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## **Wisconsin Farmers' Institutes : a hand-book of agriculture. No. 4 1890**

Wisconsin Farmers' Institutes

Madison, WI: Democrat Printing Co., Printers and Stereotypers,  
1890

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AGRICULTURAL  
Experiment Station

MADISON, - WIS.



WISCONSIN

FARMERS' INSTITUTES;

A HAND BOOK OF AGRICULTURE.

---

NO. 4-1890.

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EDITED BY

W. H. MORRISON, Superintendent,



MADISON, WISCONSIN:

DEMOCRAT PRINTING CO., PRINTERS AND STEREOTYPERS.

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## LETTER OF TRANSMITTAL.

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HON. GEO. RAYMER,

*President of Board of Regents, University of Wisconsin:*

SIR:— I have the honor herewith of presenting to you Bulletin No. 4, Wisconsin Farmers' Institutes. The Agricultural Institutes conducted under the auspices of our State University speak for themselves in this volume. They speak for the growing interest which the farmers themselves are taking in those things, which will elevate the standard of Wisconsin Agriculture to its true place among the enterprises of our people, and give to the labor of the farm the standard of rank to which it is entitled in the world's battle of labor and enterprise.

That this is true is seen in the fact that the gems of practical thought with which this volume abounds, are emanations from those who have forged their ideas upon the anvil of their own experience, and have voiced them in expression born of an enthusiasm worthy of their calling, and worthy of an imperishable keeping.

This volume is peculiarly the product of the farmers of Wisconsin — and as such I am pleased to present it to you, that it may be sent out on its mission work.

Respectfully yours,

W. H. MORRISON, *Sup't.*

*Madison, Wis., July 9, 1890.*

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# UNIVERSITY OF WISCONSIN.

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The libraries accessible to students embrace that of the University, 23,000 volumes; of the State Historical Society, 138,000 volumes; of the State Law Department, 23,000 volumes; of the City, 11,000 volumes, besides special professional and technical libraries, making in all more than 200,000 volumes, thus affording very exceptional opportunities for reading and special research.

For further information send for a catalogue, or address the President or the head of the department concerning which information is desired.

# UNIVERSITY OF WISCONSIN.

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The University of Wisconsin offers young men two courses of instruction in agriculture; first, a Short Course to accommodate those young men who desire to gain a better knowledge of the science of agriculture, but who can give but a limited time to preparation; and, second, a long course designed to meet the needs of all young men desiring the liberal and scientific training essential to the best life on the farm, and to those who desire to become specialists in some department of agricultural science.

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Sixty lectures, mainly devoted to Feeding and Breeding, by Prof. W. A. Henry.

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The facilities now provided to make the Short Course an intensely practical and profitable one for young farmers are very excellent.



A reading room and library are provided in which students will find the standard works on agriculture, and files of seventy of the leading agricultural periodicals, nine of which are from Europe. The lecture room is provided with an electric light, so that lantern slides illustrating the lectures may be used.

The famous Auzoux life-sized model of the horse, which can be dissected to show the separate nerves, muscles, blood vessels and bones, will be used to illustrate the lectures on anatomy.

The course opens January 5th, 1891, and lasts twelve weeks.

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# LAW PROVIDING FOR AGRICULTURAL INSTITUTES.

(Original Enactment, Chapter 9, Laws of 1885.)

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## CHAPTER 62. LAWS OF 1887.

### AN ACT RELATING TO AGRICULTURAL INSTITUTES, AND AMENDATORY OF CHAPTER 9, LAWS OF 1885.

*The people of the State of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. The board of regents of the state university is hereby authorized to hold institutes for the instruction of citizens of this state in the various branches of agriculture. Such institutes shall be held at such times and at such places as said board may direct. The said board shall make such rules and regulations as it may deem proper for organizing and conducting such institutes, and may employ an agent or agents to perform such work in connection therewith as they deem best. The course of instruction at such institutes shall be so arranged as to present to those in attendance the results of the most recent investigations in theoretical and practical agriculture.

SECTION 2. For the purposes mentioned in the preceding section, the said board may use such sum as it may deem proper, not exceeding the sum of twelve thousand dollars in any one year, from the general fund, and such amount is hereby annually appropriated for that purpose.

SECTION 3. This act shall take effect and be in force from and after its publication.

Approved March 16, 1887.

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MADISON, Wis., July 1, 1890.

HON. C. E. ESTABROOK, Madison, Wis.:

DEAR SIR:—It is my purpose to include in the forthcoming Bulletin some account of the life of the late Hon. Hiram Smith, and of his services to the farmers of the state of Wisconsin, and in connection with this subject it seems

appropriate to have from you, as the author of the law providing for Farmers' Institutes, some account of its origin.

Yours truly,

W. H. MORRISON, *Sup't.*

MADISON, WIS., July 9, 1890.

HON. W. H. MORRISON, Madison, Wis.:

DEAR SIR:—I am in receipt of your note of the 1st inst., relating to the origin of the Farmers' Institutes in this state. I presume you want to know how I came to think of the matter. I cannot tell exactly when the plan which was finally adopted became fully formulated in my own mind. It will perhaps best serve your purpose for me to state briefly the circumstances and conditions which suggested and preceded the drafting of the enactment in question.

In the early part of October, 1884, I listened to a short address by the late Hon. Hiram Smith to the farmers of Manitowoc County, on the grounds of the Industrial Association near the city of Manitowoc. The address was very practical, and one which any person of common intelligence could readily understand; and at the same time it was replete with information of the most valuable kind to the persons to whom it was addressed. It was in fact the summing up of years of valuable experience and study, and was being given under the most adverse circumstances, amid the noise and confusion of the fair ground. The first thought that occurred to me was, what a pity that the valuable experience of a successful life should be given out in such an unsatisfactory manner, and that no effort should be made to preserve the knowledge thus gained. That in a few short years, at most, the speaker would be no more, and that the result of forty years of earnest labor and success would then be lost. It then occurred to me that I would endeavor to get up a meeting of farmers of our county at some future time and invite Mr. Smith to address them under more favorable conditions. I had not considered this proposition long until it occurred to me that if such a meeting would be advantageous to the farmers of Manitowoc County it would be advantageous to the farmers of other counties in the state as well, and that if such a work should be undertaken it should be extended throughout the state. To do this required some organization; thus one idea led to another until the whole as it became a law was distinctly outlined in my mind.

This is as near as I can give the genesis of the law relating to Farmers' Institutes in this state; and while Mr. Smith had nothing to do in devising the scheme, it was his address that set the train of thought in action which gave birth to the plan which we finally adopted. As a matter of course, I had given the subject of education and agricultural education some thought prior to that time, and was familiar with the efforts in various localities to organize farmers' conventions and farmers' clubs, and I was also familiar with the work being done by the Dairymen's Association, Horticultural Society and other kindred



organizations. These societies and organizations and the labor of many individuals, including Mr. Smith, undoubtedly served to prepare the way for the Institutes. As soon as Mr. Smith's attention was called to the subject of the proposed Institutes, he at once recognized the value and promise of good to come therefrom. He said: "It is just what we want," and to his energy, skill and judgment a great deal of the success which has been attained in the direction indicated is owing. To us who survive him, while keeping his memory reverently, it will be no small satisfaction that we were instrumental in devising ways and means by which the fruit of his experience was preserved to the people of our state.

Yours truly,

**CHARLES E. ESTABROOK.**

## In Memoriam.

Hiram Smith was a strong man. He was strong in his judgment, strong in his will, strong in his friendship, strong in his hatred of sham and hypocrisy and singularly sincere and strong in his love for right reason. He placed many well formed and solid blocks in the foundation of Wisconsin's agricultural prosperity. He made his own fortune with his own hands and with a mind untrained in the wisdom of the schools. He was self made but he did not worship his maker as is frequently charged against men of this class. His keen thought cut as clearly through the follies of conceit as through the slush of bad logic. He loved men and hated walking mummies as thoroughly as any man on earth. His broad public spirit was his grandest characteristic. The great ambition of his later life seemed to be to help his fellow farmers everywhere, to better fortunes and happier lives. In his own life he had felt the burden of poverty and the burden of thoughtlessness. With his strong will he had trodden them both under the feet of knowledge, and for years he was a teacher of men, that they might profit by the lesson he had taught himself.

No man knew better than he the hard side of the farmer's business as commonly followed, its grinding economies, its unceasing toil, its harrowing isolation, its often profitless labors, its unbusiness-like methods. The farmers listened to him because they felt he was one of them. No cultured graduate of a college could quite do what he did in stirring the dormant mental energies of his class. No man denounced more mercilessly than he, the faults which he found there, and yet no man could have a stronger faith in the possibilities of the average farmer's mind when stirred to action, than he had. For ten years before his death he had been one of the leading authorities in the dairy world. His farm had been a practical experiment station, doing gratuitous and valuable work for every person who kept a cow. His work and his style of stating the ideas upon which it was

based made him a correspondent eagerly sought by the leading agricultural journals of the United States. The State Dairy-men's Association of Wisconsin is one of his monuments. Through it he has reached nearly every farm in the state, to a very large extent it is due to him that this organization has been kept steadily to its purpose, the education of farmers and the upbuilding of a great material interest. His generous character has helped to keep it free from the poison of envy and the stupidity of personal jealousy. His practical wisdom has made it a fountain of knowledge that has grown clearer and greater with each succeeding year. No person not a member of that association can understand the tenderness and strength of that feeling in its ranks which will be ever loyal to the memory of Hiram Smith. He was a friend of young men. Age never numbed the touch of his sympathies. His mind never grew old. He never caged himself in a prison of memories. As a regent of the University for twelve years he did a most effective work. Steadily he labored to build up the agricultural department and make it worthy of the institution and of the state. He has helped most ably to bring our Experiment Station to its present high rank. He lived long enough to see the first dairy school in the United States established under his direction. The Wisconsin Farmers' Institutes came as the outgrowth of his thought. To them he gave a gratuitous and a splendid service. Thoroughly at home on an institute platform, with the voice and earnestness of an orator and the clear cut thought of a practical man of affairs, he brought truth and conviction to thousands of men who needed both. Hiram Smith was born February 19, 1817, in Tinloton, Bucks county, Penn. He was married to Catharine A. Conover, March 20, 1845, and came to Sheboygan County July 4, 1847. He died at his home in Sheboygan Falls, May 15, 1890, at the age of seventy-three. The friends whom he had loved in life and who loved him said the words of parting and gently laid him to rest. He will be ever honored for he had "the love of wisdom and the wisdom of love."

H. C. ADAMS.



HON. HIRAM SMITH



# Morning Session--Tuesday, March 25.

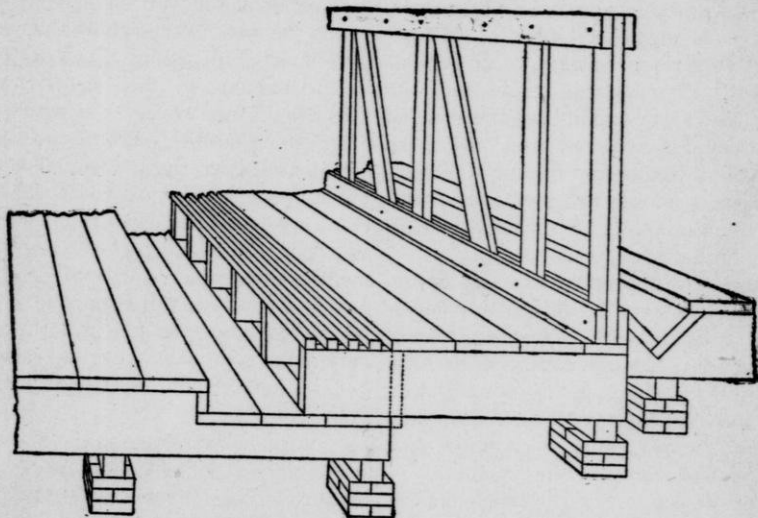
## ARRANGEMENT OF THE STABLE AND METHODS OF TYING.

By L. H. ADAMS, Supt. Experiment Farm.

### Cleanliness.

The prime requisite in dairying is cleanliness. Without cleanliness in the stable it is useless to go further, for no matter how perfect our knowledge is regarding the making of milk and the handling of it, the setting of cream and churning, if we fail in a dairy stable we

none have given such uniform success as the stanchion. There are opponents to the stanchion system of fastening cattle, but all things considered, I know of nothing that we can replace the stanchions with at the present day. We may get something that will supersede the stanchion before long, but in talk-



*Cut Showing Floor and Watering Trough in Dairy Stable.*

are gone. Therefore it is well to commence at the bottom and see that we get started right.

### Stanchions.

We have had experience with several methods of tying at the station, but

ing of these farm topics we must see that we keep within the bounds of practicability. If we advise something that is impracticable or beyond the reach of the average farmer it will do him no good, and in this talk I shall endeavor to com-



bine all the points of practicability, as near as I can.

#### Stable Floor.

The floor that you see here represented on the diagram is essentially the same as the one in use at the Experiment Station farm to-day, and has been for the last three years. In putting this floor into our stable we took out a tight plank floor with a four-inch drop behind the cows; it was unsatisfactory. Our cows would get dirty in spite of a liberal amount of bedding used under them. This matter of bedding is a point that we must spend some thought upon if we wish to cut down the expense of dairying. Now, do not understand me as being opposed to the use of bedding; it certainly is a wise thing to do, but on the majority of dairy farms, where all the waste products are used, where nothing goes to waste, this question of bedding is a serious matter; we do not all have it. Farmers who utilize their oat crop, feed straw and all just the same as they would the timothy crop, and those who use the corn crop use the stalk and all, so you can readily see there is not much material left with which to bed a large herd of dairy cattle.

Now, with this floor you see represented here there is no absolute necessity in using bedding for the sake of cleanliness. There has not been a forkful of straw litter of any kind put on that floor in three year's time; and there is not a tag of manure or manure lock on the flank of one of the cattle.

The objection to the stanchion is the rigidity with which the cow is held in one position, the cattle being unable to turn around to lick themselves; but as every dairyman has it in his power to let his cattle out daily for exercise, this objection is not so bad as one would at first think. I would not advise

stanchioning heavy beef animals, but should prefer not to fasten them at all but to feed them loose. But remember I am talking now of a stable and methods of tying for dairy cattle.

This floor here is six feet wide, and we can drive right in with a team and wagon and load the manure from the gutters on either side directly into the wagon. This floor that the animal stands upon is about 54 inches wide; our cows are grade Jerseys principally. This watering trough is made of two planks, one 10 inches wide and the other 12, spiked together and the bottom of this trough is on a level with the floor on which the cattle stand. The trough has an incline of one inch to every twenty feet which is sufficient to carry the water entering this end to the other; there is an outlet at the further end through which the water runs after the cattle have finished drinking. Feed is given to the animals in this same trough. The drop is 12 inches, from the slats down to the bottom. Whatever urine is on this floor goes right through and is taken up with an absorbent that is thrown between the joists that support this floor. The solid part of the excrement is all left along in this drop. A cow in urinating will drop the water further forward than she will the solid part of the manure, so that in cleaning out it is not difficult if the manure is out here.

#### Absorbents.

For an absorbent we use horse manure. The horses stand over the cows and the manure is pushed through a hole daily down into the basement stable where the cows stand, and distributed along these gutters, and it takes up the liquid nicely and keeps the manure of the farm all together where it goes out. If, as I have explained, the

urine passes through these slats, you can readily see how the cow lies down on a dry floor. I think you will all agree with me that lying down in a damp place is more objectionable than lying in solid excrement. I would rather see a cow lie in a pool of water, for in milking, no matter how careful you are about brushing, there will be a flavor that you cannot keep out of the milk.

#### DISCUSSION.

C. P. GOODRICH—Wouldn't you prefer to have your cows well bedded?

MR. ADAMS—Yes, I would prefer to have the cows bedded, provided I have the bedding, but, as I say, we utilize the waste product so closely that we do not have it.

C. P. GOODRICH—Don't you think it adds to the comfort of the cow?

MR. ADAMS—It does to a certain extent, undoubtedly.

C. P. GOODRICH—Wouldn't the platform be enough, so that you could dispense with the use of slats, if you have plenty of bedding?

MR. ADAMS—Straw will never take the place of slats at all.

C. P. GOODRICH—If straw was used on the slats the solid part of the manure would not be trodden through, and would dirty the cows up just as bad as though there were no slats there?

MR. ADAMS—Not so badly, for the reason that the urine would go down through. But there is no necessity of the cow lying in either the solid part of the excrement or the urine. The cow's feet should stand about over that second slat; that gives room enough for getting up and shifting position, without any extra exertion, and these slats aid the cows in getting up.

H. C. THOM—How far is it from the

top of the slats to the bottom of the trench?

MR. ADAMS—It is twelve inches from the top of the slats down here; the cow steps up eight inches.

H. C. THOM—She never steps down into the trench?

MR. ADAMS—She never does; that is one objectionable feature that this floor overcomes; this floor being two inches longer than the plank floor goes away with the cow stepping back and standing down here with her hind feet.

H. C. THOM—Do you ever have cows calve in the stanchions?

MR. ADAMS—No, sir; we always make a record of the date of service so that we always are warned and take the cow out of the stanchions; we have a hospital or box stall in the same basement barn that our cows are transferred to for at least a week previous to calving.

JOHN MARCH—Does the cow always comply with the record of the time she should calve?

MR. ADAMS—We have found that our animals do not vary more than from five to six days, and rarely ever as much as that.

CHAS. BRIGHAM—Of my cows one has calved three days less than nine months, and some have calved a few days over nine months and a half; now in such a case you would have to keep the cow in the box stall something over two weeks.

MR. ADAMS—Of course, in a normal condition a cow will not vary; but there are circumstances in which a cow will calve before or after, most always before.

GOV. HOARD—Do you allow your cows to calve in the stanchions?

MR. ADAMS—No, sir.

GEO. MCKERROW—Mr. Adams, what do you consider the best location for a dairy stable?



MR. ADAMS—The stable should be located on ground sufficiently elevated to carry off the outside water and to be well drained. We don't want any more mud around our stable than is absolutely unavoidable, and the stable should be built with its long way east and west and on the south side we should have just as many windows as we can get in, to afford light.

GEO. WYLIE—Does this method save all of the liquids of the manure?

MR. ADAMS—It does, with the use of an absorbent as I have described.

GOV. HOARD—What do you use as an absorbent?

MR. ADAMS—The manure from the horse stable.

GOV. HOARD—Do you use any land plaster in your stable?

MR. ADAMS—We have used no land plaster; we have used lime.

GOV. HOARD—Why do you use lime?

MR. ADAMS—We use it to take away the odor; it gives a sweet, pleasant smell to the stable.

GOV. HOARD—But lime is a disengager of ammonia and land plaster is an absorbent of it.

MR. ADAMS—We get all the liquid taken up in the horse manure.

GOV. HOARD—That is very true, but at the same time ammonia is a volatile gas and if you use lime you will disengage the ammonia by the action of the lime.

MR. ADAMS—I don't want to be understood as deprecating the use of land plaster, there is no question but that it is a valuable thing to use. We use the lime because we have it on the farm more or less all the time in building operations. We had a lot left over that was slacked and we used it. If we were to buy an absorbent there is nothing that would be so effectual as land plaster.

SUPT. MORRISON—Don't you think it was a loss to use that lime?

MR. ADAMS—I don't think we saved anything by the use of the lime. I think that the addition of lime itself to the soil is an advantage, however.

GOV. HOARD—That is true; but if you take manure and add lime to it, you will fire-fang the manure.

QUESTION—Would slacked lime fire-fang the manure?

GOV. HOARD—Yes; it is the chemical action of the lime upon the constituent part of the manure, where all the ammoniacal parts are thrown out. You know when you are slacking lime how ammonia is disengaged and passes into the air, and the action of lime by dissolving in water upon the manure is destructive of the ammoniacal constituent of the manure. It disengages it. Land plaster is an absorbent of it; it becomes sulphate of ammonia, passes from sulphate of lime to sulphate of ammonia by the absorbing of ammonia.

SUPT. MORRISON—Give us your experience in reference to the matter of land plaster?

GOV. HOARD—I was led to the use of land plaster in stables from a study of its chemical affinities; finding that sulphate of lime had a powerful affinity for ammonia, then I thought to myself if it has so powerful an affinity for ammonia it ought to be valuable in the stable, where ammonia is being thrown off. I also noticed in handling horse manure, especially the bedding of a male horse, where the urine is thrown into the bedding under the horse, that when you take up the bedding in the morning it will often make your eyes smart and your nose sting, there is such a rise of ammonia in the air. Now that ammonia is worth seventeen cents a pound at wholesale, and New Jersey pays

three million dollars a year for the purchase of manure for ammonia. Now, I said to myself, ammonia is worth saving; it is worth saving by using sulphate of lime in the stable. I had a crowded stable of thoroughbred cattle, and a horse, and part of the time two horses, and I wanted to make that stable as healthy as possible for those animals, and I knew the action of the land plaster in absorbing those gases; it is a powerful absorbent. If you wish to try it step into a horse stable, and take a handful of land plaster and sprinkle it on some horse manure, and see how soon—in a second—it is gone. Go to a privy and no matter how rank it may be, and sprinkle land plaster on it, and see how quickly it is absorbed. Therefore it was of use to me in preserving the health of my animals and in the retention of this valuable component, worth 17 cents a pound at wholesale. I purchased a barrel of land plaster at \$1.60, and it lasted with nine animals through the winter. I am confident it added to the manurial value of those animals that winter at least ten or twelve dollars. It is most valuable, and I cannot too strongly urge that it is a most valuable and paying thing to do—the purchase of land plaster and the sprinkling of it night and morning in the stable.

