack!

On another page you will find a comparison of the feeding value of soy beans with other feeds in Table I. The figures are for 100 pounds of the various feeds. The columns which you will need most to look at are the one marked "Protein" and the one marked "Nutritive Ratio". Wisconsin buys feeds for their protein content. Most Wisconsin dairymen can grow plenty of crops strong in carbohydrates, such as corn, for silage. What they are short in is crops strong in protein. The nutritive ratio is the relation of the amounts of protein to the amounts of carbohydrates and fats. The ration which the dairy farmer should feed his cows should have a nutritive ratio between 1 to 6 and 1 to 7. Study the nutritive ratio of soy beans to any other feed and you will see that by growing soy beans on

your farm you can save buying so heavily of the high priced protein feeds.

Better try some soy beans next year. Write the Superintendent for information as to where to secure the seed beans and the inoculation or in regard to any other questions.

TABLE I: COMPARISON OF FEEDING VALUE AS HAY

	Dry Matter	Protein	Carbo-hydrates	Fat	Total Nutrients	Nutritive Ratio
Alfalfa	91.4	10.6	39.0	0.9	51.6	1:3.9
Red Clover	87.1	7.6	39.3	1.8	50.9	1:5.7
Timothy	88.4	3.0	42.8	1.2	48.5	1:15.2
Soy Beans	91.4	11.7	39.2	1.2	53.6	1:3.6

COMPARISON OF FEEDING VALUE AS STRAW

Oat Straw	88.5	1.0	46.2	0.9	45.6	1:46.6
Soy Bean Str	88.1	2.8	38.5	1.0	43.5	1:14.5

COMPARISON OF FEEDING VALUE AS CONCENTRATE

Oil Meal	90.4	31.7	37.9	2.8	75.9	1:1.4
Soy Bean Ml	90.1	30.7	22.8	14.4	85.9	1:1.8

SOY BEANS IMPROVE CORN SILAGE

Corn Silage	26.3	1.1	15.0	0.7	17.7	1:15.1
Corn and Soy Bean Silage	24.7	1.6	13.8	0.8	17.2	1:9.8

Here is a picture of a SELF-FEEDER and the way the hogs use it.

SELF-FEEDING OF HOGS

Results of Feeding Experiments at the Wisconsin Agricultural Experiment Station.

Wisconsin has not been considered a great hog state. Why? Because its main crop has not been corn, ear corn. The Wisconsin Experiment Station has been carrying on some feeding experiments with swine in which forage crops, corn and barley have been the main feeds compared. You will be interested in these experiments, for they will put money into your pocket. One more thing; if you are within reasonable distance of the College of Agriculture it will pay you to lay off a day and use some gasoline to make a day of it at the College and go over the swine feeding experiments. They are going on all of the time.

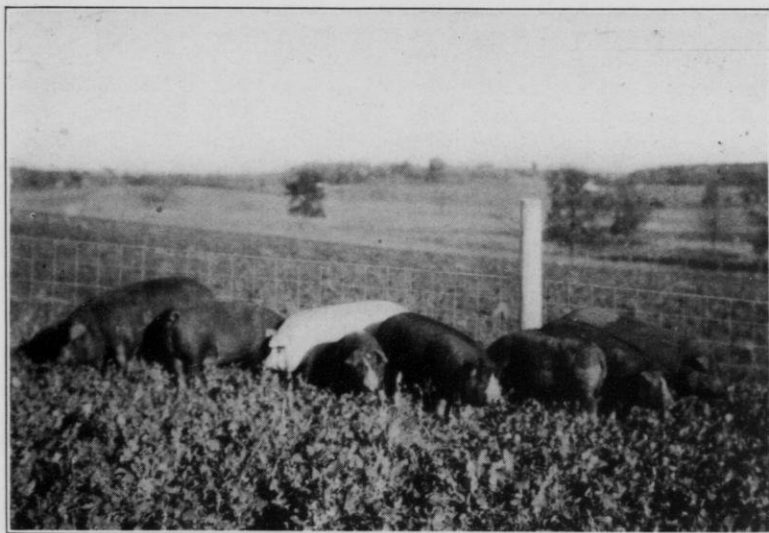
Remember Three Things

Wisconsin has the best hog feed in the world in its skim milk and whey; that every day a market hog is kept alive longer than necessary you are throwing money away on keeping up its body maintenance, therefore do not cut down on its feed; and that the SELF-FEEDER should not be used with breeding hogs.

Here is a picture of some pigs growing to be hogs in a pasture of oats, peas and rape. Along with this feed, in creamery regions, skim milk hand fed in a trough and ground barley in a SELF-FEEDER; in cheese factory regions, whey hand fed and ground barley in a SELF-FEEDER; and in

condensery regions, TANKAGE in one compartment of a SELF-FEEDER and ground barley in another. In all cases have on hand at all times plenty of good, pure, fresh WATER.

Here are some figures on one lot of pigs in 1916. Thirteen pigs averaging 52 pounds apiece were put in on an acre of this pasture seeded at the rate of one bushel of oats and one bushel of peas drilled and four pounds of rape broadcasted. They got no milk after the trial began, only fresh water, all they wanted. They were given shelled corn and tankage in separate compartments of a SELF-FEEDER and ate all of this they wanted. Shelled corn was figured at 87 cents a bushel and TANKAGE at \$50 a ton. The hogs were sold when they weighed 222 pounds for \$9.10 live



ORGANIZING PRODUCTION

Pigs self-fed grain and tankage on good pasture make rapid and economical gains. These porkers look pretty good, don't they? Why pay a hired man \$60 to \$75 a month and use his time twice or three times a day to hand-feed hogs?

weight at Madison. The value of the pork made on the acre was \$206.50. The cost of the corn and tankage was \$135.10 and the growing of the forage crop, including rent, was figured at \$14; leaving \$57.40 return for the acre of forage. Pretty good return. How many of your other acres will do as well? From recent experiments with ground barley it is felt that better could have been done than with corn.

The experiments of 1919 will be given in full below. Note especially that these experiments in which barley was used made barley worth \$1.02 (?) a bushel, skim milk 86 cents and whey 43 cents a hundred.

BARLEY FOR FATTENING PIGS—1919

F. B. Morrison and G. Bohstedt

Wisconsin Agricultural Experiment Station

Due to the large demand in the past for barley for malting purposes in this state, this grain has been for the most part grown as a cash crop instead of being fed to live stock on the farm. For this reason many Wisconsin farmers do not appreciate the high value of barley for stock feeding. This trial has been carried on to throw further light on the relative value of barley and corn for fattening pigs, and furthermore to determine the best method of feeding barley and of preparing it for feeding. Last, but not least, we have studied a question which has apparently not received attention hitherto—what feeds best supplement or balance barley so as to make the most rapid and economical gains.

In all there have been fed 12 lots of pigs, averaging 128.8 lbs. in weight on Feb. 14, when the trial began. Each lot contained 5 pigs, except the first lot, our standard of comparison, which contained 10. The pigs were purchased as unfinished feeder pigs for \$17.00 per cwt. from farmers at Oregon, Wis., and simply represent a good type of grade and cross-bred pigs, not being of the extreme large type. On vaccination for cholera at Madison, some pigs showed high temperatures and other indications of having incipient cholera. Tho many failed to gain for a few days after vaccination, none died and the trial was begun after the pigs had recovered from the effects of the treatment. Thus the trial had none too promising a beginning.

The results of the trial have been computed with barley and corn both at estimated average farm prices in the southern part of the state and at the average Milwaukee prices for fair to good barley, and No. 3 yellow corn during the period of the trial. This average Milwaukee price was \$1.38 per bu. for corn and \$.92 for barley. The "farm" prices have been taken as 10 cents per bushel less for corn than the average Milwaukee price and 8 cents less for barley. This makes the "farm" price of shelled corn \$1.28 per bu. and of whole barley, \$.84. Where ground barley was fed, 5 cents per bushel has been added for grinding.

Purchased feeds are reckoned at fair retail prices during the period, as follows: Tankage, \$110 per ton; wheat middlings, \$44.00 per ton; and linseed meal, \$67.50 per ton. Skim milk is figured at $\frac{1}{2}$ the value of a bushel of corn ("farm" price) making the price \$.64 per cwt. Whey is figured at half the price of skim milk, or \$.32 per cwt.

Where net returns over cost of feed are mentioned, this has been estimated on the basis of the pigs selling at \$19.50 live weight at Madison.

Barley vs. Corn

Several trials have been carried on in years past at other experiment stations to determine the relative value of barley and corn for fattening pigs, but these trials were conducted before the day of the self-feeder. As

the self-feeding scheme has upset several of our notions about hog-feeding, we have been testing the relative value of these grains when both are self-fed. We have compared a ration of ground barley self-fed, supplemented by tankage, or meat meal, also self-fed, with the ration which has become a common standard for comparison in the corn belt—shelled corn self-fed and tankage self-fed.

In a trial last fall we were surprised to have a lot self-fed ground barley and tankage make larger gains and require even less feed for 100 lbs. gain than pigs self-fed on shelled corn and tankage. From the chemical composition of barley and corn we would normally expect barley to be slightly lower than corn in feeding value per 100 lbs. for fattening animals, as it contains slightly more woody fiber, due to the hull.

These results seemed to be due to the fact that the pigs on shelled corn and tankage took a foolish notion not to eat enough tankage to balance their own ration properly. In other words, tho a pig usually uses good judgment in proportioning his diet when self-fed on corn and tankage, the pig, like man, may make a bad mistake in judgment. "The eye of the master fattens his cattle" is as true an adage with the self-feeding scheme as with the former systems of feeding.

We have therefore carried on another test to compare the feeding value of ground barley and shelled corn for fattening self-fed pigs, with the results shown in Table II:

TABLE II: BARLEY VS. CORN FOR FATTENING SELF-FED PIGS

Average ration	Days to reach 225 lbs.	Av. daily gain	Feed for 100 lbs. gain		Feed cost of 100 lbs. gain	
			Corn or Barley	Tankage	Grain at "farm" price	Grain at Mil. price
		Lbs.	Lbs.	Lbs.		
Lot I						
Sh. corn, self-fed, 7.5 lbs.	45	2.14	350	34	\$9.92	\$10.55
Tankage, self-fed, 0.72 lbs.						
Lot II						
Gr. barley, self-fed, 7.7 lbs.	49.5	1.95	395	28	8.83	9.50
Tankage, self-fed, 0.54 lb.						

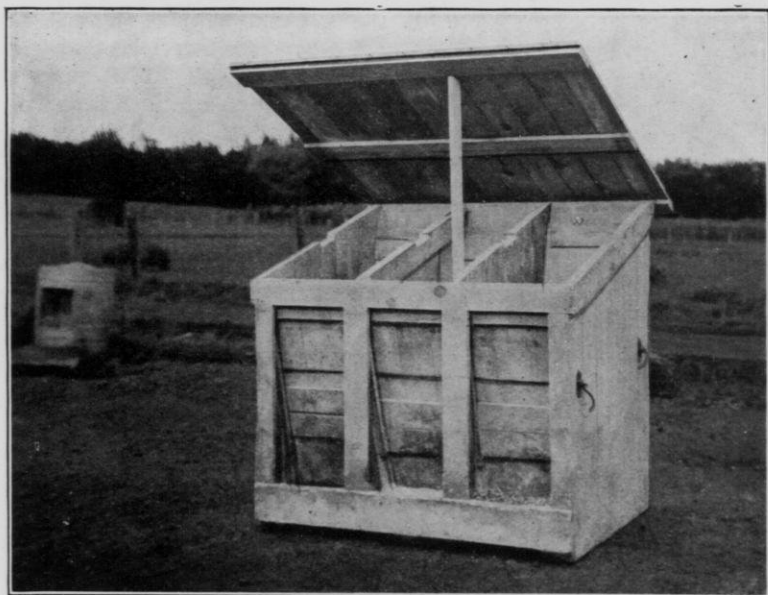
Both lots of pigs made unusually good gains, the gains of the pigs self-fed on ground barley and tankage being slightly smaller than of the pigs on shelled corn and tankage. While the corn-fed pigs required 350 lbs. of corn and 34 lbs. tankage for 100 lbs. gain, the barley-fed pigs required 395 lbs. ground barley and 28 lbs. tankage—in other words, 45 lbs. more barley but 6 lbs. less tankage.

Barley is considerably richer in crude protein than corn, containing 9.0 lbs. digestible crude protein per 100 lbs., while corn contains but 7.5 lbs. Therefore, theoretically less of the protein-rich tankage should be needed

to balance or supplement barley properly than is needed with corn. The barley-fed pigs seemed to recognize this fact to some extent in eating less tankage.

With grain at the "farm" prices, the feed cost of 100 lbs. gain was only \$8.83 with barley, while it was \$9.92 on corn. Taking the average Milwaukee prices the feed cost was \$9.50 per 100 lbs. gain on barley and \$10.55 on corn—a decided showing in favor of barley with feeds at present prices. The return per pig over cost of feed was \$13.45 for the barley-fed pigs and \$12.38 for the corn-fed pigs, again markedly in favor of barley at the present feed prices.

With shelled corn at the "farm" price of \$1.28, ground barley was ac-



A SELF-FEEDER

This is a two-way self-feeder with compartments for different feeds. A self-feeder may have only a single compartment where only one kind of feed is used. Note the drinking fountain at the left.

tually worth \$1.02 per bushel, or \$.13 more per bushel than the average "farm" price during the trial. On this basis, whole barley was worth \$.97 per bushel compared with shelled corn at \$1.28 per bushel.

In comparing the actual feeding value of grains, we should measure their relative value not on the bushel basis but on the basis of 100 lbs. In this trial ground barley was worth 7.4 per cent less than shelled corn. This would make the value of barley before grinding 11.7 per cent less than shelled corn.

In this and the other comparisons, the results have been computed to the time when each lot reached the handy market weight of 225 lbs., except in those unfortunate lots which have not yet reached this weight. This is done because the amount of feed required for 100 lbs. gain increases considerably after pigs reach 200 lbs. Where results are not given on this basis, but are given for the same number of days for each lot, the best gaining lots are handicapped unjustly. Eventually all lots will be fed until they reach 250 lbs. and the results figured on this weight for final publication in bulletin form.

Methods of Feeding and Preparing Barley

With the popularity of the self-feeding scheme, the question naturally arises "Is it best to hand-feed ground barley or to self-feed it?" Other important problems are "Does it pay to soak ground barley for pigs?" and "How does soaked whole barley, an easy means of preparing barley, compare with ground barley?" It has commonly been advised that barley be ground or rolled for swine, but we lack definite information on these particular points. To study these questions the four lots shown in Table III were fed in this trial:

TABLE III. METHODS OF FEEDING AND PREPARING BARLEY COMPARED

Average ration	Days to reach 225 lbs.	Av. daily gain	Feed for 100 lbs. gain		Feed cost of 100 lbs. gain	
			Barley	Tankage	Barley at "farm" price	Grain MIL. price
		Lbs.	Lbs.	Lbs.		
Lot II Gr. barley, dry, s.-f., 7.7 lbs Tankage, s.-f., 0.54 lb.	49.5	1.95	395	28	\$8.83	\$9.50
Lot III Gr. barley, dry, h.-f., 7.4 lbs. Tankage, s.-f., 0.39 lb.	53	1.81	409	22	8.74	9.44
Lot IV Gr. barley, soaked, h.-f., 7.4 lbs. Tankage, h.-f., 0.37 lb.	49	1.97	377	19	8.00	8.64
Lot V Wh. barley, soaked, h.-f., 6.6 lbs. Tankage, h.-f., 0.37 lb.	?	1.13	582	33	12.02	13.01

Lot II, self-fed ground barley and tankage gained 0.14 lb. more on the average per day than Lot III, hand-fed the same feeds. The self-fed pigs had their choice in determining what proportions of barley and tankage to

eat, and ate 93.5 per cent barley and 6.5 per cent tankage. We decided at the beginning of the trial that 5 per cent tankage was plenty to balance barley and accordingly fed Lot III a mixture of 95 per cent barley and 5 per cent tankage.