Fermentation in the manure heap, if too great, will produce fire-fang, which disengages elements that would be of value; land plaster retains them upon the land.

T. J. FLEMING—It seems to me that a cow going up on to that bed with no litter on it and constantly wet is liable to slip. I raise that question because the drop I have got is only seven inches and gives very good satisfaction.

MR. ADAMS—I would answer Mr.

Fleming's question by saying that the drop we took out of our floor previous to putting this one in was four inches. We were obliged to take it out owing to the fact that the solid part of the manure in 24 hours would pile up to such a height that they had got to lie down in it. We increased the drop in another stable where steers were being fed to eight inches and the same objection was encountered there to a considerable extent. When we made up our minds to replace the old floor in the present dairy stable we put in this 12-inch drop and the cows never come in contact with the manure and we find no objection to the 12-inch drop, because the cows can get on to the floor readily; once up on that floor there is no occasion to step down until they go out of the stable and when we let them out we loosen the cows at one end of the stanchions and the cow turns around and walks on this floor and walks off here; she doesn't back off; she steps off.

T. J. FLEMING—Were those steers fastened with stanchions, where the drop was eight inches?

MR. ADAMS—They were fastened with chains around their necks that played up and down on a perpendicular pole.

T. J. FLEMING—I think that makes a difference as to the height of the drop, whether they are fastened with chains or stanchions. I don't think you will experience any trouble with milch cows with an eight-inch drop.

THOS. CONVEY—Is a slanting floor in a stable objectionable?

MR. ADAMS—I can't answer that question from experience. But when I could have a level floor that would answer the purpose of a slanting floor I would prefer that the cow stand on the level floor.

WELDON VAN KIRK—By the use of

this lime are you able to take away the odors of the stable entirely?

MR. ADAMS—Not entirely. We have got to depend upon ventilators to a great extent to carry off the foul odors of the stable.

WELDON VAN KIRK—What is the best way to ventilate a stable?

MR. ADAMS—Undoubtedly the best way is by running chutes or shafts of any size from a foot to two feet, that may be utilized for throwing feed down at the same time; run these from the top of the barn, where there is a free outlet, down to the basement of the stable and down to within two feet of the floor.

JOHN MARCH—Would dry earth with a little charcoal mixed be a good substitute for lime as an absorbent? We all have plenty of soil and can store a little and have it dry and use it in that way. I find it good.

MR. ADAMS—It would undoubtedly. Last fall we scraped up dust when it was extremely dry with us; we went out into the road and gathered up ten or twelve barrels of road dust and stored it away and are using it now as an absorbent behind young calves.

H. ROBBINS—What do you consider the best system of tying to use in an ordinary cow stable?

MR. ADAMS—That is the kind of a stable I am trying to talk about—an ordinary cow stable, and I think the present stanchion is the best system to use.

GOV. HOARD—Why do you like the stanchion?

MR. ADAMS—Because it will hold the cow in the best manner and enable us to keep her clean with the least trouble and most satisfaction.

GOV. HOARD—Do you think it a comfortable thing for the cow?

MR. ADAMS—For the average dairy animal, that does not weigh over seven to eight hundred to nine hundred pounds, where she may be let out daily for exercise, I don't consider it a bad practice to keep them in stanchions.

H. ROBBINS—Do you consider it necessary to the health of animals to lick themselves?

MR. ADAMS—That is undoubtedly a very natural proceeding; how necessary it is I am unable to say.

GOV. HOARD—Do you think it would be a good thing for you to be cramped up with your head and your neck between two rigid bars, and when you lay down, obliged by nature to turn your neck one way, and then be obliged by these stanchions to lie with your neck straight up and down?

MR. ADAMS—I will answer that question like a Yankee usually does by asking another. How can we fulfill the requirements of cleanliness in any other way than by the use of the stanchion, without confining her so that she will be able to raise herself as she does naturally in the pasture, and to lie down naturally—how will you do this with the same outlay for room in the stable? If you use box stalls you can't get as many animals in a given space. I don't say there are no disadvantages to the stanchion system, I don't claim it is natural for a cow to stand in a stanchion. Is it natural for her to be in a stable at all? Was the cow ever intended for a stable? We have got to restrict her in some sense by any tie that we employ. The question is, what is the best tie? One man will say this and another that.

GOV. HOARD—I want to ask how much space is allowed in your diagram for each cow, from backbone to backbone?

MR. ADAMS—Four feet is ample.

GOV. HOARD—I have a system, if you

will come over to the Executive barn, and I will show you a stable where two cows are kept so clean that on the flanks of one which is a little white you will scarcely find a stain, and I allow three feet and a half of space.

MR. ADAMS—As I said four feet is ample, and there are numerous stables where the space for cows in stanchions is not more than three feet.

GOV. HOARD—It seems to me that as the cow is a mother she ought to be handled with a constant regard for her comfort, and that a rigid stanchion is the most comfortable thing in the world for the man that owns the cow, but not for the cow herself.

MR. ADAMS—Undoubtedly the most comfortable way of handling cattle would be for them to run loose; that is the system that I should advocate if it were a practicable one. I would allow the animal perfect liberty. But that would require too much space and would necessitate this practice of dehorning to a considerable extent. It seems to me, with our present knowledge, there is nothing at the present time on the average dairy farm, where there are from 25 to 50 animals kept, that will supersede the stanchion. I hope we will have something better in the future. I know a man in the state of Washington who is going into the dairy business. He objects to the stanchion, and what does he substitute for the stanchion? He has a chain running the entire length of his stable just in front of his feed manger, and he ties the cows to the chain. She can't turn her head to the right or left to turn around and lick herself any more than she can in the stanchion, and in getting up or lying down they are apt to get their heads over or under that chain; they are more liable to accident. He has confined his cows in just

about as rigid a manner as if he had put them in the stanchion, and he hasn't the benefit of the advantages the stanchion offers.

GOV. HOARD—We haven't said anything yet about your watering trough.

MR. ADAMS—The watering trough is made of two plank, one twelve inches wide and the other ten inches wide. The trough inclines an inch to every twenty feet. The water runs in through a pipe from the tank, which is about a foot above the level of this trough in the barn, and runs the entire length of the trough and the animals stand in the stanchions and drink in a very satisfactory manner, the weak and strong alike. They all have to wait their turn. The first cow will commence drinking and the first two or three will take up the entire quantity of water poured into the trough, and when they get through it will run down further, and I water the entire row of cattle without running out as much as a pailful at the other end at the time they get through. The water is clean and nice, and it is warmed in the tank before it comes in so we have no trouble with freezing pipes.

H. C. THOM—A barn 40 feet wide and 60 feet long will accommodate 20 cows; if you give the cows a space 16 feet by three feet each side, there is plenty of room for the cows; they can lie down and can lick themselves at pleasure, and I believe the time is soon coming when the dairymen of the state will adopt that method.

C. P. GOODRICH—What kind of a time would you have when you wanted to milk?

H. C. THOM—I would have the head of this platform a stanchion and would put them in that and milk them, and would turn them loose after that.



## MANURE.

By H. C. THOM, Dairy and Food Commissioner.

### Economy.

I won't talk on the subject of manure from the standpoint of a man who has a hundred cows. I will talk about where a man has a dozen or fifteen cows. I will start with a proposition that will meet with objection. I deprecate the practice of throwing out manure every day. I don't believe when you take out manure every day where bedding is used liberally that you get the greatest advantage from that manure. I think that manure to give the soil the greatest benefit should be thoroughly rotted. There is nothing in straw when it goes on to the field in an unrotted state that will give the soil much strength, but if you take straw from the stack and so handle it that it becomes thoroughly rotted it is of great advantage to the soil. Now, my idea in speaking of cows running loose was that the stable should not be cleaned from the time the cows go in to the stable in the winter until they come out in the spring. That may be opposed to your ideas of cleanliness but your ideas are wrong about that. With a fair use of land plaster as an absorbent, you can keep the stable just as free from bad odors as this room is at present. I have done that now for a number of winters. I wouldn't use lime for the reason, as has been stated, it is a dissipator of ammonia, and ammonia is a fertilizer, and if you disengage the ammonia you are losing fertilization.

### No Waste.

Now, if these stables are liberally bedded, you will accumulate in six months, from two and one-half to three feet of manure, and it can be taken out after the crop is cut and distributed where it should be distributed, upon the grass land, and it is in the best possible condition and you have saved every ounce of liquid and you have saved every pound of solids. There is nothing that has escaped; you have got it all.

Now, I have two barns, one 40×60 and the other 24×48, in which cattle run all the season through, and when that manure is taken out and put upon grass land upon half of a field, you can tell that grass land just as far as you can see it the next year. The idea of putting manure in heaps belongs to the dark ages. The idea of putting it in a yard and letting it spread all over a yard is not economical. But if manure is taken into a yard and there is something of a hollow in the yard, or better still a hole made on purpose, and the manure is put into that and so handled that it does not fire-fang, I believe that but very little of its value has been lost.

### Fertility is Wealth.

Every one knows that the Germans are especially noted for their economy in the handling of manure. One of our most successful farmers, Mr. Linse, of La Crosse, has a hole or pit dug in his yard, and it is stoned up and grouted on the

bottom, and in the bottom is a round hole with a grating over it. The top of it comes up four feet above the surface and he drives right to it, and all the manure from his barn is put in there, and there is a cover over it, and when he comes to draw it out, he drives his team right in there and loads from the side. He puts a pump down into the hole below the grating and pumps up the liquid, and he has a long, tin spout which he can swing around, and he covers the top of the pile with the liquid that comes from the bottom; and Mr. Linse's success in fertilizing his farm has become a matter of comment all over the State of Wisconsin.

There are many farmers in this state who have straw stacks; some are burned; they are considered of no commercial value. If they are correctly handled and turned over two or three times in such a manner as to wet down, you will find you will get a body of pretty fair manure out of it.

Mr. J. M. Smith, of Green Bay, who has produced the richest forty acres of land in Wisconsin, never thinks of distributing manure directly upon land, but places it in compost heaps and it is turned over and handled and at last carried out on to the ground, and I believe that in this respect we can economize in the management of the farm.

#### DISCUSSION.

L. C. ADAMS—Does fermentation in manure increase the value of it?

MR. THOM—It does not.

GEO. MCKERROW—Which are the more valuable, the liquids or the solids in the manure?

MR. THOM—It is conceded by nearly every one that the liquids are.

GEO. WYLIE—What per cent. is lost by piling manure in heaps?

MR. THOM—I think it is a very small percentage that is lost.

GEO. WYLIE—In heaps in the fields I mean?

MR. THOM—It would be a dead loss to me; I have tried it several times.

THOS. CONVEY—Does the storing of manure in large heaps cause fermentation?

MR. THOM—Yes.

THOS. CONVEY—And you say fermentation does not increase the value?

MR. THOM—Yes, sir.

THOS. CONVEY—You store manure in sheds, do you?

MR. THOM—Yes, sir, I do.

THOS. CONVEY—Do those statements agree?

MR. THOM—They do in practice; they may not in close theory.

THOS. CONVEY—Do you favor the use of land plaster?

MR. THOM—I do.

THOS. CONVEY—Does it have an equal effect on all kinds of soil?

MR. THOM—I think not; I am talking about it in reference to the manure and not the soil.

JOHN MARCH—Do you have a stairway for your cows to get in and out of your stable?

MR. THOM—It doesn't take very much of a stairway for the cows to get up or down three feet. An old German up to Kewaunee says, It's all bosh. I said, Have you tried it? No, he said, if you let your cows run in there all winter by spring they will be way up by the ridge-pole. But it is not true. My cows have never accumulated over three feet in a winter.

J. M. TRUE—Do you understand there is always an escape of ammonia when there is fermentation in a manure pile?

MR. THOM—No, sir, I do not.

GEO. MCKERROW—If you have grass

land to put this manure on wherein is the loss in hauling it out every day?

MR. THOM — Well, my experience has been in putting it on meadows, that I have got a combination in the next cutting that is not very desirable; there is a large amount of straw in it.

GEO. MCKERROW — What objection is there to it on pastures?

MR. THOM — Coarse manure cannot be distributed without loss to the pasture, it destroys some of the grass.

GOV. HOARD — Can you manure a pasture without having it offensive to the cattle?

MR. THOM — No, sir; but two or three rains will remove that.

C. P. GOODRICH — Now, I want to know when and under what conditions you would apply manure to the land?

MR. THOM — After it was rotted I would put it on the meadow after hay cutting; I would never think of putting manure on ground and plowing it under.

C. I. BRIGHAM — Do you have to bed your cattle every day?

MR. THOM — Not always; if the cattle are bedded every other day it is sufficient. A creature running in that manner never lies down on the same droppings twice.

C. I. BRIGHAM — Do you feed in mangers?

MR. THOM — I do.

C. I. BRIGHAM — How do you arrange your mangers so your cattle can eat out of them towards spring?

MR. THOM — There is no floor in the barn; this is the feeding floor, and the bottom of the manger is right here, about three feet high; then I run two by fours and fasten them up at the top, and then across here I put another two by four this way so, that leaves a square hole for every animal to put its head in

and eat from the manger which is on a level with the feeding floor, and in the spring, if there is three feet of manure in the stable, the cattle can still easily eat from the manger.

MR. DOWLING — I have been compelled to use an absorbent behind my cows which has been rather costly to me—it was burned clover.

R. W. DENNIS — What is the value per cow of the liquid droppings for a year?

MR. THOM — If you will consider the whole manure worth \$10, I should say that the liquid manure would equal about six of it.

C. I. BRIGHAM — What is the value of manure from one cow through the year, as you operate them?

MR. THOM — A ton of manure on land worth \$100 an acre should be worth \$2; if it is on land worth \$10 an acre it is not worth so much.

ORANGE JUDD — I have seen this practice of not removing the manure from the building until spring in western New York with large herds of sheep, where the manure has been left until it raised to four or five feet in height, in a large ground cellar. But I do not think it is a good practice generally where we have not plenty of bedding.

I want to say a word in regard to the use of absorbents and ammonia. I was very strongly of Gov. Hoard's opinion and theory after I had spent three years in a laboratory, but I have changed my opinion a good deal since, and I think the experience of those who have tested it has changed. We may get a little smell of ammonia from the manure, but there is not much ammonia there. The escape of ammonia does not amount to so much after all. No appreciable amount of ammonia will escape so long as moisture is present; if the manure is kept

damp not enough ammonia to amount to anything will be lost.

GOV. HOARD—Where does it go when it fire-fangs?

ORANGE JUDD—Fire-fanging is lack of moisture. Land plaster is very good in certain places, but until we know by experiment where it is good, it is not really well to buy it.

GOV. HOARD—Do you mean to use on land?

ORANGE JUDD—Yes. It is not worth its expense as an absorbent; I am quite sure of that. Soil is much better. I have carried on some experiments in that line. We want plaster on some of our soils, but it is far too expensive to use as an ordinary absorbent.

J. M. TRUE—Don't you believe that land plaster has a tendency to fix the ammonia in the manure?

ORANGE JUDD—Not so much as supposed. There isn't a great deal of interchange of elements in changing the sulphate of lime into the sulphate of ammonia. Under proper conditions of heat, etc., there may be—in a laboratory for instance. I rather object to the governor's theory, except where you want the land plaster on the land. As a general observation, the plaster is far too expensive where it is not wanted outside of the manure. Simply dry earth, rotted manure or burnt clover, or any material that you can throw in will do very well.

GOV. HOARD—We have got to be very careful in our experience meetings. We must not pound one another over the head because our experiences differ. I have been making some experiments in regard to the fertilizing values of manure from the use of land plaster. I will give you one. I took seventy rods of ground, and used a barrel of land plaster, and with those cattle it amount-

ed to sixteen loads of manure; the ground was so poor that it would hardly produce a crop of potatoes. The land was planted to corn and the manure was put in there green. The land was planted and the manure was put on and dragged under. There was a barrel of land plaster in this manure. The corn was planted the 9th day of May that very dry severe season we had. The corn seemed to find sufficient land fat in that green manure so that it never stopped growing a moment, and I had stalks in sixty days' time that weighed ten tons, cut even with the ground. I cut on that piece of ground, four tons 170 pounds of cured corn fodder, cut on the 15th day of August and weighed the 15th of November. On a corresponding piece of ground with manure that had no land plaster in it I had a most signal failure. Now, if with the same season, and the same quality of manure and the same quality of solid and the same kind of crop, I produced those diverse results, it was to me a very significant experience.

SUPT. MORRISON—The question of "watering" will now be taken up by Mr. T. J. Fleming, of Watertown.

MR. FLEMING—We will consider the subject open for discussion at once. Are there any questions?

H. C. THOM—Would you heat water above 70 for cattle?

MR. FLEMING—In winter I would heat it higher if I had the facilities for heating.

C. P. GOODRICH—If you could give cows water fresh from the well at, say 48 degrees, would you think it would pay to heat water?

MR. FLEMING—I don't think it would pay; I know it does from my own experience.

GEO. MCKERROW—If they could drink



this water at 48 degrees in the stable, don't you think it would be better than to have them drink it out doors?

MR. FLEMING— I don't think the advantage, if there is any, derived from watering stock in the stable will pay for the extra expense; heat the water outside and let your stock go and drink it.

C. I. BRIGHAM— How are you going to heat water for a herd of forty cattle?

MR. FLEMING— Go to the necessary expense of putting in heat.

C. I. BRIGHAM— How much would it take?

MR. FLEMING— It differs; I can't tell you how much a water tank costs; after making cheese I turn the steam in the boiler of my engine into the water tank, which gives me the necessary heat. But if I had to put in the necessaries for heating water I would be willing to do so.

C. I. BRIGHAM— What would be the profit in one season of heating water?

Gov. HOARD— It would cost you about \$50 for good apparatus and about five cents per day for soft coal.

MR. FLEMING— I have had but a crude way of experimenting with this question. Up to three years ago I always watered my cows with the cold water as it came from the well. When I got to dairying as I thought I should I began to heat the water to a temperature of ninety degrees and found that the cows yielded very nearly twenty per cent. more when receiving this warm water than when receiving the cold water, all other things being equal. I attributed this to the warming of the water and to the facts that the cows drank more of it.

SUPT. MORRISON— Would you advise offering cows water more than once a day?

MR. FLEMING— Had I the facilities without incurring extra expense I should water my cows twice a day in winter,

but I am obliged to water them only once.

MR. RUNDLE— What is a usual and cheap method of heating water?

H. C. THOM— I have an ordinary cast-iron heater, running into the side of a 25 barrel tank; it costs I think eleven or twelve dollars. I use in that heater such drift stuff as may be found about the farm, sometimes cobs, sometimes short pieces of roots and soft coal, soft coal is the safest on account of sparks.

L. C. ADAMS— Do you think it profitable, Mr. Fleming, to warm water for animals fed for beef purposes?

MR. FLEMING— I have never fed any beef cattle and I don't think I am prepared to answer that question intelligently.

SUPT. MORRISON— Does the purity of the water have any influence on the quality of the milk?

MR. FLEMING— I believe the purity of the water from the milk standard is one of the most important elements which enters into the production of milk. If we look at the office of water in the manufacture of milk we come to the conclusion readily, that water is one of the leading constituents. The water drunk goes directly into the blood. It is from the blood the milk is manufactured or elaborated. We find that the blood which circulates in the mammary glands of a milch cow is almost like milk itself. In good milk we find that 87 per cent. of it is water. When water constitutes so large a per cent. of the milk, it is impossible to say that a cow may partake of impure water, and yet say that the milk can be pure?

H. C. THOM— Cows will drink impure water rather than fresh.

MR. FLEMING— That may be due to some disarrangement of the animal system.

Gov. HOARD—Isn't it due to the temperature?

MR. FLEMING—I don't think it is always the temperature. We have sometimes seen brood sows consume the after-birth. I believe there is some disarrangement of the system which induces them to do so and I believe it is equally so with cows. I don't think it is worthy of consideration why it should be so. We should say, it will not be so. We should not let our intelligence be over-balanced by the instinct of the animal. It is not good for us to drink impure water; and what is not good for us is not good for the cow, as I believe.

MR. HURD—Can the gentleman get any more cheese by using warm water than he can by using cold?

MR. FLEMING—I get an increase in the flow of milk, and I find that the milk is proportionately richer, and consequently I have a profit at the cheese vat as well as at the milk pail.

H. C. ADAMS—Does the quantity of food consumed by a cow bear any relation to the amount of water she drinks?

MR. FLEMING—It does bear a relation to the amount of water, especially as regards the amount of moisture in that food; if a cow is kept upon dry forage she will drink considerably more water than upon a greener or more succulent food. A cow is not on full feed unless she gets all the water she wants to drink.