The hand-fed pigs required 14 lbs. more barley for 100 lbs. gain, but 6 lbs. less tankage. As tankage costs 5.5 cents per pound and barley less than 2 cents per pound ("farm" prices), the cost of gain was \$.09 cheaper with the hand-fed pigs ("farm" prices for grain).

These results raise the question as to whether we cannot improve the self-feeding scheme by self-feeding ground barley and hand-feeding the high-priced tankage. In other words, do we or do we not know better than the pig how much of this expensive feed he needs for the largest and most economical gains. This question, among others, we will study in an experiment with a carload of feeder pigs recently purchased, beginning the trial next week.



HOGS SELF-FED

Hogs self-fed don't squeal off today all they ate yesterday. They just naturally keep coming all of the time.

Comparing Lots III and IV, we find that in this trial soaking ground barley paid. We will need to repeat this test before arriving at definite conclusions as the difference is not large, considering the number of pigs per lot.

The results with Lot V show decidedly that soaked whole barley is a poor feed for pigs compared with ground barley. These pigs actually re-

quired 42 per cent more barley and 50 per cent more tankage than Lot III, fed dry ground barley. The cost of gain was increased in a corresponding manner.

Supplements for Barley Compared

For many years we have known that an animal needs a certain amount of protein in its feed for normal growth, fattening, milk production, or even for the mere maintenance of life. Only in recent years, however, have we found that not only is a certain amount of protein needed but also that the protein must be of the right kind or quality. Proteins are made up of at least 18 different "building stones", which the chemist calls amino acids. Pigs or other animals can manufacture only a single one of these amino acids from other compounds in their feed. But to make muscle and other protein parts of the body, they have absolutely got to have every single one. Therefore, the proteins in the feed must contain a sufficient supply of the various amino acids.

Unfortunately, the proteins of the cereal grains are unbalanced or "lop-sided" in composition for making pig meat or other meat in the animal. That is, they do not contain enough of some amino acids and more than needed of others. In other words, the proportion is not suitable for rapid gains. We must today recognize this fact in addition to the well-known fact that the amount of protein in the cereals is too low for rapid growth.

We have therefore fed the 6 lots shown in Table IV to find whether tankage, wheat middlings, linseed meal, skim milk, or whey supplements barley best.

TABLE IV: SUPPLEMENTS TO BARLEY COMPARED. BARLEY ALL GROUND AND SELF-FED

Average ration	Days to reach 225 lbs.	Av. daily gain	Feed for 100 lbs. gain		Feed cost of 100 lbs. gain	
			Barley	Supple- ment	Barley at "farm" price	Barley at Mil. price
	Lbs.	Lbs.	Lbs.	Lbs.		
Lot II Barley, 7.7 lbs. Tankage, s.-f., 0.54 lb.	49.5	1.95	395	28	\$8.83	\$9.50
Lot VI Barley, 5.6 lbs. Middlings, s.-f., 0.76 lb.	?	1.27	439	60	9.44	10.18
Lot VII Barley, 5.5 lbs. Linseed meal, s.-f., 0.43 lb.	?	1.22	452	36	9.57	10.34
Lot VIII Barley, 7.2 lbs. Skim milk, h.-f., 7.7 lbs.	46	2.10	345	366	8.72	9.31
Lot IX Barley, 8.4 lbs. Whey, h.-f., 15.9 lbs.	38	2.53	331	629	8.14	8.70
Lot X Barley, 7.4 lbs. Whey, h.-f., 15.4 lbs. Linseed meal, h.-f., 0.17 lbs.	41.5	2.33	316	664 whey 7 oil meal	8.21	8.75

Comparing Lot II, self-fed barley and tankage, with Lot VI, self-fed barley and standard wheat middlings, we find that when barley was supplemented with middlings the pigs gained only 1.27 lbs. daily on the average, but that on barley and tankage they gained 1.95 lbs. Apparently, therefore, middlings is not nearly as efficient a supplement to barley as is tankage. The middlings-fed pigs yesterday averaged only 207 lbs., while Lot II averaged about 250 lbs. Even up to 207 lbs. the middlings-fed pigs required more feed for 100 lbs. gain than the tankage-fed pigs did to a weight of 225 lbs. Hence the cost of feed for 100 lbs. gain was \$.61 more than with the tankage-fed lot. The difference will be even more marked when Lot VI reaches 225 lbs.

Lot VII, fed barley and linseed meal tells the same sort of story. The results with these two lots are of the utmost importance in this state where middlings and linseed meal are the most commonly purchased supplements used to balance grain for pig feeding.

Coming to Lot VIII, fed barley and skim milk, we have a different sort of story. Here the pigs averaged 2.10 lbs. gain a day, compared with 1.95 lbs. on barley and tankage. Skim milk, fed at the rate of only about 1 lb. skim milk for each pound of barley, was therefore a more efficient supplement than tankage in producing rapid gains. With skim milk figured at half the price of a bushel of corn ("farm" price) the cost of gains was just about the same with skim milk and tankage.

Whey contains but 0.8 lb. protein per 100 lbs. and is surely not a protein-rich feed. However, some work of Osborne and Mendel at Yale with rats has shown that milk albumin, practically the only protein in whey, is a very efficient protein for balancing the cereals. We therefore fed Lot IX only barley and whey to see if this small amount of protein might be so good in quality that it would supplement the deficiencies of the barley protein.

To our delight it "did the trick" and this lot gained on the average 2.53 lbs. per day, more than any other lot. The feed required for 100 lbs. gain was also low, making the cost of feed for 100 lbs. gain only \$8.14 (barley at "farm" price, and whey at $\frac{1}{4}$ the price of a bushel of corn). Instead of being worth only \$.32 per cwt., whey was actually worth \$.43 per cwt. compared with tankage at \$110.00 per ton. Compared with wheat middlings at \$44.00 per ton, it was worth \$.53 per cwt. This whey was nearly all skimmed whey. Unskimmed whey would have a somewhat higher value.

As we were afraid the quantity of protein in whey was too small to balance barley, in Lot X we used a small amount of linseed meal in addition to whey to increase the amount of protein. This addition, however, did not increase the gains or still further cheapen the cost.

Apparently, therefore, pigs may be finished with rapid and economical gains on only barley and whey, a fact of prime importance to the cheese districts of this and other states. Whether this will provide enough protein for young pigs is a question for further study.

Two other lots have been fed ground barley and linseed meal, plus either

ground rock phosphate or ground limestone, to find whether the addition of these mineral supplements would help the efficiency of the barley-oil meal ration. We are trying this out because both barley and oil meal are low in lime. The results, however, of this one trial are not conclusive enough to warrant discussion at this time.