ORANGE JUDD—The governor stated an apparatus for warming the water would cost \$50. That would scare the great bulk of farmers from adopting that process.

Gov. HOARD—That would be the outside cost of any process.

ORANGE JUDD—A large tea-kettle fitted with a rubber tube will take off the chill of the water, simply running the

tube from the nozzle of the tea-kettle and fastening it to the boiler. I believe very earnestly in this heating of water.

SUPT. MORRISON—I was talking with one of the best dairymen we have Mr. John Gould, and he said that he put into his stable last fall a galvanized iron tank, holding 30 barrels, which cost him \$19. He gives his cows water at 50 degrees; there is no warming whatever; it is run through underground pipes from the well, pumped directly from the well and it runs into this tank, they receive the water at the same temperature as the stable.

THOS. CONVEY—Should an animal's preference be taken as a guide to go by in watering cows, that is, as regards warm or cold water?

MR. FLEMING—I think not; you can educate them to drink warm water just as well as cold; I have found as much difficulty in getting my cows to drink cold water in the winter after they have been on warm water, as it was to get them to drink warm water after they had been on cold water.

Gov. HOARD—There is a phase of this question of warming water for milch cows that men do not see, physiologically. There is not a real sensible woman, a mother, in this community but what would say to a mother nursing a baby, drink warm drink; that is the old, substantial judgment of every mother in the world. Every mother will tell you if you drink ice-cold water you dry up your milk. Now this applies to a cow as well as to a woman; the lacteal function is the same. The intelligent human mother drinks warm drink; the unintelligent human father forces a cow to drink cold drink and wants that she should give just as much milk. You are making merchandise out of the mam-

mary function of the cow. It is for your advantage to promote the flow of milk; a chill operates upon the functions of the mammary glands and has a tendency to close them up, and stops the lacteal secretion.

PROF. D. E. GARDNER—Is there a danger of cows getting too much cold water on a summer day?

MR. FLEMING—I think if they are kept from water for a long length of time on a warm day and become heated

up above their normal temperature, there is danger.

H. ROBBINS—Would you give a cow free access to cold water out of a tank after calving?

MR. FLEMING—I wouldn't give a cow free access to water until two or three days after calving.

R. W. DENNIS—Would you give them more water after calving than before?

MR. FLEMING—I would give them drink sparingly.

## CARE OF THE COW AT THE TIME AND AFTER CALVING.

SUPT. MORRISON—In the absence of Mr. H. C. Adams, to whom this subject was assigned, Mr. C. P. Goodrich, of Ft. Atkinson, will introduce the topic.

MR. GOODRICH—I suppose it is expected that I shall stand up here and you ask me some questions and see if you can't get a little out of my brain that will do you some good. If you can you are welcome to it; I haven't got but little out of it myself that has been any good to me.

C. I. BRIGHAM—How soon after calving do you consider it necessary to milk a cow dry?

MR. GOODRICH—I generally milk her partially dry as soon as I find her, but not entirely so.

C. I. BRIGHAM—Is it good to feed the milk to the cow?

MR. GOODRICH—I really can't say whether it is or not; I have tried it and the cow did well; I have withheld it and the cow did well.

WELDON VAN KIRK—I would like to

ask Mr. Goodrich his idea of the cause of the retention of the after-birth?

MR. GOODRICH—I haven't had a case of that kind for I think five years. I take good care of my cows and feed them well and they are not troubled that way.

GEO. MCKERROW—Do you feed your cows heavily, for a month before calving, we will say?

MR. GOODRICH—I do not; I feed them but very little corn.

J. M. TRUE—What is the special character of the feed that you feed for the last month before calving?

MR. GOODRICH—I feed good hay and good corn fodder, and feed ensilage now; and the grain part of it would be oats and bran, but not corn meal.

H. C. THOM—Do you think that is an infallible recipe for getting rid of the after-birth?

MR. GOODRICH—That wasn't a recipe for that at all, but I think good keeping helps.

J. M. TRUE—Don't you think there is

a good deal in the character of the feed that is fed during the last few weeks in its effect upon the retention of the after-birth?

MR. GOODRICH—I don't know.

GOV. HOARD—Don't you think that a feverish condition of the cow tends to the retention of the after-birth?

MR. GOODRICH—As I said to start with, I haven't had much experience with that trouble, but I used to, years ago when I didn't take so good care of my gows as I do now; they were exposed to storms, and drank ice water, and, on the whole, were not very well taken care of, and I occasionally had such a case then.

GOV. HOARD—Do you know whether it is frequent or not for cows when on pasture to have a retention of the after-birth?

MR. GOODRICH—I don't think it is very common.

GOV. HOARD—Is it as common as when fed on winter feed?

MR. GOODRICH—The cases that I used to have were in the spring, in March and April, when they were fed on dry feed.

MR. SLOAN—When should you take the calf from the cow?

MR. GOODRICH—I think it is best to let the calf run with the cow and suck the cow for two or three days, until the milk is good, for the reason that I think the other course is more likely to produce milk fever.

MR. SLOAN—You don't milk the cow dry the first time then in order to prevent milk fever?

MR. GOODRICH—That is an idea that I have, that they are not as likely to have milk fever if the cow isn't milked perfectly dry; it may be wrong.

R. W. DENNIS—What is the simplest preventive of milk fever? And also you said you fed your cows on bran and oats;

do they give a good, rich, heavy cream when you feed them on oats and bran?

MR. GOODRICH—What I said as to oats and bran was before calving, but I will say that they will give just as rich milk fed on bran and oats, as on corn meal.

R. W. DENNIS—I have been feeding about a half dozen cows this winter, on clover hay and bran and oats in equal proportion to the clover they were fed, and the complaint was that there was no cream on the milk all winter. I had a quantity of fox-tail in my oats a number of years ago and I screened it out and fed it with oats to my cows, and when I fed that we got heavy cream; but after that when the cows were fed bran with oats they gave but little cream.

MR. GOODRICH—I think I can see the cause why a great many fail in feeding bran. It is light stuff, and they have been feeding heavier feed; they will have oats and corn ground together and feed a panful; but a panful of bran isn't worth as much; if you will feed just as much in weight of it you will have better success.

R. W. DENNIS—When I was feeding the fox-tail I used a third of the fox-tail and two-thirds of oats.

GOV. HOARD—What do you mean by fox-tail?

R. W. DENNIS—It is a kind of stuff that grows all over this part of the country, in the oats particularly, and very often in the corn, if it is neglected.

SUPT. MORRISON—As a general thing the poorer the farmer the more fox-tail you will find?

R. W. DENNIS—Yes.

MR. GOODRICH—I can give you a sure preventive of milk fever; you can starve it out of them. You starve a cow a month and she will never have any milk fever, but if a cow is a good cow and



well taken care of I don't know of any sure preventive. I have had several cases of milk fever. The first two cases I had, the cows died; the next one the cow was ruined; since then I have not lost any. I use aconite, twenty drops, of the strength made to use with animals. It is tincture of aconite such as they sell for stock.

MR. HENDERSHOT—Do you think it is injurious to a cow to eat her after-birth after calving?

MR. GOODRICH—Where she has an opportunity to do it I allow her to do it, if she wants to, and I don't know of any hurt it does.

T. J. FLEMING—Don't you think it will make the cow sick?

MR. GOODRICH—I have never known it to.

JNO. MARCH—What is the best treatment for a caked udder?

MR. GOODRICH—Well, I don't know of anything you can do for it only to feed the cow very lightly, and keep the milk out of it.

GEO. MCKERROW—Is there any ointment in use that is good for that?

MR. GOODRICH—I never have used any; I presume there is.

MR. SLOAN—I had a cow with a caked bag and I made a liniment of glycerine and — in equal parts, and rubbed it on externally.

T. J. FLEMING—I have a simple and effective remedy for caked udder. I use 20 drops of tincture of aconite, putting it on an ear of corn, which is the best way to get the cow to eat it; then I take about a half bushel of bran and put it into an old horse blanket and steam it and then wrap it around the cow's udder, over the abdomen and across the loins; I don't know as that has any effect any more than retaining the heat, but that has a tendency to extract the infla-

mation; three doses of aconite, with this treatment, has invariably succeeded with me; I wouldn't give the doses nearer than an hour and a half apart.

SUPT. MORRISON—We have had discussions all over the state in reference to the retention of the after-birth, and a great many cures have been brought out. The most reasonable one I have heard was from an old dairyman the other day. He said sometimes this after-birth was retained and had to be taken away, and he had to send for a veterinary surgeon. He said if it ran above a day he gave a fluid ounce of ergot in a quart of warm water and that he followed with glauber salts, and then about an hour after he would give about one pailful of warm water, and a tablespoonful of ginger stirred in with about a quart of middlings or bran; since he commenced that system of feeding the cow he had never had a case where the after-birth was retained.

MR. PERRY—If you feed cows oats, the same as you do horses, for two or three weeks before they are expected to come in, the after-birth will not be retained. In some cases it is pretty difficult to discharge the after-birth when it is retained.

J. M. TRUE—The point made by the gentleman is a good one. The subject of prevention is a much more important one than how we may cure anything that is established in the shape of disease. I think the question of feeding in its relation to the retention of the after-birth is one that should be carefully considered.

H. C. THOM—I don't believe that any feed fed to the cow is an infallible recipe for getting rid of this after-birth. Every man who has got five or ten cows meets with this difficulty every year almost. I believe it is the worst policy to

allow an after-birth to follow the calf by more than twelve hours. I don't think the milk is fit to use for a long time, if retained longer than that. If you feed your cows in the most intelligent way yet you will have cases of the retention of after-birth. I have seen cows as fat as hogs and as well kept as could be and that still retained the after-birth; I have seen them in medium condition and still retain it. The best dairymen in the state have experience with it. It is a physical matter; the after-birth is retained by tissue. There are buttons fastened into these little pockets and they are fastened with this tissue, and I don't believe ergot will take it off. I believe a cow will contract the habit of retaining the after-birth. It runs in a family, like a wooden leg sometimes.

J. M. TRUE—Would you keep a cow

that had the habit of retaining the after-birth?

H. C. THOM—No longer than I was obliged to.

THOS. CONVEY—Don't you think feeding on oats, a laxative feed, will tend to prevent the retention of after-birth?

H. C. THOM—Yes, I think that is true, but I don't think it is well to lay it down as being an infallible recipe for it. If a man will oil his hand or wet it and go to the back part of the cow and insert his hand he will find this after-birth fastened to the uterus of the cow, and he can tell, if he is at all delicate of touch, whether it is tearing or coming off naturally; it will drop away. If a cow retains her after-birth three or four days it will take her three or four months to get her milk back into good condition.

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## FALLACIES IN BREEDING.

By GEORGE W. WYLIE, Leeds.

In the limited time at my disposal it is impossible to even briefly allude to the many fallacious ideas connected with the breeding of our domestic animals. Such ideas as, controlling sex, the influence of first impregnation, effect of imagination upon the color, aged sires bred to young dams, and young sires to aged dams.

The outward confirmation of the sire and the constitution and disposition of the dam being imparted to the progeny, and many others that might be mentioned, are conceded by careful, intelligent observers and practical breeders to

be largely fallacious. But the particular fallacy that I wish to allude to at the present is that of breeding in and in.

### Breeding In and In.

Incestuous breeding at the present time is an entirely different thing from what it was in the days of the early improvers. They bred in and in to fix a type and from animals of no previous affinity, while to-day we are using animals of the same general type and full of the same blood to begin with. That the early improvers by breeding in and in took the quickest possible method of fixing types, and establishing breeds is



probably true. That by persistent selection without inbreeding the same results might have been accomplished, is just as true, but it would have taken longer time. The early improvers considered inbreeding and the keeping within certain prescribed limits of blood necessary to fix a type or establish a breed. But when representatives of a breed have become so numerous that there are different families and branches of families, strains and sub-strains, all belonging to one breed, the necessity for inbreeding with that particular breed would seem to have ceased to exist. If all the excellence of any one breed were wrapped up in one family or strain, then perhaps, the necessity for inbreeding might for a time exist. But this, I believe, is not the case with the large majority of the breeds with which we have to deal to-day.

And any method of breeding that tends toward a weakening of the constitution, the transmission of disease, infertility and barrenness, must be considered dangerous. An animal or a race of animals lacking in constitutional vigor and substance, is like a house whose foundation is on sand. There is perhaps no class of breeders who have had more experience with inbreeding than the breeders of some strains of Shorthorn cattle. For 30 or 40 years past a good number of them have been working with some pet strain of this breed trying to produce something phenomenal by breeding in and in.

#### Out-Crosses Preferable.

While these men have been working in this way, Amos Cruickshank, over on the bleak hillsides of Scotland, by a judicious system of out-crosses, with only individual merit backed by a good pedigree to guide him, has produced a

family of Shorthorns of such excellence individually, constitution, and substance, that in comparison the inbred weaklings on this side almost look as belonging to a different breed.

When Gen. Sherman struck out on his famous march to the sea, he made a departure hitherto unknown in modern warfare; and when Amos Cruickshank left the beaten path before pursued, he demonstrated to the world that inbreeding to obtain individual excellence is a fallacy as far as Shorthorn cattle are concerned.

The result has been that there are no better selling cattle among Shorthorns at the present time than the Cruickshank's, and that there are fewer advocates of inbreeding in the Shorthorn camp today than ever before.

There is perhaps no stronger argument against incestuous breeding than that found in the thoroughbred or running horse. He has been bred as a distinct breed for over 150 years and inbreeding in his case has always been strongly opposed as it was found when ever tried to weaken his constitution and impair his staying qualities. Here we have the purest, the most prepotent, impressive and distinct race of all our domestic animals brought to this present high state of perfection without inbreeding in any form. And today he is superior to all other breeds in speed and endurance.

#### A Model Breeder.

The man who above all others is held up as a teacher to be followed by advocates of inbreeding is Thos. Bates. But any one who will study the career of Mr. Bates as a breeder will find that he was not strongly in favor of in and in breeding, but was compelled to practice it in the early part of his career from the force of circumstances—as at that time,

no where outside of his own herd could he find animals of sufficient merit, and of the type wanted to infuse fresh blood into his stock. But when this method of breeding had been carried to such an extent that in a single season 28 of the calves died, supposedly from a lack of constitutional vigor, Mr. Bates made a radical change in his operations. He abandoned inbreeding and never returned to it. And it was not until he had done this that he began to win fame in the show yards of England.

Any one who will carefully analyze the life work of Thos. Bates, will discover that any arguments that may be drawn from his operations in favor of inbreeding are not particularly convincing.

#### Theory Instead of Practice.

At the present time we have three classes of men who advocate inbreeding. The first class that I will allude to are theorists without much of any practical experience in this particular line, they have what they know on this subject largely from books. And while I do not wish to be considered as questioning the value of information derived from books, it must, however, be conceded that as regards this subject some practical experience is necessary to a thorough understanding of the situation. These men can work no great amount of damage to any live stock industry, except so far as they may from the plausibility of their theories be able to impress upon some new beginner the necessity of inbreeding.

#### Breeding Trotting Horses.

The second class may be found in the ranks of those who are breeding the American trotting horse. With this class a few fast fliers have been produced in about the proportion of one success in one hundred failures, but the

breeding methods practiced by trotting horse breeders are mainly of a different character from that practiced by incestuous breeders among cattle, for instance some of the sons and daughters of Rysdick's Hambletonian have been "out" for two or three generations and then the streams are brought together after being diluted with a large proportion of other blood; in very few cases have the extremely close methods advocated by some cattle breeders been resorted to in the trotting horse thus far. But this breed at present is largely formative and it is, perhaps, too early to draw conclusions; if inbreeding is justifiable anywhere at the present time it is so with the American trotting horse. The third and last class that I will mention may be found among breeders of dairy cattle, some of whom are strong advocates of inbreeding, and their teachings, if adopted by the masses are positively dangerous. I have already said that constitution is of the first importance, the dairy cow may be an exception to this, but as far as my personal observation and experience goes she is the animal above all others that should from the nature of the demands made, have a robust constitution. The breeding of sire to daughter may be the best possible methods to fix a dairy type; but if that method increases the dairy qualities and weakens the constitution what have you gained. If it were possible by inbreeding to increase the dairy qualities and at the same time increase the constitution to enable the animal to back up those qualities, there would be some reason for this kind of breeding. In these days of high pressure and push dairy animals must have constitution, and if there is any one principle of breeding that has been clearly demonstrated it is that increased constitution

in any race of animals is not obtained by breeding in and in.

**Lessen Constitution.**

Some of the most cautious advocates of inbreeding advise that if two animals have strong constitutions no harm can come from breeding them together. Yet they admit that to do so will lessen constitution, but add quality to the progeny. Quality today is not so scarce an article as formerly, and experience would seem to teach that it would be much safer to hold on to what constitution we may have, and reach out and add the necessary quality by the infusion of fresh unrelated blood of equal or if possible greater merit. The advice of advocates of incestuous breeding is farther reaching in its effects than most of them appear to think. Questioned closely they usually admit that not one man in fifty has the necessary qualifications to make it a success. But the economical side of the question is quickly grasped by the masses, and men who may be owners of but one pure bred animal will conclude that they possess the require-

ments of that one man in fifty and will practice incestuous breeding accordingly.

**Look Forward.**

Advocates of this kind of breeding are always looking backward and pointing to the success of our fathers and grandfathers in this field. But conditions are entirely different today, and different conditions require different methods. Our fathers may have been good farmers but it is generally conceded that improved methods in their day would hardly be successful now. How much less then is the breeding methods of our grandfathers applicable to the changed conditions of the present time. "The world moves," no one man or set of men have a monopoly of the best animals of strains in any of our improved breeds. The necessity for inbreeding has ceased to exist, and the breeder who seeks first constitution in the animals he breeds, will have all other things added unto him.

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## PRINCIPLES OF BREEDING.

By Gov. W. D. HOARD.

Mr. Chairman and Gentlemen: I think every farmer will admit with me that it would be an advantage to him if he was a good student of the principles of breeding our domestic animals. Now, we have, for instance, too low an average of domestic animals in this state. To what does this trace? In my opinion it traces to the lack of intelligent study on the part of the average farmer in pro-

ducing a good animal. Breeding is the foundation; feeding is the finish. We have, for instance, so poor a lot of cows in this state that they do not average 125 pounds of butter apiece for the year. Yet Mr. Goodrich has a herd of cows that average over 300 pounds. How did he bring his herd of cows to that average? They produced one year 357 pounds of butter apiece. How did he

get them to do this? Why, he started right. He commenced by laying the foundation of a butter cow. How? By better breeding, by being intelligent in the use of principles that lie at the bottom of all butter breeding.

Principles are the tools of the breeder. He must understand how to use them. In order to acquire understanding he must study, not only the work as it lies in his own hands but the work and experience of others.

#### Application of Principles.

Another man has a sheep and the carcass of that sheep would weigh say 70 pounds. I saw a lamb in Canada two years ago eight weeks old that weighed 70 pounds. What is the difference between the two animals? One is a product of intelligence in breeding and treatment, and the other a product of a lack of intelligence. Now, we have a low average of beef cattle, of dairy cattle, and of mutton sheep. We have a better grade in hogs than in anything else. One reason for that is that there is no other use that you can make of a hog except to kill him. Greeley said the poorest use you could make of a man was to hang him, but the best use you can make of a hog is to kill him. No one ever heard of a general purpose hog, except down in North Carolina. There they produce a hog that I know from experience will outrun a horse. I have run a horse after them, and the hog would always keep a good healthy distance of fresh air between himself and the horse, until he got tired and then he would dart into the woods out of the way of pursuit. A man once went to North Carolina with a lot of Berkshire hogs to exhibit them at the state fair. He noticed that everybody was passing by and looking at the razor-back hogs.

He said to a North Carolina farmer, "What is the matter with the people? You don't seem to look at my hogs at all." "Well I reckon not, sir," said the North Carolina man. "What is the reason; don't you want this kind of hogs down here?" "Well I reckon not, sir." "Why?" "Well we'uns want a kind of hog that will outrun a nigger." If they don't outrun the negro the man don't own the hog you know.

With all our farm animals there is a serious lack of the principles of breeding. I want to call your attention to some of the facts that show that very plainly. The trotting horse men do not lack in a study of how to produce a trotting horse, nor the draft horse men in the study of how to produce a draft horse; neither does the bird-dog breeder, or the fox hound breeder, lack in study. Why? Because they hold steadily to the principles that are in line with the animal's function. No fox hound breeder mixes up his breed; he never goes to crossing with the mastiff, or the bull-dog, or the shepherd dog, with the idea that he is going to get a good fox hound. Yet, the average farmer in Wisconsin has no other idea to-day but to make hash of his breed. He crosses here and there and everywhere. One man said at an institute, one day, that he had started with Merinoes, and crossed with Cotswolds and then crossed with Oxfordshires and then he crossed with Shropshires, and says he, "My sheep ain't worth anything." I was a good deal struck with the vigor of the man's statement. He says, "They are neither worth anything for wool nor for mutton." That is one conclusion I want to present to you.

#### The Necessity of Strong Lines in Breeding.

If I want to pull a bell at the top of a building and make it ring, I have a rope. Supposing that rope was made up of



a strong piece of rope one foot long, a rotten piece of cordage another foot and the line up to the bell was broken in two and simply tied together so as to barely hang together, and that there was no straight, strong rope clear to the bell—I couldn't ring the bell, because if I laid hold of it vigorously I would break the rope. I couldn't pull, for the result that lies way back at the end of the rope. That illustrates line breeding. What is needed in Wisconsin to-day, is for farmers to begin to study more particularly into the value of line breeding, breeding in line for what we need, and not break up that line by foolish crosses; we make hash if we do. You cannot make chopped straw into a good strong band. Chopping up breeds produces the same result.

#### Pre-potency.

What is breeding based on? It is based on heredity. We use another word, potency or pre-potency. Mr. Wylie spoke of inbreeding as establishing potency. The Jew is the most wonderfully in-bred man of all men on earth. He has been in-bred from the very day he left the Egyptians. You may breed him with any race on earth, cross him with any woman in the world and the child will be a Jew, more than anything else. Now those are principles that apply right here, just the same with animals as with men. What is the reason of that? Because the Jew has established a type so potently and powerfully that the moment the current of his blood strikes the current of her blood the Jew current takes possession of the other, and the result is a Jew. Now, that is a valuable thing to study on; that is the meaning of pedigree. Some men sneer at pedigree, and say that it is worth nothing. Pedigree has a long number of agreeing bloods behind

it in line. Men need not only a good specimen of the individual animal but they need a long line of fathers and mothers of the same line of characteristics, so that there is a constant agreement and augmentation and enlargement of the functions for which the breeding is done.

#### Power of Assimilation.

It is a well known fact today that if a Texas steer is given a quarter of a bushel of corn meal as his ration, and you take a Shorthorn steer and feed him the same quantity, and you will get very different results. Why? Because the power to assimilate food and produce meat has been bred into the Shorthorn and by a constant, slow process built up. The Texas steer has never been bred for anything except to get over the ground, and I know from experience that he can do that. I once had three hundred of them chase me two miles across a prairie, and if a man is to be judged by the enthusiasm of his following, I was the most popular man ever seen in Texas.

Now, there are certain principles that I want to bring out in order to show that the farmer needs to study them. Why? Because his money and his living and his profit are in these animals, and yet he seems to think that nobody but the breeder ought to study breeding. Why, the farmer is the man that is to make the money out of the farm in Grant county. It is the average farmer that has to produce the animals of the county, not the breeder. Therefore, the average farmer should be just as wise in producing a good animal as the breeder. He should be a breeder.

#### Law of Heredity.

Now, take dogs, for instance. They are a favorite illustration of mine because it is so clear on this question of heredity. Take a setter and a fox hound;



both have noses equally sharp. And yet hundreds of years back wise men began to breed one dog to smell birds alone, and the other to smell four-footed animals alone, and so well have they succeeded that the setter dog is almost oblivious to any other scent but the scent of the bird. You may take him out into the field to hunt birds and he may run across a thousand fox tracks but he does not know it, because he is there to smell birds alone, as the trotter is there to trot and do nothing else but trot; like the mutton sheep which is there to produce mutton and nothing else but mutton, practically. That is the object of his being. A fox hound will cross a thousand bird tracks and he does not know it. It is not for lack of capacity to smell but because his heredity is not in that line. But the moment he strikes the fox-track, for which he was bred, for which he was born, that moment he answers quickly; he has found that which he was bred to find.

Now, I want to call attention to foolish policy the farmers of this state pursue. You do not find dog men acting as foolishly as farmers. No boy fifteen years old would ever undertake to go hunting foxes with a bird dog, or birds with a fox hound, or either with a bull-dog. And yet we have thousands and thousands of farmers in this state that are trying to make butter with beef animals and trying to make beef with butter animals. The average production of our cows is a disgrace to Wisconsin intelligence. I tell you, my friends, it is not feeding so much to-day, as it is intelligent shaping of these animals for a purpose.

#### Breed vs. Feed.

An old man jumped up one day in an institute and says, "You may talk as much as you have a mind to about

breed, I say the breed is in the corn crib," one of those truths that are partly true and yet not true. I said, "If your words mean anything at all they mean that you don't pay any attention to breed, but everything to feed." "Yes," he said, "that's right." "Very well," said I, "you are the man I have been hunting for for years. You have got a short cut to success, and I want to get it. It doesn't make any difference what the breed is; it is all in the feed?" "That's it," he said. "Very well," said I, "do you remember that razor-back hog we had here thirty or forty years ago?" "Oh, yes," he said. "Now," I asked, "how would you feed that hog so as to make a Poland China of him?" He looked a little staggered. I added, "How would you feed a race horse to make a draft horse out of it? How would you feed a Jersey cow to make a Hereford out of it?" "Well," he replied, "you may talk as much as you have a mind to, but I believe just what I said." Now don't you see, that too many of us are not teachable. We come together on these questions and every man has his own opinion, and would stick by that notion as he would by his own wife, though some men fail them very easily. Remember that breeding is a matter of principle, it is not a matter of experiment.

#### The Law of Transmission.

Just the same as we take up arithmetic to day and proceed to do a sum in addition according to principle, and do a sum in multiplication according to principle. You built this town hall here according to the principles of architecture; every single stick has been thought out and a principle applied. So it is with our domestic animals. We will take for instance dairy cattle. Some of

the opinions that our farmers have about dairy cattle stand right in the way of their success; for instance, that size is essential in a dairy cow. Now, that is a fallacy. You don't send men to Washington according to their size. You don't believe today that learning goes into a man's head according to his size. If you do you have got some tremendous big fools and some very smart small men to oppose that notion. In the dairy cow you are after a specific exhibition of talent and you need breeding to assist you in that matter. Here is a bale of hay. On one side comes a running horse, on the other side a draft horse, on this side a dairy cow and on that side a beef animal. Now, there is just exactly one kind of feed, yet in one case it produces speed, quick, fast action, in another, slow, strong action, in another it produces butter and in another beef. At another bale is fine wool sheep and mutton sheep. You see the difference in the result. What is it that turns the result off like a switch down these different tracks; what is it that takes the same car and shoots it upon one track or another? It is breed.

#### A Thoroughbred Sire.

What is breed based upon? Upon function, capacity, talent. How shall we apply it? By a study of the different kinds of those talents, but the principles that govern their reproduction are all alike. Now, one of these disadvantages that we labor under as farmers, is, that we are not sufficiently educated up to the idea of a thoroughbred sire. The thoroughbred sire is a sire that has received like a river a lot of streams from the mountains on either side running into him to swell the potency of his blood, and that all in one line. A thoroughbred sire is so full of prepotency

that he impresses himself upon his progeny. For instance, breed a native cow with a thoroughbred Holstein bull; he has had so many years of breeding in a distinct line that he invariably marks the calves black and white. You may examine the progeny of a thoroughbred Holstein bull and I will guarantee that you will not find one calf in a thousand that will not be black and white. What is it that we call "potency?" Why doesn't the native cow have it? Because her heredity is all broken up. She can't impart it. Take a thoroughbred Holstein bull and a thoroughbred Jersey cow and you will find there that potency wars with potency and you will secure a diversity there that you have not seen in the case where the cow was a native and consequently of less potency.

#### A Dairy Cow.

Suppose we want to produce a dairy cow. Let us start in by taking native cattle and putting a thoroughbred sire at the head, take an Ayrshire or a Holstein. The Shorthorns today in the west are not valuable for the dairy. We have some very fine milch cows among them but let me ask you where you will go in the west for a Shorthorn bull that will throw strongly and prepotently on the side of the dairy? In England you can find them and in the east you can find them. On the Wadsworth estate in the Genessee Valley is a herd of Shorthorns, started over 50 years ago and they have been bred for milk until today the males are potent in that line; they are not as profitable as beef animals, as those bred specially for beef. As the beef potency increases the milk potency decreases.

You want to raise the best kind of a dairy herd. This is what I would do. I would go among the farmers and select

the best native cows I could get. I would want them to be of the dairy form, every one of them. If two cows of equal merit were brought to me, and one should give even more milk than the other and yet was of a beefy form, I would not breed to her, because a cow breeds very largely from her blood and not from her udder. Many a beefy cow has been a famous cow but she wouldn't breed that way. Mr. Goodrich had a celebrated Shorthorn grade cow and she had three heifer calves, but none of them were worth anything for the dairy. A good many farmers have the idea that a good cow individually will surely breed that way. She will not always. Many a beef cow gives plenty of milk but hasn't a dairy tendency in her. Take a cow with a breeding tendency towards dairy work. Then I would couple her with a thoroughbred bull. Then I would take her heifer, if it was a good one and of strong constitution, and breed that heifer to her own father. I would determine the constitution a good deal by make-up and by the development of the navel, which I think is the finest test in the world of constitution; the strong muscular condition of the navel. By breeding that heifer to her own father I would get a three-quarter in-bred, say Jersey, or Guernsey or Ayrshire or Holstein. That is as far as I would go with in-breeding. Then I would have so enhanced the potency of the sire's breed in that heifer by that one in-cross as to make her almost as potent for the reproduction of that breed, as though she were a thoroughbred. These are some of the principles that I would use. By this process I have seen herds where the grandmother was a 125 pound cow brought up so that the daughters and grand-daughters made 375 pounds of butter. The differ-

ence in feed wasn't so much but the difference in breed was very great.

#### Constitution.

I will speak about this question of the navel as an indication of constitution. What is constitution? It is not hardiness. You hear men say, I want a hardy cow. They don't want a hardy cow; they want a cow with a good constitution. The cow you want should be a cow that can endure large dairy work—not bear exposure—but take her food and do large work in the dairy line. A cow ought to have constitution, but you don't want the mother to have hardiness like the bullock. There is a most important distinction between hardiness and constitution. Constitution is something that you can't feed into men; neither can you train it into them. How do you get it into them? It is something that his mother gives him—tenacity and vitality of life. As a soldier, I have noticed some clerk from out of a country store go into the ranks alongside of a burly-built fellow; I have seen them start right even on the march together through the swamps, and have seen the big man go down and the delicate game-cock little fellow come up. What caused the difference? I have seen hundreds of such instances, any old soldier has. The difference was in constitution, not in strength but in vitality and endurance. One of them resisted disease and rose quickly from fatigue; the other went down.

#### An Army Surgeon.

The first I ever saw of this was in watching a regular army surgeon select men for the army. I saw him reject a man of splendid shape. I asked him why he did so and he said: "The man has no constitution." I asked how he determined that? He said: "Look at

the navel." I examined. The man had a flabby, irresolute expression of the belly and thin at the navel, and the whole expression of the abdomen indicated weakness. He would break down at the first exposure. I said, "Doctor, how do you explain it?" He answered: "Constitution is something that a man's mother gives him." I want you young men to remember this because it is something which will be of use to you in your study of animals hereafter. Constitution is something that the mother gives. Life is sustained through the umbilical cord. The mother when carrying the foetus supports the foetus entirely through that organ. The whole foetal circulation is there; the combined circulation of the mother and the foetus is through the navel. Now, if that channel is weak, small or contracted, it necessarily imparts a weak condition of vitality to the foetus. If it is strong and full, and has a strong expression as you put your hand upon it, it is a clear indication that the mother has imparted a strong constitution to her young. Physicians will tell you that they have noticed when children are

born, that where the umbilical cord is weak and small, the child seems to have a low vitality; where it is short, thick and strong, that child comes into the world with a whoop, he is on deck; he is ready for whatever this world has to give him, and he has vitality right through. These are vital facts. I have never laid these facts before a physician in my life that he didn't say, "I see it," and has brought me agreeing and concurrent experiences on the matter. I asked the army surgeon: "Have you ever applied this to animals." He replied, "I have with horses and I never knew it to fail." I then took up the study in cows.

Constitution does not mean talent for beef, or milk; it does not mean anything but ability to bear strain. I took 3,000 different cases and studied every one and in every instance where I have found the navel to have a firm, strong expression I found that to be a strong cow. I have the data of that study to-day. I have not found any exception to it.

If there is anything of value to you in this talk, it is most respectfully and heartily submitted.



# DAIRY SESSION.

## HOW TO MAKE A DAIRYMAN OUT OF THE AVERAGE FARMER.

By T. J. FLEMING.

The average farmer with his average herd of cows in number and quality, with the average skill and dairy intelligence, and average dairy manufacturing facilities, is a doubtful subject for success, in the opinion of practical dairymen. Yet, from such a combination as this have arisen the exponents of far-famed Wisconsin dairymen. And what has been the system or line of action through which this reputation or success has been attained?

By looking over the fields of labor traveled by them, we will be materially aided in the rather necessary undertaking.

Do we find them beginning dairying by disposing of all the cows on hand and replacing them with thoroughbreds? By no means, they did not begin that way, nor do we find scarcely any of our thoroughly practical and successful dairymen of to-day using that character of cow. What then! surely you can't mean the scrub cow? The term scrub I don't like, and believe it is often misplaced. It should be *native cow* and scrub owner, feeder and handler.

We take an unwarranted stand when we say our cows will not pay their keep, unless we have given them surroundings and treatment under which only they are capable of showing their possibilities.

Better Cows.

And I believe a cow's capacity to pro-

duce milk in quality as well as quantity can be developed by food, care and handling, just as the trotter is brought to his greatest capacity to trot, by the judicious manner of feeding, caring, handling and developing. Therefore, fellow farmers, let us not discard our cows on hand, if the treatment of these animals in the past has been of that character not calculated to develop. Nor are we qualified to pass judgment on a cow's possibilities after a week's good treatment, because it takes a longer time to change her from an inferior to a profitable animal. And we should, if she shows any susceptibility of improvement in that time continue in the same direction until we have established her identity for or against profit. And when this is done, let us be as quick to discard, if unprofitable, as to retain if profitable.

Now, my friends, I am morally certain that the percentage of cows in Wisconsin capable of yielding a profit under favorable circumstances, is much larger than estimated and far beyond the actual number paying profit, owing to the injudicious and culpable treatment they are receiving at the hands of their owners. And while I am willing to concede the advantages to be derived from the infusion of better blood into our dairy stock, I do not believe that it is absolutely



necessary or the first essential for the average farmer to rush into.

#### Improve Your Cows.

What then, should he do? Instead of milking his cows about seven months, milk them ten to eleven. Instead of turning cows to pasture May 1st, with the regularity of the change of seasons turn them when the grass has well covered the ground and attained a good height, at which time it is capable of developing permanent and rapid growth. While on the other hand if we turn to pasture while the plants are tender and spindling, having no avenues or channels through which to draw support or plant food, except its slender roots penetrating the cold, wet soil, the pasturing will check this growth by biting short those tender plants, and treading under foot even more than they consume. Bear in mind that there is no known single food which will put a cow at her best.

#### Add a Grain Ration.

Even our best pastures in my own experience, can be improved by feeding a grain ration, and now, as grain is so cheap, will we not give it a trial for the purpose of establishing an experiment? Couple with this good feed and plenty of it, free access to good, pure water, and salt, never losing sight of the fact that milk is materially influenced in quality and quantity by the judicious or injudicious use of these two milk producing elements. Then cultivate in your animals the principle of docility by your kindness to them, milk at regular intervals with clean, dry hands, quickly strain and remove milk from contaminating influences, aerate by dipping or pouring while at its normal temperature if intended for butter making, where the centrifugal process of creaming is used, and especially should it be aerated be-

fore cooling when intended for cheese-making. But, why confine the treatment to those two systems? Because I believe them to be the only practical and profitable systems for the average farmer to follow.

#### Winter Food and Care.

A word about winter food and care. This feature of dairying is neglected because we have not brought ourselves to realize the advantages and profits derived therefrom.

We should remember that there is nothing in the organic make-up of a cow, which prevents her from being a profitable milk, butter or cheese producer in winter any more than in summer, if we only give her summer surroundings.

But bear in mind that success can only be attained by the average farmer who puts intelligence, thought, study and 365 days of the year into his business.

#### DISCUSSION.

L. H. ADAMS—Isn't it a fact that the low yield of milk is the reason there is so little profit found in the milk business?

T. J. FLEMING—It is undoubtedly, and I think the cause of that low yield of milk is largely owing to the poor care given our animals. I would state in corroboration of this, I have what you would call scrubs, natives; four years ago they would produce only 3,000 pounds per cow. I have those identical cows in my herd to-day, with their offspring, of course. The past year, including old cows, some past their eleventh year and others in milk for the first time, and I have, through nothing more than judicious care, treatment and good food, raised the milk producing capacity of those cows to six thousand pounds of milk. Now, I don't bring that up as any

reflection on breeds, but simply to show that there is a great deal more in the cows we have upon our farms than is commonly imagined; we have not given them a good trial.

GOV. HOARD—Are you not in danger of leaving clear out of sight the distinctive difference there is in cows; don't you think if you were to take a herd head by head and test each cow, that you would find a great difference in those cows?

T. J. FLEMING—Undoubtedly.

GOV. HOARD—I have found by tests that, in one case, one good cow gave me more clear profit than fifteen scrubs; I was carrying fifteen scrubs to get less profit than I could get from this cow.

T. J. FLEMING—I believe we have arrived at that time when many of us are forced into dairying. Are we going to wait until we can raise a herd of the offspring of thoroughbred animals? We have got to start in with the cows on hand. I believe in putting at the head a registered animal; I don't say that we should raise every calf of his getting either, by any means. I think it is a mistake to select calves simply on the ground of the size of the dam.

GEO. WYLIE—Can a man hope to make a successful dairy farmer unless he reads dairy literature?

T. J. FLEMING—I don't think any dairyman can be a successful dairyman who does not read dairy literature, who does not read the experiences of those men who are making dairying a success.

GEO. WHICHER—Is it not a fact that the cow that has the most generous feed will make the most milk?

T. J. FLEMING—The milk of a strip-per I know is richer than of the same cow when on a full flow of milk.

GEO. WHICHER—When I speak of their running down in the quantity of milk in

consequence of poor feeding, isn't the milk of poorer quality?

T. J. FLEMING—I wouldn't say it was of a poorer quality. If a reduction in the flow of milk is brought about by starving instead of by drying the cow up, then I don't think the milk would be richer.

SUPT. MORRISON—Do you think you can improve the quality of the milk by the feed?

MR. FLEMING—Yes, sir, I do.

GOV. HOARD—Can you make a cow that constitutionally gives poor milk, give good milk by giving good feed?

MR. FLEMING—I can improve upon it.

GOV. HOARD—Every cow is born with her certain limit, a certain limit of percentage of butter fat per hundred pounds of milk. Understand me clearly; one cow is born with a limit of say three per cent. of butter fat as a limit to a hundred pounds of milk; another cow is born with a four per cent. limit; another with a five per cent., and another with a six per cent. limit; that must be true or you would not have these differences in cows. These individual differences in cows are individual differences of limit. A cow that has an undeveloped limit can be developed by feeding; but the cow that has gone to the extent of her limit cannot be made to go a single ounce further; that has been fairly well demonstrated by experience.

QUESTION—Do I understand you that a cow that has a three-pound limit as a net amount of butter fat in a hundred pounds of milk cannot be made to increase that?

GOV. HOARD—If that is her limit.

C. R. BEACH—Can she be starved so she won't give it?

GOV. HOARD—Yes, sir.

C. R. BEACH—When she has been

starved you can turn around and increase it, can't you?

GOV. HOARD—Yes, sir.

QUESTION—How do you know when you have reached the limit?

GOV. HOARD—When you can't get a cow to make any more milk; she grows fat and she won't give you any larger per cent., then you may know you have struck her limit.

T. J. FLEMING—I don't think there are many of our farmers who have been feeding in a way to determine that limit, and that is a point I wish to impress upon you. I do not wish to take issue with Governor Hoard from a theoretical standpoint; but the fact that we have not been feeding in a way to bring our animals up to that limit, is all the more reason why we should attempt to do so hereafter; I think it is worthy the trial of every farmer in this room.

GOV. HOARD—Have you made any experiment, Mr. Fleming, with the solids in the milk of your herd to know whether you have doubled the amount of cheese that they will produce?

T. J. FLEMING—I have; that I know to a certainty.

GOV. HOARD—Have you made up the milk separately?

T. J. FLEMING—In the winter season I have; I have a partition in the vat and make my own milk in one portion, and the other milk in the other portion.

C. P. GOODRICH—You say they can be developed to a certain limit, but the question is, where is that limit; it depends on the age of the cow. A cow at four year old can be made to give more and better milk than at three year old, and at five can be made still better. When do you reach that limit? I think she can be improved until she is eight years old by the right kind of feeding and development

and she will continually give richer milk.

H. C. THOM—Do you know that when that cow of yours that gave 375 pounds of butter in a year, that she was giving a larger percentage of butter fat than that same cow when she gave 250 pounds a year?

C. P. GOODRICH—No, I don't think I do.

GEO. WHICHER—I know that if you take a herd of 40 cows and feed them on hay and give them a generous feed of it, and they will make more cheese per pound of milk, they will make a bigger yield than on lighter feed.