CONCLUSIONS

Why longer limit our production of pork? Grow the corn for silage. Wisconsin is the greatest barley growing state in the nation. Grow barley for hog feed. Utilize the by-products of the dairy business to grow pork. Use FORAGE CROPS and SELF-FEEDERS. See your County Agent about a SELF-FEEDER. If you have no County Agent, whom you should have, see your retail lumber dealer. Write the Experiment Station for further particulars in this matter. The College of Agriculture has blue prints of plans for SELF-FEEDERS.

Oh, yes, what is TANKAGE? The best hog feed in the world next to skim milk and whey when they are fed with ground barley in SELF-FEEDERS. It is made of blood and wastes of meats at the packing houses. These are all ground up, boiled up and dried out. How much does it now cost? \$110 a ton. It will probably be cheaper after things settle down. But don't let the price scare you. Its cost will go up and down with hog prices and you will come out all right.

But, don't go it blindly. All farm propositions require study. Study this profitable proposition.

SHEEP IN WISCONSIN

W. Woodard, Farmers' Institute Lecturer, Bloomer, Wisconsin.

Why the Farmer Should Grow More Sheep.

We had, January 1, 1917, 48,500,000 sheep in the United States, and a population of over 100,000,000 people; in 1910, we had 52,500,000 sheep and 90,000,000 people; in 1903, we had 64,000,000 sheep and 75,000,000 people. Thus it will be seen that our sheep population has decreased from the year 1903 to the year 1917, 15,500,000, while our people have increased over 25,000,000. There have been killed some 60,000,000 sheep since the war began; there are some 75,000,000 less sheep than there were four years ago and that means about 450,000,000 pounds less of wool.

We used to get large quantities of wool from South Africa and Australia; now, since these countries are under the English government, they likely will need all this wool for a long time as England has slaughtered many of her sheep. So it seems to me if the people of the United States want wool they must grow it.

The state of Wisconsin has 2,500,000 people and only 280,440 sheep or about one sheep for every nine people. None of the Middle or Eastern states are any better off and with a total of only 48,500,000 sheep in the

United States, where is the wool to come from? Where are Wisconsin people going to get the wool to clothe themselves?

Wisconsin is the best state in the Union in which to grow sheep. Most of our lands are rolling and well drained; sheep must have well drained land as they never do well on low, wet, swampy land or where they can get at stagnant water.

Wisconsin can grow the finest of clover and alfalfa and sheep can be wintered in fine shape on clover or alfalfa alone. Wisconsin can grow fine crops of Swedes, or, as we call them, rutabagas, and rutabagas have made the English mutton sheep, and in fact all other breeds. Where rutabagas and clover, or alfalfa, can be grown, no other feed for sheep is needed.



ORGANIZING PRODUCTION

The get of pure bred rams at a community picnic in the Town of Alden, Polk county. There are few picnics held in upper Wisconsin where the people only meet to eat. There is always some educational feature in connection.

In the northern part of Wisconsin there are thousands of acres of fine sheep lands that can be had reasonably cheap and on almost any kind of terms and here clover will grow so thick it is hard to cure on the same land and it seems a shame that our people should go short of wool when we can grow all we need right here at home.

Sheep do not need expensive barns. They should not be kept in basement barns where they will get sweaty or they will catch cold. All they need is a good dry shed or barn free from drafts where they can go inside in bad, stormy weather. Sheep do not require the labor that other stock does; yet they should be looked after to see that they are all right. Very little care is all they need.

It is not only a scarcity of wool but of meat also that we are confronted with and when we raise sheep we have both wool and meat and when we raise a steer the hair blows away and is lost.

We can raise a pound of sheep cheaper than a pound of steer and the mutton sells for more and we have the wool extra.

A few sheep should be on nearly every farm in Wisconsin; what they eat will scarcely be noticed, thousands of dollars will be saved and our people will be clothed and fed. So let Wisconsin try to grow her own wool.

HOW TO BREED AND CARE FOR A FLOCK OF SHEEP

W. Woodard, Farmers' Institute Lecturer, Bloomer, Wisconsin.

The Ram.

If you must buy a ram, get one that is not too long legged for the breed you wish to keep. He should have his legs well out to the corners of his body, be wide and level on his back, have wide, deep loin, thick leg of mutton, wide head not too long, full open nostril, bright eyes and head well up, not dropping between his legs, and a dense fleece. Feed him well, not only during the breeding season, but throughout the year.

The Ewes.

When the ewes are bred, feed good clover or alfalfa hay and just before lambing it is well to give a little bran and oats; also, if you have them, some roots or silage. Feed not more than two and one-half pounds of silage to each ewe per day and give lots of exercise. Sheep must have exercise in order to produce good healthy lambs. Be sure to give plenty of water and salt. Keep the salt where they can help themselves. Sheep will lamb in about 145 days from date of service.

The Lambs.

If the lambs come before grass keep the sheep in a warm place for a day or two until the lambs are strong. Then turn them together in lots of from ten to twenty-five each. See that the lamb gets its first meal. See that the milk starts. Sometimes it sticks and the lamb can't start it. See that there is no loose wool around the udder. If there is, clip it away. If any should get into the lamb's stomach it will cause wool balls and the lamb will die.

Dip the Flock.

When the weather gets warm, say about the middle or last of May, shear the sheep and in about two weeks, dip the whole flock. For a small flock of fifty to seventy-five ewes, you can use a vessel of almost any kind or nail up a box about fourteen inches wide, three feet long and two feet high. Use any of the standard dips and mix according to directions. Put the lamb in with his back down. It takes two persons to do the job; one

takes the lamb by the front legs and head, the other by the hind legs. Keep him in the bath about one and one-half minutes; then put him upon a drain board fixed against the barn in such a way that the dip will drain back into the tank. Squeeze out all the dip you can and let the lamb go. When you have all the lambs dipped get the old ewes into the corner of the barn and crowd them as close together as you can; take an old-fashioned potato sprinkler and give them a thorough wetting with the dip. If you do a good job you will have no ticks. Sheep should be dipped every spring; they will do much better and the cost is so small one cannot afford not to do it.

Have some movable fence and do not confine the sheep to one pasture all the year through, but do not turn them onto low wet ground. Do not confine the sheep closely in winter. Have a good tight shed or room open to the south and let them go in and out freely. A small flock will winter in the yard with the cows and will pick up much which would otherwise be wasted.

Lastly, if you are new at the sheep business, do not go it alone too long. Secure the bulletins of the State College of Agriculture and read them. There are excellent books upon sheep with valuable hints. Come to know some of the main troubles of sheep and how to prevent them. Address the writer, or the Superintendent of Farmers' Institutes, or the College of Agriculture. Let's be sure to make all of the small flocks which are now starting in Wisconsin successful.

SHEPHERD'S CALENDAR

Prof. F. Kleinheinz, College of Agriculture, Madison, Wis.

Careful flockmasters follow these simple rules and practices to insure healthy and profitable flocks.

1. Cull the flock, sell mouth-broken ewes, and any other ewes that have not proved good producers.
2. Get the ewe flock in good condition before breeding begins.
3. To make service easy tag all ewes before turning to ram.
4. Use a good, vigorous, pure-bred ram and do not breed more than 50 ewes to him in a season.
5. Do not use a ram lamb for breeding unless circumstances necessitate and he is unusually well developed. If used, he should not serve more than 8 to 12 ewes. Never breed ewe lambs.
6. Remove ram from flock as soon as breeding season is over.
7. Exercise pregnant ewes as much as possible. Keep them well sheltered, however, in wet or stormy weather.
8. Do not feed timothy or marsh hay. Clover or alfalfa is best; feed all the flock will eat without waste. Feed corn silage or roots, 2 to 2½ pounds daily, to supply succulence.
9. Do not feed mouldy or frozen silage or roots to sheep.

10. Feed some grain at least a month before lambing, $\frac{1}{2}$ pound of a mixture of equal parts of oats and bran a head daily is very helpful.
11. Give close attention to the ewes at lambing time. It will save many lambs.
12. Pen ewe and new born lambs away from the flock for a few days to prevent her from disowning them.
13. Increase the succulent feed and grain for ewes the third day after lambing.
14. Castrate ram lambs on a bright day when one or two weeks old. Dock all lambs about a week later. Docking pincers are recommended.
15. Wean the lambs at $4\frac{1}{2}$ to 5 months of age and do not let them wean themselves. Retain all best ewe lambs for the future flock.
16. Shear the flock just as soon as the weather is warm enough to cause them to suffer from heat. Use paper twine for tying the wool.
17. Dip the whole flock about ten days after shearing. This is essential. Any of the standard dips may be used.
18. Feed the flock liberally.
19. Avoid parasites by changing pastures. Do not allow sheep to drink stagnant water.
20. Be on the lookout for maggots in hot weather and fly-time.
21. Provide a patch of Dwarf Essex rape to furnish feed when pastures are short.
22. Good fences are necessary. Dog-proof corrals safeguard sheep at night.
23. Never keep sheep on low marshy land.
24. Supply the flock with fresh water and salt at all times. Give attention to all details and success is assured.

A NEW SETTLER'S EXPERIENCE WITH SHEEP

C. P. West, County Agricultural Representative, Hayward, Wisconsin.

Charles Marple came to Sawyer county, Wisconsin, in March, 1914, from a farm at La Plata, Missouri, and settled on a piece of land seven miles east of Hayward. He moved onto his land two days after he bought it, cleared away the brush and stumps to find room to place his shack, and started farming. The eighty was covered with a dense growth of birch, poplar, maple and other trees about ten to fourteen feet high. The first season was spent in building fences, cutting brush and erecting a small shack of a barn and a hay shed.

During the second summer, Mr. Marple bought eighty-two ewes, native grade Shropshires, and a pure bred Shropshire ram. The following year (1916) he received \$245 for his wool and \$210 for his lambs, making a total of \$455 income with no cash outlay, for he raised all that these sheep ate. These same sheep brought \$320 for wool and \$125 for lambs in 1917. All of the ewe lambs were saved for breeding purposes. Mr. Marple now has a flock of 150 females, 100 of which will have lambs this spring. These

sheep are worth at least \$20 apiece, making \$3,000. The original cost of the eighty-two sheep that started the flock was \$492, making a balance of \$3,400 for the three years that Mr. Marple has been in the sheep business. The cash profit is not the only profit on these sheep. Mr. Marple says: "The sheep have been excellent in keeping down the underbrush, nearly as good as a hired man during the summer months." When Mr. Marple started, every acre was covered with brush, now the brush is reduced to a large extent on the entire farm and over 40 acres are entirely free from brush and in clover. Mr. Marple further says: "I think sheep are the best money makers for the capital invested of any stock that can be kept on the farm if handled right."



UNCLEARED LAND

This is the way it looked on the cutover land purchased by Mr. Marple near Hayward, Wisconsin.

Mr. Marple had no experience with sheep before coming to Sawyer county, but followed directions from the State Experiment Station and successful sheep men, and applied his own good sense. What Mr. Marple has done, any farmer can do if he will use his head as well as his hands. Four years ago, this farm was a mere patch of brush; today, the entire place is fenced and cross fenced, 40 acres are cleared, and a neat little farm house has taken the place of the shack. There are thousands of acres of land in Sawyer county waiting for men like Mr. Marple to come and convert them into fertile farms.

ORGANIZING WOOL PRODUCTION

The marketing of wool presents its difficulties, one, and the most distinct, of which, according to the statement of a man very much interested in this matter, is "the wool itself". Wool as ordinarily presented for marketing assumes about as many grades as there are individual sheep, surely as many grades as there are individual farms marketing.

The many conditions under which sheep live are some of the main reasons for this; but one of the foundation reasons is the variety of ideas which farmers have relative to the matter of breeding. This is well exemplified in the following instance.

A flock of sheep was met near a farmer's gate up in Wisconsin. The ewes were large, strong animals and looked good; but over in the midst of them was the ram, a small, sharp ended, sharp backed affair, the scrubbiest of the scrubs. The farmer was complimented for his fine ewes, but where did he get that ram! Disparaging things were said of that ram. Finally the farmer said he guessed he did make a mistake in purchasing that ram, that he could have secured one for \$15 but took this one at \$12! At that very time any kind of sheep at all was bringing from \$15 to \$20, and here



SHEEP AS LAND CLEARERS

Mr. Marple brushed the land with sheep. These sheep are valiant workers but look fine for all of their hard work. Why do so very few pioneers use sheep to clear their land in Upper Wisconsin?

was this farmer purchasing for the head of his flock this good-for-nothing scrub.

Now what will this do for the wool which this farmer will offer for sale in a couple of years? Simply this. The offspring of this scrub will be of all sorts, some will be pretty good sheep and some will be pretty

poor stuff and so the fleeces will represent all sorts of wool with the probability that much of it will be very short, hairy and coarse. You see this farmer by his shortsighted saving of \$15 on the price of a decent ram has not only hurt the wool marketing problem for his community but has multiplied difficulties for himself.

How much better if he had bought a good pure bred ram of the breed which his community is using and would grow up a flock which would tend to carry uniform wool. Then if his neighbors would be sure to adopt the same practice and have a uniform foundation for community wool, the marketing problem would be well on the way to profitable adjustment.

The next step would be for the farmers to come to agreement upon rules for producing wool, that is, the sheep should be fed rations which would tend to vigorous flocks and kept in quarters which would tend to uniformity in wool quality.

These are some of the conditions which would constitute what might be considered the organization of wool production.

Individualism in wool production must give way to cooperation in the sheep industry as it must in producing cattle, potatoes and grains. We must give more attention to the quality production under cooperation.

A Milestone of Progress

We depore the waste and inefficiency of the small one-room school. We favor a policy wherever practicable of consolidation of school districts into larger units, and better training for our boys and girls of the farm. Our rural schools should be more closely related to our homes and made centers for a new social life and in which a spirit of civic service and helpfulness may be developed.



Adopted at the Mass Convention of Farmers and Workers at Madison, May 1, 1918.

HOW CONSOLIDATION HAS WORKED OUT IN POLK COUNTY

Martin Stenerson, County Superintendent of Schools,
Balsam Lake, Wisconsin.

When I came to Polk county ten years ago to take charge of the State Graded School at Frederic, this was the only locality in the county where transportation in any form was provided. At that time one transportation wagon was used to transport about a dozen children from the west side of the village. The district then comprised about ten square miles of territory extending from one to four miles outside of the village. This joint district between the village of Frederic and the Town of West Sweden may therefore be considered the first consolidated school district in Polk county.