L. H. ADAMS—To go back to the question of improving our native cows which we left some time ago. It has occurred to me that the rapidity with which we progress in this direction toward better cows, is limited to a large extent by the cheese makers, and the fact that there is not a proper incentive among cheese makers and farmers who sell milk for cheese purposes toward better methods and better cows.

T. J. FLEMING—There is an incentive, in my opinion, for the milk producer to produce good milk only when he is a patron of a co-operative factory or creamery. It is immaterial which. Although we have not many of these co-operative factories at present, it will be in a short time so that milk will be made up for exactly what it is worth; if there are four per cent. of butter fat in the milk of A's cows and only three per cent. in that of B's cows, they will be paid accordingly.

L. H. ADAMS—Will it take so much preaching then as now to elevate the standard of the cows?

T. J. FLEMING—No, I think not.

GOV. HOARD—I have had some experience with these different kinds of cows.

We made 12,000 tests in our own creamery in one year and I tell you, my friends, there is a vast difference in cows.

We had milk brought there from one herd of cows which yielded only 2.61 pounds of butter fat to a hundred pounds of milk; to be sure the man didn't feed them well, but he corrected their feed afterwards and fed them well, but they were a low order of cows. Now, if there was no difference in cows in constitution there would be no use in breeding; there would be no particular advantage in breeding cows if feeding made everything; but we see that breeding establishes a foundation and by wise feeding we help to enlarge that limit. But I know myself that we have had men bring us milk that contained nearly six pounds of butter fat in one hundred pounds of milk, and we have had other men bring us milk that contained only three. Now, in that case one man's cows were earning nearly or quite double what the other man's cows were earning, and yet the division had to be made on the pound.

T. J. FLEMING—I don't want to be critical, but we all concede that a stripper puts a larger quantity of solids into her milk than when she is in full flow.

Gov. HOARD—Do you mean per day?

T. J. FLEMING—Yes.

Gov. HOARD—No; a cow will give you fifty pounds of milk a day in June and she will give you a pound of butter; she will give you twenty-five pounds of milk

in October and a pound of butter; now she does not put any additional richness in that milk, so much as the fact that she has decreased the water; there is a larger percentage of solids in the twenty-five pounds of milk; but there is not a larger amount per day. Suppose Morrison has a cow, Thom has one, you have one and I have one; in June we bring fifty pounds of milk apiece to the factory, and in the fall we bring twenty-five pounds a day; the milk makes in June the same amount of butter that it did in the fall, but the cow secreted no more solids per day than she did in June.

T. J. FLEMING—She did per hundred pounds of milk.

Gov. HOARD—That is true.

ORANGE JUDD—Do I understand Gov. Hoard to say that you get from 100 pounds in October as much butter as you do from 200 pounds in June?

Gov. HOARD—I have known cows that would give just as much butter in October as in June, when they were giving only half as much milk as they were in June.

ORANGE JUDD—Do you get as much butter from 100 pounds of milk in October as you do from 200 pounds in June?

Gov. HOARD—Not always; but often we do, in certain herds. Oftentimes you will find a man bringing milk in June that double the amount of milk produces no more butter than half that amount of milk in October.



## HOW TO REAR A DAIRY HERD OF COWS.

By C. P. GOODRICH, Fort Atkinson, Wis.

### Some General Principles.

"Train up a child in the way he should go," is certainly good advice for the human family. It is just as sound advice to say, "train up a heifer calf in the way she should go when she becomes a cow."

Now if she is intended for a dairy cow she "should go" first, "in the way" of consuming the best milk producing foods, and second, of converting these foods into the largest possible quantity of milk, rich in butter fat—the fat being the chief valuable part of milk. Then feed your calf just such foods in order to train her organs of digestion and assimilation so that when she enters upon the real business of her life, she will be able to convert as much as possible of these foods into rich milk. Feed your calf liberally so as to promote rapid growth and development, but avoid feeding so as to make her excessively fat. For in this there is danger of forming a beef tendency and habit, so that she will even take on the beef form to a certain extent more than she otherwise would, and quite likely divert too much of her food into the wrong channel for a dairyman when she becomes a cow.

I believe if a dairy cow, which had been proved a good one, should from accident or otherwise be dry for several months, and in the time become very fat, her usefulness as a dairy cow would be permanently impaired, the habit of turning her food into fat would be, in a measure, fixed. And further, I believe that this change would extend to her progeny, so that the calves produced after the change would

not be as valuable for the dairy as those produced before. If this were not true, how is it that we have such a great variety of types among our domestic animals that are all descended from one source? Food and care make changes and create types; then breeding and feeding perpetuate them.

C. R. Beach once said, "You feed a common cow like a Jersey and you will think you have got a Jersey." And he might have added, you feed a Jersey as you would a beef animal, to produce the most fat, and, though you may not think you have got a Shorthorn, you will turn her somewhat in that direction, or feed and treat her as some men do a scrub, and soon all you will have left of her will be her hide, because she has not been "trained" to stand hard fare and starvation.

A prominent Jersey breeder who, by the way, has as fine a herd of Jerseys as I have ever seen in the state, was one day showing me his cows. There was one which, although she had the Jersey color and markings, had more of the form of a beef animal, and was very fat. He said she was one of the very best bred cows he had, and at one time was excelled by none in butter production; but one year she failed to breed, and the manager of his herd not understanding the situation dried her up. She was nearly a year without giving milk, and in that time laid on a great amount of flesh. She had ever since been nearly worthless as a dairy cow, and he believed that she had permanently changed her form. He still kept her for breeding purposes on account of her pedigree—the



blood that was in her—thinking that her progeny would be valuable. In this I fear that he is mistaken, and that her progeny will in a measure partake of her character as it now is. I once had a similar experience. My cow, which was an excellent butter cow, was dry several months, and being well fed in the time, accumulated a great deal of flesh. I supposed that when she came in she would do better than ever on account of the extra flesh. I thought she could draw on it for butter, or, at least not require so much of her food to support her, and could turn more of that into butter. But I was mistaken. She did very poorly that year, and has never yet come up to her old standard.

These are some of the general principles, briefly stated, which from known facts, and my own observation and experience, I believe to be true, and an adherence to which will greatly aid one in rearing a dairy herd.

It must not be inferred that I place a light value on breed, but that I wish to emphasize the fact that feed and care can work changes in any breed; that by these means the common stock of the country can be greatly improved; also that the best breeds can be made to rapidly deteriorate. Because an animal is a registered Jersey or a Guernsey is not proof positive that he or she is a good dairy animal. A poor Jersey cow (and there are such) is worth no more than any other poor cow.

#### A Poor Man.

At the close of an institute held in Jefferson the last of February, a man said to me: "I have come a long way to attend this institute, hoping to learn something that would help me, but I am disappointed. The talk was good enough, but it takes money to do as they say. Rich men can do it, but I can't. I'm poor." After a little further conversation I learned that

his case was like this. He had lately bought an 80-acre farm and was \$2,000 in debt on it. His entire stock, besides his team, consisted of 6 young cows and 2 yearling steers. He had enough good hay to keep them through the winter, but no grain that he could spare for them. His cows would come in in the spring. He wished to work into the dairy business as soon as possible, but he positively would not run in debt another dollar. It occurred to me that I could do no better on this occasion than to take up his case and work out the problem for him, and demonstrate how he or any other man similarly situated could in a few years, rear a good dairy herd of cows. My feelings are the more deeply interested in this case, because the time when I was in a like position is not so far in the past, that I have not the most vivid recollection of it.

#### Demonstration.

First, sell the steers for whatever they will bring. Sell the hay that it would take to keep them till spring. With part of the money buy some feed, equal parts bran and oats. Begin immediately to feed each cow a small ration, say 4 or 5 pounds a day of this, with all the good clover hay they will eat, with cornfodder and straw, if you have it, to make a variety, until four days after they come in. Then gradually increase the grain feed till each cow has 12 pounds a day. The extra amount of milk from feeding the grain will pay more than double price for it. Raise all the heifer calves, and buy enough more to make as many calves as you have cows. Go to some dairyman who has been grading up to Jerseys for some years, and has yet left some—of course the best—of his common cows. Their calves will be half bloods, and he will sell them when he would not sell the higher grades. Such heifer calves from very superior cows can be bought when a few days old for

about \$3 each. Do this the second year also; after that you will have calves enough of your own. Feed your calves whole milk, 12 to 14 pounds a day, till they are one week old. Then have it part skimmed milk, till when the calf is four weeks old it may be all skimmed milk, about 16 pounds. Have the milk warm to about blood heat. Have some good hay always within their reach and after they are two weeks old, always have a box that they can reach, with bran and oats in it. Feed them no corn meal. While they are having milk it is better, until they are at least four months old, not to let them run out to fresh grass, but have them in a yard where they can run for exercise, and where there is a cool clean stable where they can go to get out of the hot sun, and away from the flies. It will pay to keep up the milk feed till six months old. When it comes cool weather next fall put them in stanchions nights. Feed them as great a variety of hay and fodder during the winter as possible with 2 or 3 pounds of whole oats and bran, or oats only, each day. I advise putting them in stanchions while so young so as to train or educate them to that mode of confinement, for, when they come to be cows, there is where they will be kept most of the time during the winter season.

Handle your heifers; treat them gently and kindly, and you will have no trouble breaking them to milk.

#### Ration for Milch Cows.

I think as good a grain ration as you can get for cows in milk, is one-third bran, one-third ground oats and one-third corn meal, all by weight, about 12 to 14 pounds to each cow daily. Be guided as to the quantity by the appetite of the cow, and her ability to turn her food into milk. The corn is given to maintain the condition of the cow. It is not the best milk

producing food; but some heavy milkers have the ability to turn almost any kind of food into milk. Such cows will bear more corn. Give them all the good early-cut clover hay, corn fodder, and straw they will eat, giving as great a variety each day as possible. In the summer, if they have good grass and plenty of it, that will do very well, but I think it will pay even then to feed a small ration of grain.

Now, this is in the direct line of rearing a good herd. By the treatment I have described you will develop and improve your cows. They will, perhaps, produce 50 pounds more of butter each next year, on the same kind of fare, than it is possible to get out of them this year; and the year after next you will get still more. The more milk you manage to make a cow give, the more she can give as you develop her capacity to do so, until a certain limit is reached, and she will in a measure, transmit these improved qualities to her progeny.

#### Test Your Cows.

Weigh the milk of each cow separately every day, or at least once a week for the year. Test it frequently to see what per cent. of butter it contains. At the end of the year foot up your figures, average your per cent., and see what each cow has done. If you have any cow that makes less than 150 pounds the first year get rid of her, she pays only for her feed and gives you nothing for your work. With the treatment I have been advising, you ought to get from 200 to 250 pounds the first year, and considerable more the next year.

Have your heifers come in when they are two years old. Use a full blood Jersey sire, the best you can get; one, if possible, that is five or six years old, that has daughters that have become cows, so that you can better judge of his merits. I have advised you to grade up with Jerseys. Some other dairy breed, particularly the

Guernseys, may be just as good. But I believe the Jersey will give as large a return for the food consumed as any other breed, and they being more plenty, you can, no doubt, grade up with them with less trouble and expense. When once you have started with a breed, follow up that line, and don't mix breeds. Above all things don't try to raise the general purpose cow. I tried hard to get her, and did get her, but she was profitable for no purpose, and that kind of foolishness cost me very dear.

When your heifers come in, weigh and test their milk for a whole year, so that you can tell without any guess work, which produces the most; and when you have any to sell always let the poorest go. Let your standard be solely, the amount of product, and count as nothing such immaterial things as color or particular markings, or fancied beauty of forms or features, for they will not produce butter; and, after all, "handsome is that handsome does."

#### Get a Uniform Herd.

If it should happen that the daughters of one particular cow—for instance, the brindle one—should average considerably better than those of the others, she is the cow to tie to, to be the source from which shall, in time spring your whole herd. She may not produce as much as some of your other cows, but she has, no doubt, got good blood back of her that shows in her descendants, all of which you should keep (except some poor ones if there should happen to be any such) and in a few years your whole herd will have some strong resemblance, with their pedigree all tracing back to "Old Brin."

#### Results.

And now, my dear friend, if you wish to profit by the experience of others, and will follow substantially the plan I have

outlined, I shall expect, if I visit your place a dozen years or so hence, to find that your mortgage has long been paid, and the productiveness of your farm doubled. You will be a happy, contented and prosperous man, with a pleasant family enjoying the comforts of life. The grumbling and complaining disposition you manifested when I saw you at Jefferson will have entirely disappeared. You will have a splendid herd of cows, for which you have the greatest admiration, and in which you take great pride, and in the rearing of which you have taken immense pleasure. "They will produce more than 300 pounds of butter each a year," you will proudly say. You will have a large and convenient barn with a large silo, and a snug little house with pleasant surroundings.

While you have been developing and improving your cows, you have been developing and improving yourself, by the exercise of the thought, study and close attention to business necessary to success.

You will be a more obliging neighbor, a kinder husband and father, and a better Christian in consequence of having exercised the care, patience and kindness necessary to rear a *good dairy herd of cows*.

#### DISCUSSION.

CHAS. BRIGHAM—How long would you keep your cows?

MR. GOODRICH—I would keep them as long as they gave me a good profit. I have had them do well until they were 14 or 15 years old. Sometimes I do not keep them until they are 3 years old.

J. M. TRUE—What kind of grain would you give the heifers while developing?

MR. GOODRICH—I would give the feed that would make them grow and come to maturity young, but not put on flesh; I wouldn't feed corn or timothy hay; it

would be clover hay and oats or bran and ensilage.

GEO. WYLIE—What constitutes a good dairy cow?

MR. GOODRICH—One that will make 300 a year.

GEO. WYLIE—Nothing less than that?

MR. GOODRICH—It might be; that ought to be the standard; no man ought to be satisfied with less than that.

GEO. MCKERROW—How is he going to find out whether he has a good dairy cow in his herd?

MR. GOODRICH—By testing her, weighing her milk every other day or occasionally, and keeping a record of it.

THOS. CONVEY—How would you test it?

MR. GOODRICH—Test it by setting the milk by itself. Take a day's milk and stir it into butter. That tells me what I can get out of it. It may not tell what there is in it, but it tells what I can get out of it.

G. C. HENDIE—Do you discard any of your heifers in your dairy work, and if so, what per cent.?

MR. GOODRICH—I sell off from my herd the increase and they are the poorest cows, that is about 30 per cent. of them go every year.

H. C. THOM—Who buys them?

MR. GOODRICH—Anybody that don't know better.

H. C. THOM—Your neighbors?

MR. GOODRICH—They are sold and shipped to Chicago; the ones that the stock-buyers want are the ones I don't want to keep.

MR. SNOWDEN—Can you get scrub cattle and begin dairying with them successfully?

MR. GOODRICH—I think you can.

WELDON VAN KIRK—How much importance do you attach to exercise in a dairy herd?

MR. GOODRICH—The calf and the heifer

ought to have exercise to develop their muscles, but after a cow comes to giving milk I am well satisfied they need but very little exercise. I tried that a year ago last winter. I had one cow that had a notion of milking herself. I kept her in the stanchion. She would be let out before the rest twice a day; she would walk about 60 feet to the tank, and being alone would walk right back and put her head in the stanchion. She wasn't out to exceed 10 or 15 minutes a day.

J. H. WISE—I would like to ask at what age a heifer should drop her first calf?

MR. GOODRICH—I wouldn't want them to have calves before they are 2 years old.

H. C. THOM—What effect would lack of exercise have upon the offsprings?

MR. GOODRICH—That cow had a fine, large heifer calf in the spring. That is the only one I ever kept confined so closely, and she is doing well this spring.

MR. RUNDELL—Which do you prefer to raise, spring or fall calves?

MR. GOODRICH—Fall calves can be raised with less trouble than spring calves.

H. C. THOM—If butter was the same price the year round, would you encourage having calves dropped in the spring or fall?

MR. GOODRICH—There would be very little difference now that I have a silo. I think that if a cow comes in in February, and you have dry feed through the winter, you can get more out of her during the year than you can to have her come in in the fall, but with ensilage I am pretty well satisfied you can get just as much out of a cow coming in in September or October as out of one coming in at any other time.

GEO. WHICHER—Isn't it more trouble to feed her?

MR. GOODRICH—No; it is less work taking the whole year through to have them come in in the fall.



R. B. BROOKS—Do you warm the water for the cows?

MR. GOODRICH—I do.

R. B. BROOKS—Don't you think it is better to turn them out twice a day to drink?

MR. GOODRICH—I shouldn't object to having the water in the barn.

Do you get sunshine in your stable?

MR. GOODRICH—There are plenty of windows that admit sufficient light on sunshiny days.

H. ROBBINS—How soon do you take the calf away from its mother?

MR. GOODRICH—When it is three or four days old.

MR. SNOWDEN—How much of an outlay in cash would I have to make to do successful dairying with a few cows?

MR. GOODRICH—If you wanted to do it as cheaply as you could, it wouldn't be a very large outlay. You need a tank and five or six cans. I think you could fix up for setting your milk at a very small outlay, \$15 or \$20.

GEO. WHICHER—I would like to know what temperature you mean by warm and cold water for dairy stock. If spring water came out of the ground smoking in winter time, would it be necessary to warm such spring water?

MR. GOODRICH—If I had water at 48 or above the temperature of the earth, and cows would drink it at that temperature, I wouldn't be to the trouble of warming that water.

H. C. THOM—Wouldn't you if the cows had to go 80 rods to get to the spring?

MR. GOODRICH—I wouldn't have them go 80 rods to the spring. Where water is pumped into a tank, unless you have a heater, the cows will have ice water all winter, which isn't best.

MR. DENNIS—Wouldn't it be more profitable for the average farmer to have a good, fair-sized cow that would give a

fair amount of milk than to keep a Jersey cow?

MR. GOODRICH.—That comes into the general purpose cow question. I don't believe any individual ever tried harder than I did to get that cow. I couldn't be reconciled to the Jersey. Mr. Curtis here knows it. I thought I had got her once, I will describe the cow. I bought a 2-year-old heifer of the old style roan Durham of the wonderful milk family of that breed. She was a beautiful specimen—at least I thought her so at that time. She had a very large fine udder, and when she got to be four years old she used to give 60 pounds of milk a day when she was fresh. Sometimes she gave more, and that was fairly good milk that would test four pounds to the hundred, so that she made nearly two and one-half pounds of butter per day. When I sold her she brought \$75. Now, that is as good a general purpose cow as you can get. She started out with a good quantity of milk, but she didn't hold out with this quantity of milk, but kept running down, and in seven months she was practically dry. I used to strip her for a month longer. Well, by occasionally weighing the milk and testing it, I figured that she produced 256 pounds of butter in a year. You see that is a pretty good cow. That is just the cow you are asking for, but I never made one cent of profit on her except when I took in the \$75. Her weight ran from 1,500 to 1,700; when in good condition, towards 1,700 pounds. She was two cows in one in size, and took nearly the feed of two small cows, so you see when you come to take that into consideration, it was small doings.

Now, I will compare her with another cow. I had a cow that weighed just 800 pounds, half her size, and took just half the feed, perhaps a little more. She had the dairy form, and that cow produced 256 pounds, as near as I could figure, the same



as the big cow. The big cow took \$25 worth of feed more than the little cow, so I made \$25 profit a year on the little cow and milked her 12 years and sold her for \$15, though I got \$315 from her, and all I ever got from the other was \$75. The little cow was worth \$240 more to me than the big cow. You see I want to give the general-purpose cow all the advantage I can. I have an 800-pound cow that makes 120 pounds more than this one. She will make 375 pounds at least in a year. That cow with the same way of figuring would make me \$500 more than I would make out of the big cow.

R. B. BROOKS—How do you think the two cows compared in regard to the number of pounds of milk? Where I live a man would get as much for 100 pounds from one as from the other.

MR. GOODRICH—The big cow gave some more milk; it was just about average milk.

The other cow was not a rich milker; I think it took some 23 or 24 pounds of her milk to make a pound of butter. But the little cow gave milk eleven months in the year and the big cow only seven.

J. H. WISE—Do cows that are fresh in the fall give as much milk in the year as those fresh in the spring?

MR. GOODRICH—I can get as much out of them with ensilage when they come in in the fall as when they come in in the spring.

MR. DENNIS—Do you consider it any more trouble to keep a beef cow with a full flow of milk with plenty of feed than a dairy cow?

MR. GOODRICH—When you undertake to feed her to keep it up, she turns the feed into beef instead of milk. I cannot make a beef cow give as much milk as I can a dairy cow.

## BUTTER-MAKING ON THE FARM.

By THOMAS CONVEY.

### Conditions of Success.

This depends on circumstances; where a few cows are kept on a large or medium sized farm, where much other work has to be attended to, it hardly pays to manufacture butter for the general market. A small quantity requires almost as much time in manufacturing and marketing, and equally as much attention as a larger quantity, and rarely sells as well, owing to the fact that each package should contain butter of the same quality, with regard to salting, color, degree of freshness, etc., this being more difficult to secure where a

package contains different churnings, Buttermaking on the farm, if conducted in a business-like way, will certainly pay as well, at past or present prices as selling milk to cheese factories, at sixty to sixty-five cents per hundred, it being contracted for that price the present season. If skim milk is worth twenty cents per hundred, and I consider this a low estimate. If hauling milk costs the patron another twenty cents per hundred, and how much less does it cost him where he delivers twice a day? If you allow anything for loss of fertility, occasioned by selling milk off the farm,

and then deduct two per cent. of gross income which goes to factory owners, this being the custom in southwestern Wisconsin, and you will have some difficulty in convincing the maker of good butter of the advantages of selling milk and feeding whey.

#### Quality Before Quantity.

The gathered cream butter factory, is scarcely more popular, where the proprietor determines the amount and quality of cream, and the price he will pay, the latter depending on the price he receives. This, in turn depending on the quality and quantity of food given each cow, and the cleanliness, care, and intelligence of each and every patron, creamgatherers and buttermakers. In the separator factories they run less risk of producing an inferior quality of butter. The patron does the hauling, and this system, though the least objectionable of the factory systems, will hardly become popular until milk is paid for according to quality not quantity; this being also an objection to the cheese factory. Milk should be set as soon as possible in cold water, in preference to cold air, and in ice water, in preference to cold spring, or well water. Yet good butter can be made from cream secured in any of the ways mentioned, provided the air or water has no objectionable odors. The temperature should not be below 40° nor should it run above the normal temperature of spring or well water. When set in cold air it should be at a lower temperature than when set in water, the latter being the best conductor. The more rapid the cooling after being set, the more perfect the creaming. Delay in setting milk always results in loss. Aeration of milk will improve its keeping qualities, but re-

tards creaming and should never be resorted to in buttermaking.

If the temperature should fall much below the normal heat, when obtained from the cow, warm water may be added not to exceed 6 to 8 per cent. at a temperature not to exceed 125°.

#### Skim the Milk Sweet.

I prefer to skim cream when sweet, and if held it should be at a low temperature, to prevent ripening. In warm weather it is safer to put it in water where milk is kept, churn as soon as possible as it gains nothing by age. When you wish to ripen it, keep it in an atmosphere of about 60°, when it should ripen in about twelve hours. In winter time where held at a low temperature, it will be necessary to raise the temperature of cream to 60° or even slightly above that before trying to ripen. It may take twenty-four hours to ripen in winter time. I prefer to churn when cream is slightly sour raising the temperature to 64° before starting to churn in cold weather. In raising the temperature be careful not to over-heat any portion of cream. Do not pour warm water in it, but place vessel containing cream in warm water, and stir vigorously to secure uniformity of temperature. This being essential to uniformity of ripening, the latter being necessary to secure the greatest degree of churnability.

#### General Directions.

Cream prepared in this way should churn in thirty to forty minutes. When butter comes in small grains, stop churning, allow it to stand a few minutes that butter may rise to the top, draw off buttermilk. Should butter come with the buttermilk, you have not churned enough, or your cream was over-ripe

and too thick, in the latter case add weak brine or water, when buttermilk is drawn off, wash butter three times, using weak brine the first time and sufficient water each time to float butter. The last washing should be nearly clear, taking care to keep the butter in granular condition until buttermilk is washed out and salt incorporated, working just sufficient to secure an even distribution of salt or the color would not be uniform. If you wish to salt in the churn use  $1\frac{1}{2}$  to 2 oz. of salt to each pound of butter, leaving sufficient moisture in the butter to dissolve the salt, and allowing it to stand about one-half hour expressing surplus moisture when packing. I prefer to weigh butter and salt at least one ounce to the pound, salting and working on the butter worker and packing immediately. Good butter contains 10 to 12 per cent. of water, but it should show no trace of buttermilk. Avoid overworking, or any plastering motions in working butter, or finishing packing as they destroy the grain and keeping qualities and give the butter a greasy appearance. Butter color is a commercial necessity at least during a portion of the year. It should be added to the cream first before starting to churn.

#### Butter Granules.

The grain of butter may be destroyed by over-heating, or freezing, milk, cream or butter. They are not similarly affected by the same temperature. The flavor may be injured by milk, cream, or butter being kept where it would come in contact with odors from cooking, smoking, decaying vegetables, bad water, etc.

#### Aroma.

The flavor may also be affected by the quality of the food, grass in June producing a desirable flavor, but additional feed may be given at any time as it im-

proves the flavor, increases the quantity of the product and improves the keeping qualities. As butter from dry feed melts at a higher temperature, mixed foods produce better flavor than any single food, and rich foods produce the best flavors if they are of desired quality. Immature grass is injurious to body and flavor, weeds, cabbage, etc., will give objectionable flavors. Use best grades of dairy salt, and do not store where they will take up odor of kerosene, fish, etc. If churn or butter worker is inclined to get mouldy as they sometimes do in damp warm weather, clean thoroughly and rub on dry salt.

#### Packages.

In preparing packages I prefer to throw in salt and then scald, cover up and the steam will make it pickle-tight. Use cold water to rinse and rub inside with dry salt. Never put poor butter in fancy packages, and when you can make good butter you may very safely brand it, there is no necessity of putting your name on it, but be sure you do not brand inferior goods, then it can be sold like a popular brand of baking powder, on its merits. In finishing top of package use dairy cloth on top of butter, then make a paste of dairy salt and put it over cloth. It will prevent top of butter from getting over-heated and will also guard against flavor of lid. Remember that good butter must have perfect grain, high, fresh flavor, desirable color and a sufficient amount of best quality of salt. That it must be put up in clean, bright, packages of best quality and of a style the market demands.

#### DISCUSSION.

L. H. ADAMS—What is the objection, Mr. Convey, to a lower temperature than 40 degrees in which the milk is set?

MR. CONVEY—Because the milk con-

denses down to that temperature and after that it expands; condensation of course increases weight, and an increase in weight increases the comparative difference between the butter fat and the milk serum.

C. I. BRIGHAM—I should like to ask if cream will likely get sour standing only twelve hours?

Mr. CONVEY—In summer it will; in winter twenty-four hours.

SUPT. MORRISON—Can a pound of finished butter be made to retain any more than a half ounce of salt?

Mr. CONVEY—I think not; chemists state that that is the case and I believe it to be so.

SUPT. MORRISON—Is the other half ounce, if it is undissolved, of any benefit to the butter?

Mr. CONVEY—I think not, except that the stronger it tastes of the salt the harder it is to detect decay in the butter.

C. P. GOODRICH—Why do you put in one ounce?

Mr. CONVEY—Because the market demands that.

C. P. GOODRICH—Does it retain that?

Mr. CONVEY—By having dissolved salt in it, it will.

Mr. GOODRICH—Does the market demand that?

Mr. CONVEY—Sometimes it does; I have had more fault found with my butter on that account than anything else.

C. P. GOODRICH—Isn't it a fact that the saturating brine makes the butter salt, and the more you work the butter the less salt it will have in it?

Mr. CONVEY—That is so.

C. P. GOODRICH—Doesn't a portion of that ounce run out in the brine in working the butter?

Mr. CONVEY—Of course it is impos-

sible for an ordinary dairyman to determine how much salt is retained, but in selling butter I find that there is more demand for more than an ounce than for less than an ounce.

Gov. HOARD—Of all the qualities in butter which do you estimate as the most important in securing a good price?

Mr. CONVEY—Flavor.

Gov. HOARD—I think you are right. Now, how long can you retain the first fine flavor that stamps the value of butter?

Mr. CONVEY—I would put the limit at two weeks, and possibly less than that time. I have always found long keeping a failure.

QUESTION—Why set milk in ice water if you have cold spring or well water?

Mr. CONVEY—The colder the water, not getting below 40°, the more rapid the creaming and the more thorough the creaming, and the quicker you can skim.

QUESTION—I have a spring that registers 46°; would you prefer ice water to that?

Mr. CONVEY—Not as far as the butter is concerned.

L. H. ADAMS—What is the butter flavor, where does it come from?

Mr. CONVEY—It comes from feed I think, breeding having very little to do with it; that is you can't produce a fine flavored butter on poor feed. I think it rests entirely in the feed and the manner of handling.

WELDON VAN KIRK—I heard a gentleman say the other day that a person is liable to injure the flavor of the butter by breaking the grain in working. I would like to have Mr. Convey's opinion about that?

Mr. CONVEY—It would certainly destroy the keeping qualities.



WELDON VAN KIRK—Would it injure the flavor at the time?

MR. CONVEY—I think over-working or over-washing will destroy the flavor.

C. P. GOODRICH—Will the milk from two cows kept on the same feed be of the same quality?

MR. CONVEY—I think if the cows are healthy that it will; it will be just alike with regard to flavor.

C. P. GOODRICH—That is not my experience. What is your opinion, Gov. Hoard?

GOV. HOARD—I think there is an individual difference there.

C. R. BEACH—I don't want to tell but one story. I was in Chicago sometime ago and asked the steward of the Palmer house, who had been buying the butter from a celebrated herd of Jerseys, what kind of butter he got. Pretty good, he said. But he says, no such butter as

you used to send to the West Side Briggs house when I boarded there; how did you make it? I said, We made it down in a dirt cellar, out of the milk of common cows, fed on marsh hay, with my swill barrel at one end of the milk rack and a soap barrel at the other. Well, he said, it was good butter anyway. What gave the quality to that butter? The cows were farrow cows being fed with Indian meal to make beef of them. The quality of the feed does make the quality of the butter, and the cow that is not with calf will make a great deal better flavored butter than a cow that is with calf.

GOV. HOARD—After a cow has got six months along in gestation, doesn't the flavor leave the butter?

C. R. BEACH—Certainly; if it has anything like the flavor of the butter of a new milch cow or farrow cow.

## TEMPERATURE IN BUTTER-MAKING.

By D. W. CURTIS, Secretary of Wisconsin Dairyman Association.

### Setting Milk Warm.

The whole process of good butter-making is governed almost entirely by temperature, from the time the milk is drawn from the cow until the cream is ripened and churned into butter.

The milk when first drawn from the cow if immediately placed in cans and submerged in water standing at 45° to 50° all of the cream is thrown up between milkings. If allowed to stand around until partially cold and then placed in water at 55° to 60°, the loss is at least from 5 to 10 per cent. The im-

portance of setting milk, while warm, in water cold enough to throw up the cream, is of a sufficient value to warrant any one, who is in the habit of doing this work when they have time, in making the test. The temperature of the milk, together with the temperature of the water in which it is placed, has very much to do with the profits of the cow.

### Care Will Give Success.

It has been an inquiry of many why separators are taking the place of gath-ered cream. The answer is one of tem-



perature. The farming community, where the cream is gathered, are careless and shiftless in many cases in taking care of the milk. The farmers do not realize that the poor care given to it, comes out of their own profits. If the milk stands around for half an hour before being placed in cans, and the wind, and the boys, do not feel like pumping fresh water into the tank, it is all the same; the farmer never once thinking that he is only beating the creamery man out of the quality and himself out of the quantity. If this same milk had been brought to a creamery where the separator is used, it must be brought to a temperature of 70° to 75°, according to the season of the year; the butter maker is careful that his separator runs at the right speed, and the milk is just at the right temperature to insure the best results. If the same care should be exercised in caring for the milk on the farm, and the temperature looked after as closely as the butter maker is obliged to look after it, to get the best results, the two systems would vary but little. In fact, there are gathered cream creameries that use the submerged system of setting milk that are paying dividends quite as large as any creameries in the country. The success of both methods is one largely of temperature, for should this be neglected the results would be largely against them.

#### **Flavor Depends Upon Temperature.**

In the ripening of cream temperature plays almost as important a part as it does in the creaming of milk. In open vats, cream ripens best at 60° or 62°. If it is below that, the chemical action takes place very slowly; if much above that degree, it imparts anything but a pleasant flavor to the butter.

The generally accepted theory of

ripening cream is that it must be frequently stirred and come in contact with the oxygen of the air to develop the aroma so much sought after in good butter. Cream which is allowed to ripen in all degrees of temperature bring different degrees of acidity, and consequently the butter is affected by it. If the acidity in cream could be ascertained the same as the temperature, by the use of the thermometer, I venture the assertion that there is not one butter maker in a hundred that could tell the acidity within ten degrees.

#### **Boyd's Starter.**

The Boyd process of ripening cream is directly the reverse of all this, and is wholly controlled by temperature. Sweet skim milk (from fresh cows preferred) is taken and warmed up to a certain degree and placed in a can with non-conducting walls so that it shall not be affected by heat or cold, where it is allowed to remain from 18 to 24 hours. It is then ready for use. This produces a perfect lactic fermentation. The cream is sweet, and is placed in a vat or can with non-conducting walls, so as not to be affected by the surrounding temperature. It is heated up to 68° or 70° and 1 or 2 per cent. of the lactic ferment added and thoroughly mixed in. The vat is immediately closed air-tight and left there from 18 to 24 hours. This lactic ferment which has been added commences to work through the entire mass of cream, and imparts to it the same principle, and producing the chemical change necessary preparatory to churning. It is far better to supply the cream with the right kind of ferment, that shall produce uniformity in quality, than to have the cream seek its own agent for ripening, containing

many of the destructive elements which go to destroy fine butter.

#### Temperature Means Profit.

Tempering cream for churning must be governed very largely by the cream that is to be churned, and this knowledge must be gained by the butter-maker who is doing the work. The rule laid down in books, that 58° to 62° is the right temperature to churn at, will not hold good in all cases. A prominent creameryman once said: "I test my butter-milk with Short's test, and if I find any butter-fat remaining, I change the temperature of the cream—and keep on changing the temperature until the right degree is found that leaves the least butter-fat in the butter-milk." This knowledge must be gained where the work is done, as the cream from different creameries and dairies will churn best at different temperatures.

Mistakes are often made in getting the temperature of cream, both in warming up and cooling down, from the fact that the serum or watery part is affected by heat and cold very quickly, while on the contrary the globules or fat in the cream are not so sensitive to the different degrees of temperature. As the butter globules have time to absorb the heat or cold, it is not infrequent that the temperature is changed from 5° to 8°. Should it rise that much and the butter come soft, it is charged to friction in churning." Cream may be cooled very rapidly to the required temperature, yet the butter will be soft, which clearly indicates that the butter globules were not sufficiently cooled before the churning commenced.

#### General Rules.

The process of butter making may be governed very largely by a few general rules: obtain a good thermometer and use

it; note the temperature that gives the best results; let cleanliness and temperature be the controlling factors. See that the milk as soon as drawn from the cow is placed in cans and submerged in cold water. Skim the cream sweet, and keep it so by placing the can in cold water, until ready for ripening. Warm it to the right temperature and furnish it with a ferment that shall give it the right degree of acidity in a given length of time, or let the cream furnish its own agent for ripening, and *guess* at the proper acidity. Determine by experiment at different seasons of the year the temperature in churning that shall give you granular butter and leave the least trace of butter fat in the butter-milk. Wash all traces of buttermilk from the butter, work it lightly at a temperature of from 58 to 62 degrees.

#### DISCUSSION.

JAMES SPENSLEY—What do you mean by ripening?

MR. CURTIS—I mean getting it of the right acidity; getting it just right to churn.

JAMES SPENSLEY—Is it necessary that the cream should be sour to churn?

MR. CURTIS—No, sir; I suppose you can churn sweet cream as well as sour, if you so desire.

JAMES SPENSLEY—Would it have as good a result?

MR. CURTIS—I don't suppose so.

JAMES SPENSLEY—Would the butter be as good.

MR. CURTIS—That is a question that doctors disagree on; the theory is nowadays that we have all got to make sweet cream butter; that is the latest fad in butter-making.

L. H. ADAMS—That raises one more question. If feed makes the flavor in butter, why are we objecting to sweet

cream butter, as some of us do and some do not. Why do those who object to it lay it to the cream being churned sweet, if, as they claim, the flavor all comes from feeding.

GOV. HOARD—You have the same butter with just one difference—the acidity.

C. R. BEACH—You will admit that there is a flavor in a rose leaf, will you not? but you will not get one-half of it until it is bruised.

GOV. HOARD—The acidity you think brings it out?

C. R. BEACH—Souring.

JAMES SPENSLEY—Would you recommend churning sweet cream at the same temperature as you would sour?

MR. CURTIS—I do not recommend churning sweet cream.

JAMES SPENSLEY—There is lots of cream churned sweet. Now would you churn it at the same temperature?

MR. CURTIS—No, I suppose not.

SUPT. MORRISON—What would the temperature be?

MR. CURTIS—Anywhere along in the fifties—fifty to fifty-five degrees. I know nothing about it excepting what I have read; I have never churned any. I believe down in Virginia, where they have been making sweet cream butter for the President, they churn the cream at 55 degrees.

GOV. HOARD—That is English butter.

THOS. CONVEY—What ferment do you use and how would you produce it?

MR. CURTIS—I told you in the paper I would produce it from sweet skimmed milk; I would heat it up to 90° in a water bath and would allow it to stand from 18 to 24 hours; it then becomes lobbered milk. Take off the top of this and add one or two per cent. to the cream which has already been heated to 75°; shut the vat up tight. This

ferment wants to be mixed through the cream, the same as yeast works through bread, and it gives the cream a nice, pleasant acidity, and when it is so treated, 18 to 24 hours will produce the cream ready for churning, and will also do so every day in the year. But when you ripen in open vats or open cans I claim there is no man, not even a professional, can tell within 10° or 20° what the acidity of the cream is. They get very close to it sometimes. Here are Mr. Goodrich and Mr. Beach, they get their cream very nice, because they are careful of the temperature of their rooms and keep it pretty near the same all the time. But generally people who ripen cream in that way can't get within a row of apple trees of the proper acidity for churning. Sometimes it is too sour and sometimes not sour enough.

C. I. BRIGHAM—What proportion of the ferment do you use?

MR. CURTIS—From one to two per cent.; if I had a hundred gallons of cream I would use from one to two gallons of ferment.

SUPT. MORRISON—We are very fortunate to-day in having with us Mr. C. R. Beach, of Whitewater, who supplied the Sherman House in Chicago for many years, and who is called one of the best butter-makers in the state; and also Mr. Goodrich; and we have here a couple of pages of formulated questions that will bring out a great many interesting suggestions and also a great deal of experimental work and I would like to have Mr. Beach take the paper and read the questions and give his answers to them. It will help us to make up a good *Bulletin* and you will receive a great many suggestions in this line.

C. R. BEACH—"Please give a statement of your dairy, how many cows, how many pounds of butter sold, and what

it brought?" I have never kept a dairy of cows continuously for a year. We make butter largely in the winter and milk many more cows in the winter than we do in the summer. For the last three winters we have been milking about thirty to thirty-five during the winter. I think last year the sale amounted to about 9,000 pounds, which would be an average of about 300 pounds to the cow. The average price last year was 28 cents and this year ending January, 1890, it was 21 cents.

"What does it cost to keep cows?" That question I will skip because it would be mere matter of inference.

"What is the ration?" We vary it somewhat. This winter we have fed twenty-five pounds of ensilage, 12 or 15 pounds of shock corn, and a little oats mixed, eight pounds of bran, and probably five or six pounds of hay. Our usual feed is about forty pounds of ensilage made from Yankee corn, ten pounds of bran and what hay they will eat at night; we don't feed hay but once a day.

"Do you feed the mill stuff wet or dry?" Dry.

"Do you run a winter dairy?" Yes.

"How many pounds of milk for a pound of butter?" Last winter it would take about eighteen; this winter we are so situated that we have a different class of cows (somewhat) and it takes about twenty; day before yesterday I think it took just an even twenty, five pounds to the hundred.

"Do you groom your cows?" We do not.

"Do you summer feed with grain and what is its influence upon butter?" We always summer feed cows when giving milk; we think it not only improves the flavor of the butter but gives it solidity;

butter made upon a grass feed alone has not quite the consistency that it has with other feed. In damp or rainy weather we occasionally give twice a week a feed of dry hay.

"How many pounds of butter do you make per cow for a year?" I answered that before as nearly as I can.

"How long do you keep cream before churning in summer; also in the winter?" We churn every day in the summer. The milk is always sour with us when skimmed. In the summer when we churn every day there will be two skimmings; morning and night and churning the next morning. In the winter we churn every other day and have four skimmings.

"Do you wash your butter in the granular form?" We do.

"Do you add salt to wash water?" Yes, always. Sometimes instead of putting it into the water we throw salt right into the churn before adding the water.

Gov. HOARD—Why do you add the salt?

C. R. BEACH—Well, because the high-toned dairymen say it is best. It tends to lower the temperature and brine is heavier and floats the butter better. I see the man from Oregon recommends the putting of salt into sweet cream. I sometimes put in a handful of salt in the cream when I put it into the churn.

"Would you advise coloring butter?" I certainly would, because the market demands a high colored butter.

"How many times do you work the butter and how?" We work it but once. We wash it; salt it in the churn; revolve it a few times; put it upon a butter worker and press the moisture out slightly and put it in the tub; it is in the tub in less than half an hour after it



comes and it is not disturbed after that.

"How do you keep your stables free from odor?" Only by ventilation. We have not used land plaster and I therefore cannot speak anything about that.

"Do you allow your help to misuse cows?" Not if I know; I presume they sometimes do.