During the first year or two that transportation was tried out in this district there was considerable opposition to it and several attempts were made by the residents of the transportation territory to have a new district organized so that they might maintain their own little rural school. Com-



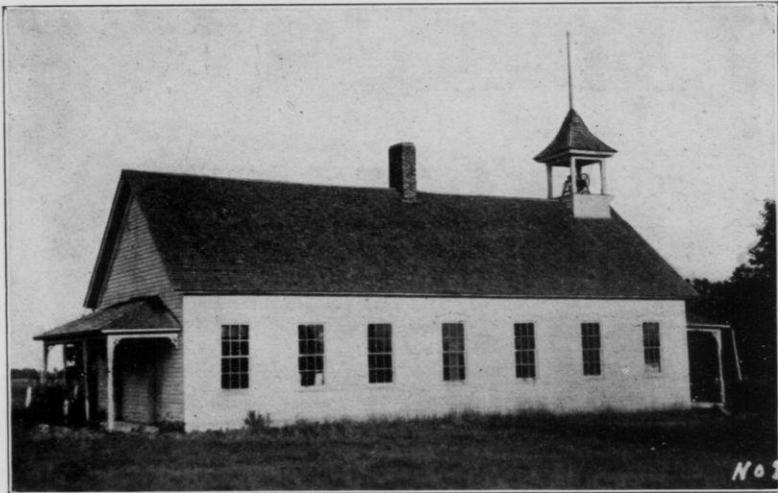
CONSOLIDATION IN POLK COUNTY

The splendid State Graded and Union High School building at Milltown and the classy vans for transporting the pupils.

plaints, which may in some cases have been justified, were made in regard to the transportation but the principal objections came because the people of this part of the district felt that the village people were "putting something over" on them and that the rural community was getting the worst end of the deal both with reference to taxes and to school accommodations. They also felt that the village could outvote them at any time and con-

sequently they began to lose interest in school affairs as they had little or no choice in the management of the school. It was a case of taxation and manipulation without representation with a large number of them.

This attitude began changing, however, after a better school wagon was provided and a representative from this territory was elected as president of the school board. They began now to realize that better school opportunities were afforded in the village school than could have been possible in such a school as they would have maintained in their rural district. Before long petitions from residents outside of this district on the north, east and south sides of Frederic began coming in, asking that the district be enlarged and that transportation be provided for them to the central school. This resulted in the enlarging of the district and the addition of a second wagon in the year 1914. The following year four sections in the town of Clam Falls were added so the district now comprises about 22 sections of land and is known as Joint District No. 3, Village of Frederic and Towns of West Sweden, Luck and Clam Falls. This is the largest transportation district in the county. Four wagons are now provided besides a private transportation rig. During this time a new school house has



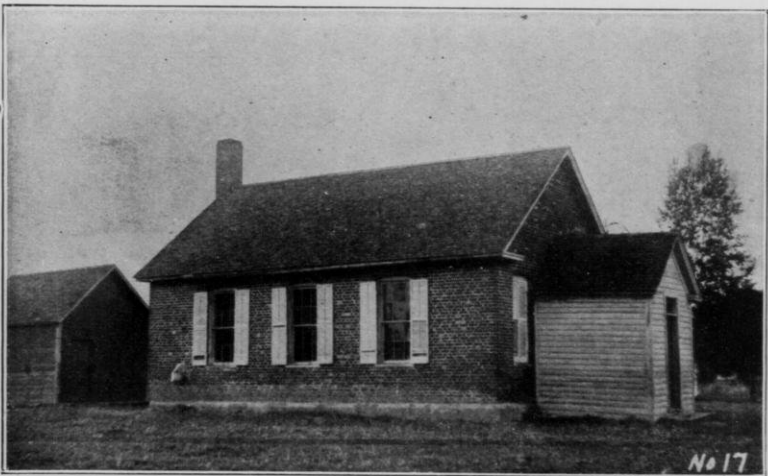
CONSOLIDATION IN POLK COUNTY

A rural school one mile south of Milltown vacated to make way for the Milltown school.

been erected and a high school, with an attendance of between 80 and 90 pupils, has been organized. This gives the pupils of the rural districts an opportunity to be transported to the central school while completing their high school course. A recent report from the principal of this school states that parents, pupils and taxpayers are now well satisfied with the **new arrangement.**

I have gone into considerable detail in regard to the Frederic School as this is typical of several other districts in the county and it has served as a precedent and an example of what has been accomplished in the way of consolidation in other places. In 1915 the village district of Clayton and two of the adjoining rural districts were consolidated by a vote of the people. This consists of 14 square miles of territory and has a valuation of about \$450,000. Four wagons are provided at a cost of from \$40 to \$50 each. The routes range from 7½ to 8½ miles in length and from 18 to 24 children are transported in each wagon. The longest distance any child is transported is 4½ miles and the shortest distance is 1½ miles. A new brick school building in which a full high school course is provided has recently been completed. Considerable opposition to the change developed at the time the new district was organized but recent reports indicate that the present plan is giving general satisfaction.

The most striking case of consolidation which we have in the county is found at Milltown. Up to the fall of 1915 the only school provided for this



CONSOLIDATION IN POLK COUNTY

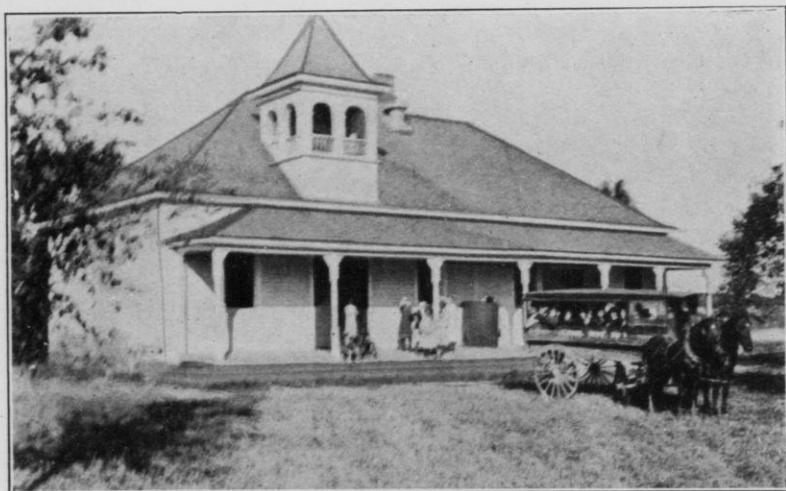
A one-room school a mile north of Milltown was the second building vacated to make way for the Milltown school. Hundreds of districts call this building good enough. Not so up in Polk county.

village of three or four hundred population and the surrounding territory was a two-room graded school located in a remodeled rural school building about one mile south of town and a one-room country school about one mile north of town, the dividing line between the two districts being the main street of the village.

In the fall of 1914 these districts were consolidated by action of the County Board of Education as it appeared to them that this was an ideal location for a consolidated school. This is a rich farming community, the

roads are in excellent condition and are laid out in such a way as to make transportation very feasible. A number of progressive men in this community were very much interested in the new project and began making plans for the best school that the people could afford to maintain,—an idea which should be the guide in every locality where improvement in school conditions is needed.

After considering this proposition for some time the conclusion was reached that the establishment of a Union High School in connection with the Consolidated Graded School would be the best and most economical solution of the problem. The proposed territory for the high school district, including about 48 square miles, was mapped out and the question of establishing such a school was submitted to a vote as provided by law and carried by a large majority. In the meantime the Consolidated District, consisting of about 10 square miles and forming a part of the High School



CONSOLIDATION IN POLK COUNTY

District No. 1, Bone Lake, and a classy van for transporting pupils.

District, had been fully organized. At a joint meeting of these two districts it was unanimously decided to construct a building to be used jointly by these two schools, one-half of the cost and general expenses to be borne by each district. A site for the proposed building, including 12 acres of land with a comfortable residence and barn was then purchased at a cost of \$6,000. In the fall of 1915 a modern, fireproof, brick building, providing for both the grades and the high school, was erected at a cost of about \$40,000.

This briefly completes the story of the transformation in school buildings at this place but the whole truth would not be told unless I added that three modern transportation busses are now transporting all the pupils in the

Consolidated District living over two miles from this school and many who are within the two mile limit. Four teachers are employed in the grades with a fifth one to be added next year. A full supply of first-class supplies and equipment has been provided throughout the entire building and the people are justly proud of their new institution. The high school employs four teachers and already has an attendance of over 80 students. This is strictly a farmers' agricultural high school. The agricultural course is given special attention and most of the boys in the school are taking this work. In addition to this, special courses are given in domestic science for the girls and manual training for the boys both in the high school and in the grades.