"What temperature do you keep your stables?" I cannot answer that question definitely; we keep about forty head in a stable seventy by thirty, and we ventilate the place, and such weather as this we keep the windows open. I think fifty degrees is warm enough and some of the time it does not reach that. It never freezes in the stable so as to stiffen manure at all; we try to keep them comfortable.

"At what age do you have your cows come in?" I buy my cows in milk generally.

"How long do you milk your cows before letting them go dry?" Too long altogether. I think every cow ought to go dry two months every year. I often milk my cows until I am sorry I have milked them so long. I think ten months is long enough.

"How much more stock can you keep on your farm than you did before you commenced dairying?" I cannot answer that question but I differ from many as to the opinion that simple dairying improves the farm. You cannot retain the fertility of your farm if you stock it full of cows and send the milk to the factory and do not feed a grain ration.

"What sort of grasses do you prefer, mixed or straight?" I prefer mixed grass and for cows for pasture I prefer grass that has never been disturbed; I think it is better and richer in butter fats, gives a better flavor and holds it longer.

"Do you have any difficulty in drying up your cows?" None at all. Tie them to a post for a week and they will dry up all right. A man asked me for a receipt to dry up a cow and I told him that.

"Have you ever had any difficulty with abortion in your herd?" I have had a great many cases of that.

"Is it contagious?" I don't know.

"Did it continue in winter?" It did.

"How much corn would you feed a cow giving milk?" Five or six or seven pounds would be the extent that I would ever feed it. If I couldn't have but one feed I would make it wheat bran without the corn.

"Is a ton of bran worth as much to feed as a ton of oats?" Perhaps not, but a dollar's worth of bran ordinarily is worth more.

"Would you thresh oats or feed them in the straw?" "Would you run them through a feed cutter?" I would feed them in the straw and run through a feed cutter every time.

"What is the best kind of hay to feed cows?" If I was feeding corn and corn-stalks I would prefer clover; June grass hay I think is fully equal to it.

QUESTION—Did you ever use millet?

C. R. BEACH—I never did.

"Is well cured corn fodder with the ears on and run through a cutter as good feed as corn ensilage?" It is not. If a man has not got a silo I would certainly recommend running this corn through a feed cutter, but it lacks softness; it is not as thoroughly digested, more corn passes the cow, it is more work to prepare it and is not as desirable.

"How many pounds of butter should a cow make a year in order to make her profitable to her owner?" That would depend on how much the butter sold for and how much you fed the cow. You



cannot fix any particular number of pounds; the more pounds of butter she gives the better she pays. How low a point you may go and still make a profit you should not find out; you should find out how many pounds she can make.

"Is any special breed necessary to secure a good butter cow?" We have breeds of cows in which a large percentage of them are better butter cows than others; there are good cows in all breeds and good cows in mixed breeds; but if I were going to take my chances I would take grade Jerseys or full bloods.

"Do you test your cows?" Occasionally.

"How?" By churning each cow's cream separately.

"What variation do you find?" More than I want to.

"Can you change the quality of the milk by the feed?"

That is what I claim you can do. I claim that by feeding you can not only produce in her the habit of giving richer milk. You can't take her to-day and have the quality change tomorrow a great deal. I met a man some time ago who said to me, why do you have such great faith in feeding bran; I fed my cows half a ton in three days and I didn't see any great change. But you can, by continuous feeding, produce in cows not only the habit of giving milk, but can increase the richness of the milk simply by giving your cows good treatment under favorable conditions and surroundings. Corn when fed to excess will decrease the milk. The effect of corn upon milk is to render the fats solid or hard; to a certain extent that is desirable, but an exclusive corn feed is not desirable, and if a cow is inclined to fat rather than to giving milk she takes

on fat at the expense of quality of milk; the effect of too much corn ration is that it renders the milk too tallowy.

Gov. HOARD—I want to ask if it is not somewhat liable, if you feed a cow too heavy a corn ration, to change her from a milking habit to a beefing habit, particularly a young heifer.

C. R. BEACH—I think so, and I think a cow at any time when from any cause she has begun to put on fat and shows a laying on of beef, you cannot very well stop it; she has been wrongly treated in some way.

"How is it with oats?" There is nothing better for butter or milk than oats, but the objection is it usually costs too much.

"How is bran for butter fats?" Bran is one of the best and cheapest rations, and if mixed with corn or oats it is almost invaluable; we wouldn't know what to do with it.

Gov. HOARD—Have you ever tried barley?

MR. BEACH—Some years ago I did, but some way I had the impression that the butter was drier and crumblier, that it had neither the solidity nor the richness of corn, nor the soft flexibility of bran. (These are all matters of opinion and not authority.) Bran gives a flexibility in winter which is very desirable; it is very much superior to corn. With hay and corn and oats, you make very rich and very solid and very high flavored butter—it is most delicious.

C. P. GOODRICH—Will the milk from cows having bran exclusively for their grain ration be richer in butter fats than it is where it is half corn?

MR. BEACH—I can't tell you, sir.

C. P. GOODRICH—I understand that it is not, but people generally think it is better where they are fed corn.

MR. BEACH—Those of us who are mak-

ing butter for the profit aim to have winter dairies, and there is one advantage in this the cow is not so far gone in calf, and the flavor of the butter is not injured by her being in that condition, we get therefore a better flavored butter from her grain feed, than we would if she came in in the spring.

Gov. HOARD—The butter of a cow far along with calf is not worth as much in the market either.

Mr. BEACH—No, sir. We know that it does not take half as much trouble to take care of cows in the winter as in the summer. We can afford to crowd them pretty strong in the winter.

“What effect has ensilage upon the quality of milk?” My friend Goodrich is a new convert, and he says it makes it better. I have been feeding it three years and I do not think it makes it any worse.

Gov. HOARD—A gentleman back of me inquires if you have ever fed rye.

Mr. BEACH—I have never fed rye.

Mr. WHICHER—It is miserable feed for cows.

“Do you feed roots?” I do not.

“Do you find any difference when you change from roots to ensilage?” I can't answer that.

I have found that there is one thing

about ensilage, that the butter comes quicker than it does on dry feed; it comes quicker than June butter. We can churn out the butter fat from the cream and get a larger percentage from ensilage. When we can get 15 or 20 tons of corn ensilage to the acre that we know is good we don't want to dally with turnips. I know that ensilage is good and can be cheaply produced and will give a large amount of feed. Do you know that an acre of ensilage will more than furnish a cow rations for 365 days of the year and have enough left to pay for the bran she will eat.

Gov. HOARD—That is more than keeping a cow to the acre.

Mr. BEACH—I merely say that it will give more than 365 days' rations and leave enough to buy the bran for her.

“If you desired to enrich your land rapidly, what ration would supply the most fertility?” Wheat bran.

Supt. MORRISON—And clover hay.

Mr. BEACH—Yes, clover hay, but wheat bran anyhow, and feed wheat bran in the summer for pasture. You will give back more fertility than you take from it. You may pasture a field indefinitely; feeding wheat bran rations and they will grow better all the time.

## MY DAIRY EXPERIENCE.

By JAMES McPHERSON.

### A Farm Dairy.

My experience dates from about the year of 1874, when I began keeping cows on a small scale, sending my milk to a cheese factory. This paid fairly well for awhile but, with high prices for making and low prices for the cheese, I concluded

I could do better than patronize the cheese factory, so built a milk-house, bought a Cooley creamer and commenced making butter and shipping it to Chicago. I thought I was doing pretty well, and did make some money at it as the butter sold at very good prices.

About this time I read a report of some noted dairyman's herd, which had made over 300 pounds of butter per cow in a year's time. I think this was in 1880. I got out my cash book and went to figuring.

#### Must Do Better.

I learned that, after allowing the cows credit for 365 pounds of butter used in the family, they had only produced 156 pounds per cow for the year. I thought this too great a difference to be true. I thought the 300 pounds to the cow man had stretched the truth into a pretty big yarn to advertise his Jerseys. At this time I had in my herd a half-blood Jersey cow, five years old. I thought she was a pretty good cow, although I had several others that would give a larger mess when fresh. I tested this cow about April 1st, 1880. The food she was having at the time was bran and tame hay, and from seven milkings we churned seven pounds of butter. This was an eye-opener to me, and from that time I have used Jersey sires in my herd. I found that beef cows were not the most profitable kind for butter-making.

#### Tries a Creamery.

Three and a half years ago I commenced taking my milk to the Fort Atkinson creamery, and from March following to the next first of March I received in cash a little over \$63.00 per head, receiving my skim-

milk back. The average price the butter sold for was within a small fraction of 25 cents per pound, deducting 4 cents for making, it netted me 21 cents. Three hundred pounds of butter at 21 cents per pound amounts to just \$63.00. For fear that you may think as I did about the 300 pound-yarn, I will say that I have no Jerseys that are for sale. In my herd there were ten two-year-olds and ten three-years-olds, heifers which I figured in as fifteen mature cows. While I do not give the whole credit for this increase in butter per cow, yet I believe a large part of it is due to the infusion of Jersey blood in my herd. I feed better than I used to, and my cows are all fresh in the fall of the year — two conditions which cannot fail to increase production.

#### No Use Kicking Against the Silo.

One year ago while in attendance at a Wisconsin Dairymen's meeting at Augusta, I sat on the anxious seat on the silo question, but before the meeting adjourned I was fully converted and determined to build me a silo. Well, I built one and now the only fault I have to find with it is, it is not half big enough. I think a dairyman wants about 12,000 pounds of ensilage per cow for the year, so as to bridge over any shortness of pasture or hay crop that may occur in a dry season.

## HOW HAVE OUR GREAT DAIRY COWS BEEN BRED?

By T. L. HACKER.

Most farmers think that the phenomenal butter cows are accidents, not knowing or thinking that, as a rule, they inherit their butter capacity; some think it the immediate feeding and manipulation of the owner; others—don't think at all—and these last discredit the large butter tests; still others there are, intelligent breeders, who shrug their shoulders and wisely shake their heads and don't believe a word of it—presumably, because they have not the material, or having it, have not the patience or faculty to make the most of it.

To doubt the authenticity of most of our butter tests, corroborated and vouched for, as they are, by men of unquestioned integrity, men who in social and business circles stand in the foremost ranks, and whose word, no one would dare to question on any other subject, is utterly ridiculous, and as presuming as it would be for me to say, I do not believe the Holstein cows give the quantity of milk their owners claim—or to say, I doubt the statement of my neighbor, who says his Swigert will take him to town and back in two hours, because it takes my Percherons all day to make the same distance.

It is not but fair to assume that these records are true, and so, studying the pedigrees of some of these famous cows, we may find from whence and how their great butter heredity comes.

As a building to endure great strain or pressure, must be "builted upon a rock," so, must constitution and butter heredity be the foundation of the great dairy cow; this being secured we must next look to the lines of breeding, intensifying the nature by inbreeding, yet, not carrying it so far as to result in constitutional weakness or passivity, although there is very little danger, if the foundation animals are strong and vigorous, as will be seen by the breeding of the cows Volie, and Purest.

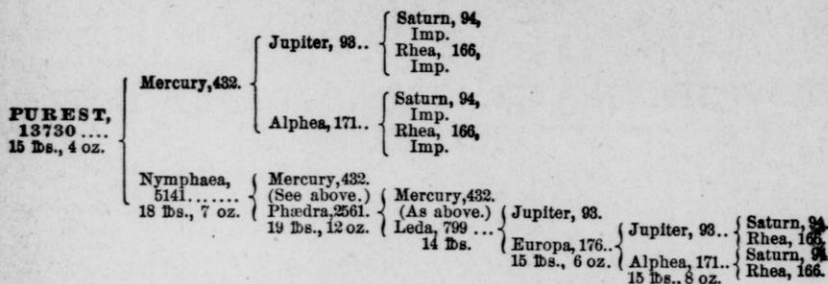
### Specimens of Close Breeding.

St. Helier-45 was bred on the island of Jersey and was the result of forty years' inbreeding in unbroken family lines—he was imported, and was bred to cows, in the manner indicated by this pedigree of Volie.

St. Helier and Blanche produced Ianthe, 16 lbs. 10 oz.; St. Helier and Ianthe, Pyrola, 18 lbs. 6 oz.; St. Helier and Pyrola, Oxole; St. Helier and Ibi, Kalmia, 15 lbs. 8 oz.; St. Helier and Kalmia, Safrano, 17 lbs. 8 oz.; Oxole and

<b>VOLIE</b> ..... 18 lbs., 1 oz.	{	Oxoll .....	{ St. Helier.	{	{ St. Helier. { St. Helier.
		Pyrola.....	{ 18 lbs., 6 oz.		
	{	Safrano.....	{ St. Helier.	{	{ St. Helier. { Ibi.
		17 lbs., 8 oz.	{ Kalmia.....		





Safrano, Volie, 18 lbs. 1 oz. There are thirty odd cows similarly bred and with similar results, a number of them several more removes with St. Helier as sire, with even greater results, and all showing good constitution.

In Purest, of the Alpeha family, we have a little different form of inbreeding which has been carried to a degree seldom ventured on by breeders, and which has been, so far, very successful.

Saturn and Rhea imported from Jersey produced Alpeha, 15 lbs. 8 oz., and also Jupiter, who was bred to his full sister Alpeha and produced Europa, 15 lbs. 6 oz.; Europa bred to her sire Jupiter, produced Leda, 14 lbs. Jupiter and Alpeha again produced Mercury; Mercury and Leda, Phaedra, 19 lbs. 12 oz.; Mercury and Phaedra, Nymphae, 18 lbs. 7 oz.; Mercury and Nymphae, Purest, 15 lbs. 4 oz., as a two-year old.

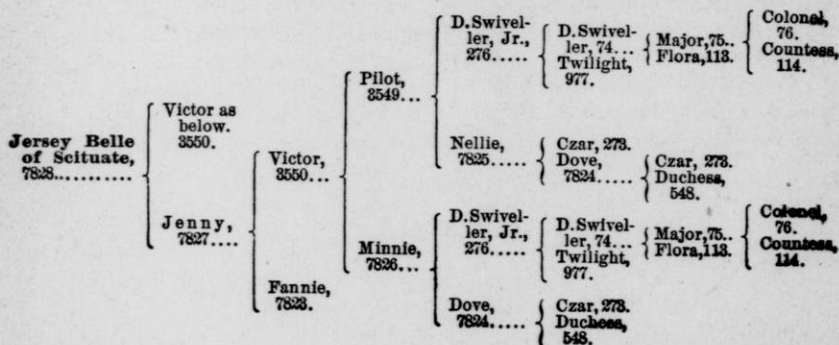
Every female in this pedigree since importation has made a butter record, and Mercury has twenty more daughters testing over 14 lbs.

These animals had good, strong constitutions and transmit their good qualities to their progeny.

These two examples are sufficient to demonstrate the fact that the closest inbreeding can be practiced without producing constitutional weakness or diminishing the ability to make a large butter yield.

#### Jersey Belle of Scituate.

In the year 1850, the old Massachusetts Society for the improvement of domestic animals, sent Mr. Thomas Motley to the Island of Jersey to purchase the best dairy animals he could find. He brought over the bull Colonel, said to be out of the best cow on the Island, and the cows Countess, 16 lbs. on grass only; Flora, 511 lbs. inside of a





year; Twilight, Jenny and Duchess, three excellent dairy animals. They were bred together until the blood of all these animals was united four times, culminating in this great cow that yielded, when six years old, 705 lbs. of butter in a year on light feed; the largest ration of grain fed to her during the winter of her year's test was only two quarts of bran daily. Two years later she made in one week 25 lbs., with a ration of two quarts each of cornmeal and bran.

She had a perfect dairy form, full, placid, intelligent eyes, a clean, thoroughbred appearance, thin, long neck, sharp withers, capacious body, high rump, thin incurving thighs, an enormous udder, measuring when fresh, five feet three inches, perfect teats and a navel remarkable for its development—she is considered the most perfect model of a dairy cow.

What a grand opportunity to establish a family of almost perfect dairy animals by breeding Jersey Belle to her own kin, was lost by the foolish prejudice against inbreeding, so that her wonderful butter heredity was dissipated and in a large measure, lost.

The dairy interest is to be congratulated that breeders are now more enlightened and their efforts more directed to holding together good blood lines, intensifying and strengthening the good results already attained.

It is still a mooted question, whether close breeding can be carried on indefinitely without constitutional deterioration; this is being thoroughly and

intelligently tested by William Simpson, of New York, and thus far his experiments have been remarkably successful, as shown by the heifer Purest, whose pedigree you have seen.

Eurotas, whose yearly butter record exceeded that of Jersey Belle, is our next example.

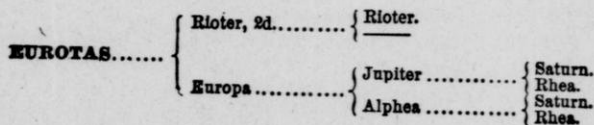
The dam of Eurotas was the inbred Alpha cow, Europa, the product of full brother and sister. Eurotas was bred by R. M. Hoe, of New York, who, possibly doubtful of the wisdom of further inbreeding, sent to England for the young bull Rioter 2d, sired by Philip Dauncey's Rioter; he was bred to Europa and produced the great Eurotas that made 778 pounds of butter and dropped a strong, healthy calf within a year.

This cow inherited her butter qualities from both sire and dam.

A Great Jersey Breeder.

Mr. Dauncey was unquestionably the most successful Jersey breeder of his day. Judging from results he was a master hand at the business, for nearly half a century he bred for large butter yield, strong constitution and solid colors, and here let me say, during all that time he went only once outside of his herd for a sire, and only retained him until he secured a bull calf out of the desired cow, to take his place, which shows that outcrossing was no part of his plan. So firmly did he fix these desired points in his stock that breeders at the present time, resort to his strains to secure these most desirable points.

This is a marked illustration of the



<b>MARY ANNE OF ST. LAMBERT...</b>	{ Stoke Pogis, 3d..	{ Stoke Pogis.	{ Y'ng Rioter.	{ Rioter.
	{ Lolly of St. L....	{ Buffer.....	{ Lord Monek.....	{ Victor Hugo, Imp.
		{ Hebe of St. L....	{ Victor Hugo, Imp.	{ Pauline, Imp.

great benefit conferred upon all interested in dairying, by the skillful breeder, who devotes his time and ability to establish certain characteristics he may have in view.

#### Selection the Basis of Success.

We may learn much by a close study of the pedigrees of his noted animals; it is evident from these, that he had no special formula, but combined those animals which would intensify and strengthen the points desired, regardless of kinship.

#### St. Lambert Family.

We will next examine the breeding of Mary Anne of St. Lambert, whose weekly and yearly record exceeded that of Eurotas, being 36 pounds in a week, and 867 for the year.

I have carried out the pedigree of Stoke Pogis 3d, to the third remove, to show that the sires of these two cows are descendants of Dauncey's Rioter, Eurotas being a grand-daughter, and the grand-sire of Mary Anne being an inbred grand-son of the same Rioter.

Lolly of St. Lambert, the dam of Mary Anne, traces three times to Victor Hugo, who has demonstrated that he was one of the most potent butter

sires in the Jersey breed. He was bred on the Island of Jersey, and imported in 1868, by S. S. Stephens, who used him for a number of years and subsequently he became the property of a gentleman in Kenosha. Victor Hugo was as remarkable for his high spirit, as for the superiority of his descendants in the dairy, which are noted for their excellent fore udders and strong constitution, and these peculiarities are as strongly developed in the Rioter or Stoke Pogis family, being almost abnormally developed in the great St. Lambert cows.

There are about thirty cows similar in breeding to Mary Anne, averaging 20 pounds per week.

We will now take the queen of the dairy, Landseer's Fancy, a cow that has given the largest authentic yearly butter test.

The test began January 26, 1885, when past twelve years, and was finished January 26, 1886, making 111 pounds, 15½ ounces in thirty days, 206 pounds, 9 ounces in sixty days, 302 pounds, 15 ounces in ninety days and 936 pounds, 14¾ ounces in a year. She dropped a healthy calf June 29, 1885, about the

<b>LANDSEER'S FANCY, 2876....</b>	{ Landseer, 331....	{ On Island of Jersey.	{ Dazzle, 379, Imp.	{ Gen. Scott, 46....	{ Splendid, 2, Imp.
	{ Fancy 2d, 95....	{ Gen. Scott, 46....	{ Fancy, 9, Imp.	{ Splendid, 2.	

middle of the test, and was again bred Sept. 29, 1885, so she carried a calf during nine months of the year's test. Her usual feed was four quarts of corn hearts and two quarts of bran.

#### Quality of Milk.

The ratio of milk to butter was 5 7-11 pounds of milk to one of butter; 2 $\frac{5}{8}$  quarts of milk made a pound of butter.

The dam of Landseer's Fancy was inbred to Splendid 2d, whose daughters were not generally tested except for quality of milk, some of them producing a pound of butter from less than four quarts of milk, when fed the ordinary rations of that day. Splendid was doubtless the richest bull ever imported, and his quality is fully demonstrated in Landseer's Fancy, and many other noted cows.