The school residence is at present occupied by the principal of the high school, the granary has been transformed into a work shop and the barn



CONSOLIDATION IN POLK COUNTY

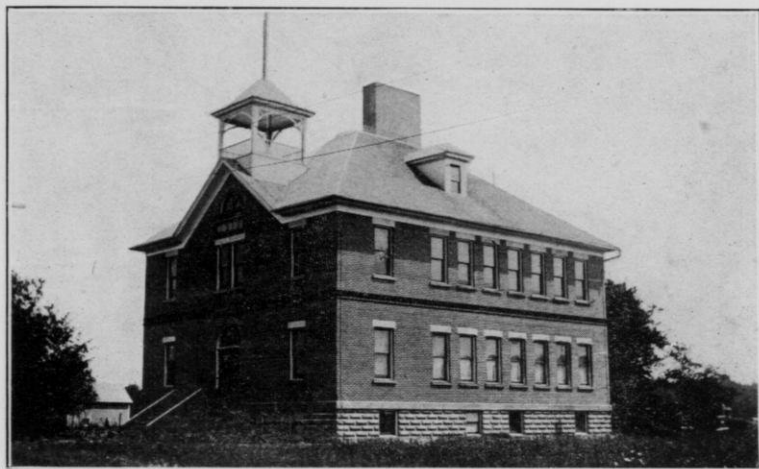
Vans in winter to transport pupils from a rural district to the village of Clear Lake.

is used for storage and for stabling the horses of high school pupils who ride or drive in from the outlying parts of the union high school district. We feel that this is the kind of a school that farming communities in any part of the state should consider where they wish to create a greater interest in their home community and instill in the minds of the boys and girls the desire to remain on the farm in place of drifting away to the larger cities.

In addition to the above mentioned typical consolidated districts we have two wagons transporting pupils from a rural school district that for several successive years has voted to close school and transport to the village of Clear Lake. One wagon is also used in each of three different two-room school districts located in the county, and a new consolidation has just

been voted which will mean another graded school where transportation will be provided in the future. Transportation and consolidation is "catching" in Polk county as a result of the successful operation of this class of schools in various parts of the county. It may be of interest to add that the cost of the transportation wagons ranges from \$30 to \$70 per month for the present year and that the average cost of the 15 wagons now in use is \$47 per month. The length of the transportation routes ranges from $4\frac{1}{2}$ to $10\frac{1}{2}$ miles.

Consolidation in another form, without transportation, has also taken place in many rural communities by enlarging the districts and establish-



CONSOLIDATION IN POLK COUNTY

Consolidated school at Clayton erected in 1915 at a cost of about \$10,000.

ing second-class, two-room state graded schools or simply changing from a one-room to a two-room school in districts where the school attendance and the valuation of the district justify it. So popular have these schools become that we now have 22 such schools located in the rural districts of the county, more than are found in any other county in the state.

This rapid increase in state graded and consolidated schools in this county is due to several reasons:

1. The people of the county, as a general rule, are interested in educating their children and in giving them the best opportunities for securing an education.
2. They have learned to recognize the advantages of schools where more than one teacher is employed and that the best results cannot be secured in an overcrowded country school.

3. An educational campaign for better and larger schools has been carried on and whenever a new building is to be erected the future needs and probable changes are carefully considered.

4. Wherever larger schools have been established and have been in operation for some time they have proven to be satisfactory so we have very few localities in the county now that are not ready and willing to establish such schools wherever the school enrollment, valuation of the school district and other conditions are favorable.



CONSOLIDATION IN POLK COUNTY

Second class State Graded School and classy van for transporting pupils located in the country district, District No. 3, Johnstown.

THE NEEDS OF THE VICINITY

Mrs. Hattie Kepler, Boaz, Wisconsin.

In writing on the needs of this vicinity, I am writing on a need that is general. There may be, and, doubtless is, this difference, that the need is greater or harder to remedy in one place than in another. If I may put it in one word, ours is a genuine community spirit. You ask, "What is a community spirit?" Well, it is a feeling of interest and concern for the other fellow. It sees itself bound up with a neighbor for weal or woe. It knows that, no matter how much personal success there may be, if a neighbor suffers loss, this loss falls in part on the other also. Such a feeling is always more common in the early history of any community.

We can have pardonable pride in the fact that our state of Wisconsin stands in the front rank of states that are trying to create and foster this community spirit. This work is being done through the efforts of men in close touch with our state university. Men are sent out to address people and organize them into clubs and community centers. Besides, they are sent out to instruct and interest the citizens in those things that concern the general welfare of each community. The burden is carried largely by the state. There are also instructive motion pictures and slides that can be obtained for no other cost than postage or express. Now, the question is "How are we to get this community spirit?" Well, to get at the matter, perhaps a lesson from life may help us. Almost always before we build up we must do some pulling down. In a prairie country the most may be only to burn the tall grass, but in a timber country there must be cutting of trees and burning of much rubbish and pulling of stumps before any good cultivating can be done. So we shall need some little pulling down before we can build.

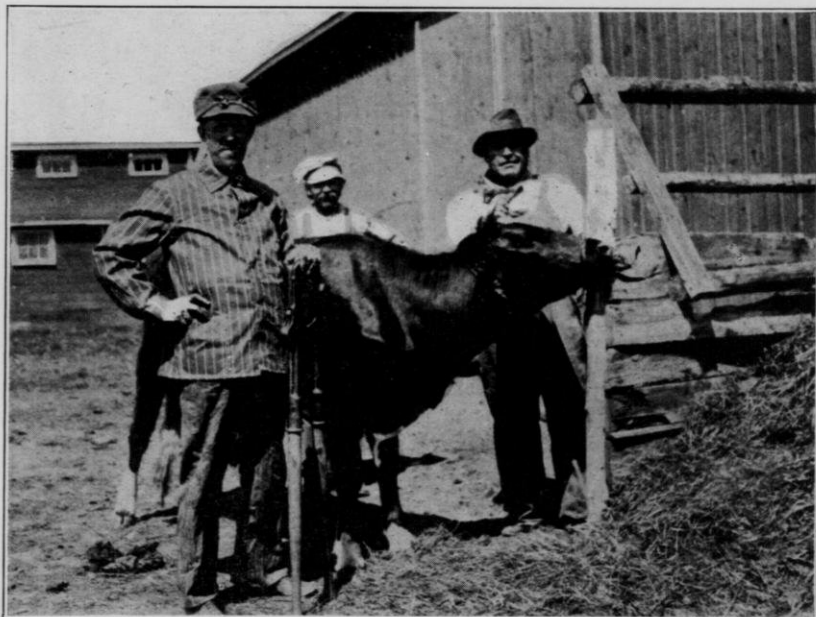
To begin with, there is great need of some forgetting. In the past years, this neighborhood (like many others), has been a scene of much unpleasantness. As long as these things are kept alive by constant repeating and remembering, there is no hope of better things. They cannot be undone, do only harm in being remembered, and so ought to be buried. In the language of the Indian, we should "bury the hatchet".

Another bit of rubbish to be destroyed is suspicion. This evil trait will make its possessor and all about him or her most unhappy. The sincerest acts are looked upon as hiding a dagger of some sort. Every truthful word is a cover for some poison. The beauty and fragrance of the rose is not observed and enjoyed, because of the fear of some rank thorn beneath. This feeling is expressed in the words: "Do the other fellow, before he does you". As long as this feeling exists in any community there can be no pleasure or profit that can be called common. There is great need of trusting, even if occasionally deceived. Confidence shown will some day bring confidence, just as love begets love. The Bible says "We love Him, because He first loved us". This holds good in all relations in life. It is impossible to take interest in any one whom we hold under suspicion.

Very closely allied with this is the unfortunate trait of telling all, or perhaps more, than we know. The proof of one's religion lies in the ability to bridle one's tongue. We need to paste under our hats words something like these: "There is so much good in the worst of us, and so much bad in the best of us, that it ill becomes any of us, to talk about the rest of us".

Another thing that needs to be removed is indifference, the I-don't-care feeling. The person who thinks or feels this way, as good as says that nothing can touch him. He serves notice that he does not consider himself a part of the community, he doesn't mix, and so is in no danger or is in no need. He is sorely deceived. No social wall can be built thick enough or high enough that the outside influence will not touch us somewhere. If it does not ourselves, it will our children, and often sooner and more than we notice. It has two bitter stings, it will sometimes promise and not fulfill, or it will blight by discouraging.

The whole may be summed up in the one word, **SELFISHNESS**. Write it with capitals. This does not mean the love of money only but includes



Before County Agent Gunderson's Visit.

a list too numerous to mention here. Just as the apples on the same tree are not alike, so selfishness does not show itself in the same way in each person. The man who will let his wife worry with green wood all winter is as selfish as the man who cheats a neighbor in a deal.

This will likely clear the ground now for the building-up part, the mak-

ing of a community spirit or feeling. One part of the task is already performed. It is something to have a topic like this on our program. It means that we feel that we need something. We are asking what it is. We only tear down the old when we feel that we need something new and better. The first thing to be seen is that each one is a part of the neighborhood, the city, the state and the nation. And for that matter, a part of the world.

The community is what you and I make it. No one man or woman makes the conditions of it. One may be doing more than another in trying to make the neighborhood good or bad. But we all do our part. When we see this, we lose our indifference. Everything concerns us greatly. And, if we see some one trying to do something to better things, we will



After County Agent Gunderson's Visit.

In Vilas county where veterinarians are scarce and the farmers widely dispersed, the County Agent is doing a splendid work in supplying the need of veterinarians.

walk up to him or her some day, and say "I am glad to see you do this; it is just what we need. You can count on me to do what little I can to help you along. Just call on me any time". It will help much, when people see that two are on the job. We go by twos today when raising money, etc.

This will open our eyes still more. Working at a common task shows us all off to better advantage. It is hard for any of us always to look our best under all circumstances. We usually look a little better at parties and at church than we do at our daily work. What is true of the exterior is likewise true of the interior. When we are interested in a common pur-

pose the truest democracy shines forth. All hearts beat with the throb of the same enthusiasm and this helps all to appear better to every other engaged in the same effort. And if now and then there arises a slight ruffle of indifference, the fervor of the bunch soon smooths out the wrinkles. And it does not gain its usual large proportion. Besides, no one is at all anxious to throw a cold sheet over the warmth that is felt by every one that is helping along good things. In this way we learn to become a little ashamed of our suspicions and our neighbors appear better than they did.

Then there is need of a larger view of life and no one needs this more than do rural folks. There is always plenty to do for him who will work and there always will be. If we did not take a little pleasure until there was no more work to do we would never take any. We need to see that life is not all work, but that there is also a time to play. Birds and beasts have their playful moods, then why not we?

There is no better place on earth to live than a good country home; pure air, pure water, everything to eat fresh and clean, and plenty of room to stir about. If to these we can only be taught to add a few hours and times of enjoyment, our boys and girls will not have a hankering for city life. Pleasure and society are the lure of the city for the young and it is a great deception at that.

Now this cannot be as it ought to be until it becomes a common thing. No one family can bring the right conditions about. Mr. John Babb often took his family out for a day's fishing, but how many followed his example? The most that this community saw of this sort of effort was when Rev. Chas. A. Stevens managed to induce the farmers to take a Saturday half holiday, and play ball. Old and young entered into the spirit of the occasion and are we any worse off for the recreation? Did we lose anything then?

What proper effort will do, even in and around Sabin, can be learned from what was done for several seasons in having a lecture course. Some of those most active in the matter, were, sorry to say, under some suspicion of running a money making scheme, but any one who knows all about such things knows that this is almost impossible. But the lesson is that these efforts were seconded by the people, they patronized the entertainments. This was the work of only a few. What would it mean to Sabin and this vicinity if the whole community entered heartily into such work.

And this makes me think of something else. There ought to be a place for everyone, something for everyone to do. And there ought to be plenty of room furnished for young people to use what talent they have. They should be kept in the lead as much as possible, so that the next bunch will have a better outlook than we had. See how our government,—yes, all governments, save, perhaps one,—are calling out young men of promise to train them for the active duties that must soon fall upon them. Where the right sort of feeling prevails, the older ones do not feel that they are cast aside and the younger ones are not discouraged.

Just one thing more and this is for the writer a delicate thing. For,

standing on the outside, it may be thought out of place thus to write. But the one looking on often sees what another does not. This is the need of a better feeling among the Christian people, both within the same church and among those of different beliefs. It is only natural for a community to look to them to take the lead in all good works; and, if they do not work well together, how can we expect others to do so? If there were a little more pulling together for the welfare of all and not so much concern for the gain of any party, this vicinity would soon feel the effect of the effort.

If under the enthusiasm this institute gives we could here and now organize a club, bent on creating and fostering a "Community Spirit", there is nothing that we need of the necessary things of life and happiness that we could not have. There is no lack of means for anything we wish, we have some talent that we could utilize to our profit and, if we go at it with the right spirit, we can be among the happiest and most prosperous of communities. But to accomplish this, "let not each one look on his own things, but also on the things of others".

NOTE: Say, reader, did you get all of the good there is in the foregoing paper? Don't be in a hurry. Just read this paper again and let it sink in. What a benediction seems to fall as this article is read the second time.—
Superintendent.

THE UNIVERSITY OF WISCONSIN

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

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

Branches of Study

The University presents a wide range of study embracing more than three hundred subjects. Something of the extent and variety of these may be indicated by the following synopsis: Twelve languages are taught, viz.:

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

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

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

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

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

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

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

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

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

The libraries accessible to students embrace that of the University, 316,000 volumes; of the State Historical Society, 423,000 volumes; of the State Law Department, 64,000 volumes; of the city 41,000 volumes; of the Legislative Reference Library, 40,000 volumes and pamphlets; besides spe-

cial professional and technical libraries, making in all more than 889,000 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.

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.
- Middle Course.** Consists of two full college years, modified to include as much practical work as possible in connection with the regular scientific training.
- 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.
- Home Economics.** A two-year course for training vocational teachers under the Federal grant Smith-Hughes Law.
- Summer Session.** Last week in June to second week in August. This session includes 39 courses in agriculture.
- Short Course.** A term of 15 weeks in each of two years. Registration Tuesday and Wednesday, November 11 and 12. The course includes lectures, demonstrations and practice work.
- Young People's 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 course of popular lectures, demonstrations and exercises in practical agricultural science, beginning early in February. It is open to farmers over 25 years old.
- 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.
- 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 Farmers' Course.
- Women's One Week School.** This is a laboratory course in cooking, given during the second week of the Farmers' Course.

FARMERS' INSTITUTES

E. L. Luther, Superintendent.

Alice E. Hibbard, Clerk.

THE FARMERS' INSTITUTES DEPARTMENT conducts meetings in various sections of the state where practical lectures and conferences on subjects pertaining to farm life and farm operations are presented. Women's Institutes are also conducted for the women. The Farmers' Institute Bulletin is issued annually in an edition of 30,000 copies, and distributed at Institutes and by mail; also 10,000 copies of the Farmers' Institute Women's Bulletin. Any community can secure an Institute upon proper application to the Superintendent. For further information address E. L. Luther, Madison, Wis.