Imported Dazzel and Fancy, were noted for remarkable richness, so this queen of cows was produced by a union of animals whose strongest characteristic was *quality* not quantity, which was intensified in her, and, her performance as a butter producer, considering the small quantity of milk given by her, has astonished the dairy world and provoked no end of comment as to its correctness.

For the week ending July 22 the milk weighed 152 $\frac{1}{2}$  pounds which made 29 $\frac{1}{2}$  pounds of butter, a fraction over 5 pounds of milk to a pound of butter.

This is one of the most striking results of intelligent effort in breeding for a specific purpose, what wonderful cows may be obtained by uniting animals having the same qualities in a superlative degree. When we see how freely the animal kingdom responds to the will of man it seems as if nothing was impossible of accomplishment to him who persistently and intelligently works for it.

#### DISCUSSION.

THOS. CONVEY—I would like to ask Mr. Hacker if the best cows there have not had the largest number of outcrosses?

MR. HACKER—I remarked before that we have no knowledge of the breeding of those two animals.

GEO. MCKERROW—Hasn't inbreeding reduced the size of the Jersey?

MR. HACKER—The Jersey is a small cow, that is a fact; but I am not satisfied that the cause lies in inbreeding for this reason, there are two islands side by side in the British Channel; the Guernsey has been as much inbred as the Jersey and yet she is a large cow; I think she will average the size of our native cows, if not larger. I am of the opinion that the small size of the Jersey is occasioned more by precocious fecundity or early maturity. As a rule she drops a calf when she is two years old, and from that time she neglects herself and throws nearly all that she consumes into the udder.

GEO. MCKERROW—Landseer's Fancy and Eurotas are better cows than their dams and grand-dams; now why are they better? Is it not from the fact of the outcross?

MR. HACKER—Judging from results they are better, but I am hardly prepared to attribute it to the outcross. That might be the case. I have a theory about that and I will give it to you. I believe that inbreeding intensifies the nature; I believe that it develops the nervous temperament, and I am of the opinion that it makes the animal more delicate.

GEO. WYLIE—Isn't it pretty generally conceded that, outside of breeding Jerseys, the tendency of breeding in and in is to weaken the constitution, and that the tendency is towards disease and barrenness in animals bred in that way?

MR. HACKER—I could only answer that outside of the Jerseys from reading.

GEO. WYLIE—Isn't it so with the Jerseys?

MR. HACKER—No, sir, inbreeding does not produce barrenness. We have nothing to indicate it at all. This idea that inbreeding causes barrenness is caused by the inbreeding of Shorthorns. But they have a different temperament and inbreeding will not produce the same results on them. A rule that will apply to Shorthorns and beef animals or to a hog will not apply to a dairy animal.

W. H. COLE—In raising dairy animals what feed do you think best calculated to develop their dairy qualities, and do you think it a disadvantage to give them milk after three or four months old?

MR. HACKER—I have fed mostly ground oats to young animals. I never allow them to lay on flesh, for it has been my experience that allowing a heifer to do so, ruins her for a first-class dairy or breeding cow. So far as feeding milk is concerned, I think it better to feed milk until five or six months old.

H. C. THOM—Do you ever feed dairy calves whole oats.

MR. HACKER—I generally do feed whole oats; they are better.

C. I. BRIGHAM—Is there any danger of pampering a cow? Danger of taking too good care of them and causing them to loose their ruggedness?

MR. HACKER—My experience is that a cow should be pampered from the time she comes in until she dies.

GEO. WYLIE—Would you advise far-

mers to inbreed in the manner that you have mentioned?

MR. HACKER—I would not. Not to that extent.

R. B. BROOKS—What is the effect of breeding from immature sires?

MR. HACKER—Immature sires will not as certainly transmit their good qualities as mature sires.

GEO. WYLIE—Why would you not have farmers inbreed?

MR. HACKER—Because it is not likely that they will read an animal as thoroughly as a breeder will; they will not see the defects and consequently it will not be as safe.

GEO. WYLIE—It wouldn't be safe to tell a farmer that he could not see the defects of an animal as well as you can

MR. HACKER—I thought I knew somethink about Jerseys a great many years before I did know anything about the subject.

JOHN MARCH—Should a cow be fed grain before calving? Oats for instance.

MR. HACKER—From the time that a cow is dried off I would feed her lightly on non-carbonaceous feed, until about a week before time and from that time I would give, in addition to her regular feed, a little ration of oil meal.

WELDON VAN KIRK—How long should a dairy cow go dry?

MR. HACKER—That depends altogether on the dairy cow. There are some dairy cows that it will injure to go dry at all, but as a rule a Jersey cow will do better by having four weeks' rest than she will if milked throughout the season.



# EVENING SESSION.

## IS IT NECESSARILY HARD TIMES FOR GOOD FARMERS?

By C. R. BEACH, Whitewater.

### Do We Receive Fair Returns.

"The fault, dear Brutus, is not in our stars, but in ourselves, that we are underlings!"

I shall not, in the short time allotted me, attempt anything like a full and philosophical discussion of this question, but shall confine myself to a very limited inquiry as to whether the farmers of Wisconsin get a just proportion of the world's wealth they are helping to create, or in other words, are we as farmers receiving fair returns for capital invested and labor performed and if not why not? And whose fault is it?

This is a question of facts and not theory.

### A False View.

There are those who claim to believe that the farmers are a much abused class—that all the rest of the world have conspired together to rob them of their hard-earned dollars—that virtually they are the slaves of capital.

That the banks, the railroads, the manufacturers, the merchants and the middle men, are taking the lion's share of the accumulations of labor, leaving to the farmer only a bare pittance to supply his most pressing wants, and to pay taxes.

That the government both state and

national, legislate mainly in the interest of large capitalists—that the interests of the farmers are almost entirely ignored, save that now and then a few crumbs are thrown to them, to save or to win votes.

If all this and much more that is preached were true, and I believed it, I would quit farming and engage in some other occupation; for I should carry about with me a feeling of degradation, a want of self-respect, did I belong to a class that was not in every sense the peers of any other class. No man can do his best in any business in which he thinks the odds are against him.

But it is not true.

### Pleasant Homes, Fine Farms and Good Stock.

Go where you will throughout the state, you will find hundreds and thousands of men the owners and cultivators of highly improved farms, equipped with all the modern appliances of improved farming. Stocked with good cattle, housed in spacious and comfortable barns, the farmers themselves living in almost palatial homes, furnished with soft carpets, elegant furniture, well filled libraries, music to charm the ear and paintings to please the eye and delight the fancy.



They drive fine horses, and ride in fine carriages and wear good clothes.

Should you ask them how they came by *all* this wealth, and they will almost to a man tell you that they came to this state poor, and all that you see about them is the honest product of legitimate farming; that aside from what you see about them, they have raised and educated children, helped the boys to money to start in business, given marriage portions to the girls, helped to build roads, school-houses, churches and public buildings, contributed to the support of religion and the countless benevolent objects whose aim is to make the world better.

#### No Depression in Good Farming.

A business that has enabled these men to accomplish such results in spite of governmental disfavor, of legalized frauds, of crushing monopolies and unholy combinations in the form of trusts, must of itself be good business. You may go into any city or village in the state with from two to five thousand inhabitants, say Platteville if you please, can fifteen or twenty of the business men in that place buy out an equal number of the best farms in the surrounding county? I think not.

Do you hear of one farmer failing where you here of ten merchants or manufacturers making assignments? Do you know of a single instance where a temperate and industrious man who has run in debt for a farm? I care not, if it be for the whole purchase money, that has had it sold from under him unless from unforeseen misfortune? I have lived in the state for more than thirty years and I have never known such an instance.

#### Walworth County.

As a further illustration of the favorable pecuniary condition of the farmers

of Wisconsin allow me to refer to Walworth county, where I reside. This county has a population in round numbers of 28,000. The assessed valuation of the whole property of the county in 1888 was \$15,552,005, if this assessment was made upon the basis of 60 cents on a dollar the real value of the property would be \$25,920,000 or \$925 for every man, woman, and child in the county.

But there are 19,000 residing on farms to 9,000 residing in cities and villages, and figuring upon the same basis, the property of these 19,000 on farms is equal to \$1,025 to each individual as against \$716 for each of the remaining 9,000 who live in cities and villages.

The farmers of Walworth county certainly have their share of the wealth that has been accumulated. As compared with their neighbors, their property may have been assessed relatively higher, but it was not assessed for more than it was worth. Only last week I took dinner with a farmer past middle life and I asked him this question that has been given me to answer:

Is it necessarily hard times for good farmers?

His reply was, it may be a little close for some, but not more so than for men in other branches of business.

#### Farming Does Pay.

Farming, said he, is the surest and best business in the world, and if I was to live my life over again I would be a farmer. This man commenced for himself with nothing and by running in debt for land. Fourteen years ago he was the owner of a farm that sold for \$12,000. While looking for a more desirable location, he made a few successful speculative ventures on a board of trade, the result was that before he stopped, he lost all that he was worth save a few hundred dollars. But without whining,

he and a grown-up son, for the next five years worked other peoples' land on shares, for the last seven years they have worked lands for which they have been in debt for a large share of the purchase money. Today they could sell and be worth \$12,000 to \$15,000, all the fruit of farming. Has not farming been good business for them?

**Result of German Economy.**

Across the fields from my home lives a German who some dozen years ago was working by the month. He married and worked his employer's farm for seven or eight years. Two years ago he bought the farm where he now resides for \$8,000, and had money to pay half down and own his tools, teams and stock enough for the farm, and in a very few years will own the farm clear, which with the working capital will be worth \$10,000.

I might multiply such instances by the hundreds but time will not permit.

**Good Farming Pays.**

But what per cent. do farms in Wisconsin pay on their "selling value?" There are so few farmers that keep a debit and credit account with their farms that it is somewhat difficult to obtain sufficient data to answer only with approximate certainty.

But it is much larger than is generally claimed, and fully equal to the average of business ventures. I have inquired of several men, some of whom rent farms on shares, and others that receive money rent, and they will range from 4 to 7 and 8 per cent.

But the object of this paper is not to so much determine the rental value of good farms, but rather what returns may reasonably be expected from lands well managed by the owners.

For I pray God the time may never come when any considerable part of

Wisconsin soil shall be owned by others than those who cultivate it.

At a farmers' meeting held at La Crosse last month this question was discussed at some length. A Mr. Harris thought that a majority of good farmers were making 7 per cent. on their investment. Mr. Hanchett said he could make his farm pay 10 to 12 per cent. Henry Richmond kept a set of books and knows just what his farm has paid, and said that it was more than 6 per cent. and that he had bank checks to show for the money.

Not far from me lives a man who owns and works a farm of 120 acres of about an average of farms in fertility.

While he makes the production of milk a leading business he can hardly be called a specialist. His cows are of no particular breed and while they are well-kept they are not crowded. He raises some calves to keep his dairy good, raises one or more colts each year, sells some grain and now and then a beef.

I have his statement of his farming for 1889; this statement, though not very minute, is sufficiently so to get at approximate results:

INCOME.		
Milk from 22 cows taken to factory.....		\$852 68
Calves sold.....		22 00
Hogs.....		190 00
Cows sold, whose place is supplied by heifers.....		187 00
Thirty bushels of wheat.....		24 00
One hundred bushels of potatoes.....		25 00
One three-year-old colt.....		165 00
Beef.....		30 00
One old horse.....		45 00
	<b>DEBT.</b>	<b>\$1,590 68</b>
Hired help.....		\$125 00
Use of tools, fence repairs, blacksmithing		100 00
Taxes.....		50 00
Bran purchased.....		200 00
Capital in farm at \$60 per acre, 7,200 }	\$10,000 at 7 per ct.	700 00
Stock and tools 2,800 }		
		<b>\$1,175 00</b>
Balance.....		<b>\$415 68</b>
Use of home, fuel, provisions raised on farm for a family of six persons, use of horse for boy and girl attending high school.....		400 00
		<b>\$815 68</b>

This \$815.68 will more than pay the owner and his wife for their work and that of his son who helped milk and made himself generally useful. I have not given this statement because there is anything remarkable about it, but rather because there is *not*. This man has done no better than very many are doing, and no better than any of us could do. If there are common farmers with ordinary methods who can realize 7 per cent. on land valued at \$60 per acre, it is certainly fairly good business.

#### The Necessity of Keeping Farm Accounts.

The trouble with the most of us is that we do not know anything about what our farms do pay. And even if we do make estimates there are many items that we fail to credit to the farm that properly and justly belong to it.

Let us suppose a man with a family of six persons, wanting a home, purchases a farm of one hundred acres of land, within three miles of a railroad town at \$70 per acre, with good buildings, the use of the house for a home would be worth \$150, fuel from the farm \$50, the milk, the butter, the pork, the eggs and the poultry, together with the vegetables for use in the family \$150, use of horses aside from necessary work on farm, \$50, making \$400. Almost six percent. on the whole investment. But you will say, they form no part of an income. True, but they would form a very important part of one's out-goes if they had to be paid for.

#### The Farm a Good Investment.

Money in a farm at 5 per cent. is as well invested as money loaned at 7 per cent., for one does not need to be looking for new places to invest, and then there is always a reasonable prospect that land well located will advance in

price. It is better than railroad stock. Mr. Blackstone, president of the Chicago & Alton railroad is my authority for saying that of 650 railroads companies in the United States, only 83 paid dividends to stockholders in 1888. Of these only nine paid 10 per cent., seven, 8 per cent., fourteen, 7 per cent., twenty-four, 6 per cent., and the remaining nineteen paid from 1 to 4 per cent.

That the entire railway stock in the country paid only 62-100 of one per cent. in 1888 with an increase of traffic of more than 14 per cent., the divisible profits were reduced 12½ per cent.

#### Real Estate Better Than Railroad Stock.

Of sixty-two railroads in Illinois forty-nine paid no dividends and thirty-six did not receive money to pay expenses. You will say that much of this stock was watered but it is not to be presumed that there was six parts water to one of value. The railroad commissioner of Nebraska says that the railroads of that state could be duplicated for \$16,000 per mile but admits that on that valuation they have not earned seven per cent. I think then that I may safely say that capital in farming pays as well as railroad stock. And so with capital in manufacturing though it may pay ten per cent. or twenty per cent. on the *investment*, if for any cause the article manufactured ceases to be in *demand* or the price reduced by *successful competition* the profits may entirely disappear and the stock become worthless. A bank's stock may pay twelve per cent., but the security of the investment rests solely on the sagacity and integrity of those who manage it. I have a friend that owned stock in an eastern bank that was worth 130 cents on a dollar, but in two years the stock was worthless and the stockhold-

ers were assessed 100 cents on a dollar to pay losses.

The reason that a farmer can not hope to make a million dollars out of his business, is because it can not be carried on profitably only within narrow limits; within that limit it may pay a better per cent. than a business that yields a million dollars of revenue.

#### The Secret of Large Gains.

Phil Armour in his statement before the United States senate committee in reference to the pressed beef trusts, claimed that his average profits on 340,649 head of cattle stamped and sold in the pressed beef trade in 1888 was only \$1.22 per head, a sum less than Hiram Smith realized on a single tub of butter, or Theo. Louis on a hundred-pound pig—yet he made a half a million of dollars. The real danger from great combinations of capital is not that they will increase the cost of production, but rather that from economical combinations, of money, machinery and labor on large scales, competition in a small way will be destroyed, and so large numbers who would otherwise be independent producers, masters of their own business, must either seek new fields of labor, or become the hired employes, and so the servants of great monopolists. The Standard oil trust, the greatest monopoly in the country, makes oil cheaper rather than dearer.

#### Cause of Low Prices.

But to come back to our subject. While it may be generally admitted that farming in the past has been fairly remunerative there is a wide-spread feeling that the present low prices of farm products is but the natural results of causes that have long been at work and are still working, and that there are more reasons to expect lower prices

rather than higher. That by the rapid extension of railroads and steam navigation the ends of the world are brought together that space has been almost annihilated.

That the invention and almost universal use of the self-binder and steam thrasher, together with numberless appliances for increasing the production of food materials with lessened labor, together with opening up of vast areas of new territory of virgin soil and unsurpassed fertility, on the continent in Australia and in Asia has resulted in an over-supply of the markets of the world with wheat, and to some extent with meat, and the prices are, and will continue so low, that in all the older countries they can be produced only at a loss.

#### The American Farmer not Alone.

That farming in Great Britain has become unprofitable, that during the last twenty years the shrinkage of value in England and Wales alone of farming lands and capital used in cultivating them will amount to \$5,000,000,000. That the price of farming lands in New England, and New York have depreciated nearly one-half, and that even here in Wisconsin many of our farm products go begging for a market at prices below their cost of production.

#### Business Methods and Cheaper Production.

To all this and much more than can be said in this line I will only answer that the tendency in all departments of human industry is towards cheaper production, and that the farmer must keep step in the changing order of things or get left. Is there any reason why we as farmers should be able to buy a self-binder, a lumber wagon, a covered carriage, a shovel, a pitchfork or a hoe, a pound of sugar, a yard of factory cloth for half the price of twenty years ago



without a corresponding reduction in the price of what we have to sell?

What is the object of a department of agriculture, of experimental stations, of appropriations for scientific investigation as to economical methods of producing crops, of feeding tests to determine how to get the best results from a given amount of feed?

Of appropriations for farmers' institute if all these are only to result in putting more money into the farmers' pockets and not at the same time lessen the cost of food to the consumers?

**Old Ways, Poor Crops—Unprofitable Cows Must Go.**

But can the Wisconsin farmers at present prices get pay for his labor and fair interest on his capital invested? That depends upon how he farms, and in what shape he sells his products. If he follows old ways and manages so as to raise only poor crops sells hay, straw, corn, oats and barley, lean cattle and hogs, ill-bred horses and poor butter, I answer, no.

But if he farms intelligently so as to make every acre produce a fairly good crop and feeds it on the farm without waste in such a way that it goes to market as a finished product of the highest quality, I unhesitatingly answer, yes.

It may be that Wisconsin can not compete in wheat growing with the Northwest, and it is fortunate that she can not, or with the Southwest in raising cattle; but in products that require intelligence and skill, the odds will be in her favor. In the production of butter and cheese we can hold our own as against the world.

I have shown you a case where an ordinary patron of a cheese factory realized more than 7 per cent. on sixty dollars per acre, even at last year's prices—but

on farms well adapted to grass and corn, with good butter cows *winter* dairying—and a silo—a return of 10 per cent. on \$100 per acre, would not be extraordinary, provided the requisite amount of skill and intelligence was applied. Such dairymen are not complaining of hard times.

**Profitable Industries.**

A *twin* industry in connection with dairying is the making of pork. An acre of clover pasture in connection with dairy slops and wheat shorts, supplemented with corn and fed to well-bred hogs, even though sold at \$3.50 per hundred, will pay more than the interest on a hundred dollars per acre, provided always that the requisite amount of skill be employed. With our clover, corn and dairies, we can beat an exclusive corn country in making cheap pork.

No state in the Union is superior to Wisconsin for raising good horses. It is not an unusual occurrence for a well-bred, good sired draft colt to sell for \$150 to \$200; in *raising* such colts there is *always* profit, and so with good driving horses—but more than half of us who raise such horses, still continue to raise those that have to be sold for less than a hundred dollars if *sold* at all.

The raising of mutton sheep and early lambs for market, when intelligently pursued, can be made to give profitable returns.

Dairying, pork making, horse raising, mutton and lambs for market, summer feeding, steers with grain on pasture—any and all of these can be made to give large and sure returns.

The conditions are that we make our products of the very best quality. That we study our business and then put the best that is in us, into it; fail we so



many of us—I might say *all* of us, in so many ways, in doing as well as we know that the wonder is not that our farms pay so poorly but that they pay so well.

**Yield, an Important Factor.**

Do any of you realize how far we come short of making our farms produce what they might? Only last season in the state of South Carolina on a poor worn-out *soil*, an acre of land was made to produce 255 bushels of shelled corn, and 24 tons of fodder.

A woman in New York raised a crop of potatoes that yielded at the rate of 1,061 bushel per acre. I do not say that we ought to beat these records, but they show how far we come short of knowing the possibilities of production. How much we lose in failing to save in the the best possible manner what our farms have produced. How much we lose in failing to feed in such combinations, and in such a way and at such times as will give the best results. And more than all, how the best of us

could double our profits if every animal on the farm was of the higher type of its kind.

**More Thinking and Less Muscle.**

If we have failed in any particular it is not because we have not worked enough, but rather because we have worked too much, and thought too little. In the past, muscle has been the prime factor in production. In the future it must be skill, clear thinking, and wise planning, if the scales are to indicate a balance on the side of profit, and they will if we do the right kind of thinking. We cheat ourselves in so many ways it is no wonder that we think everybody is cheating us.

The way to reform the world is to reform ourselves. The way to make the world respect and honor us is for us to respect and honor our calling—making it what it should be, the most useful, the most honorable and the most profitable in the whole range of human activities.

## FOOD ADULTERATION.

BY H. C. THOM, Dairy and Food Commissioner.

**Cheaper Food.**

Unconsciously the nation has drifted into a partial recognition of fraud by a tacit permission to certain manufacturers to conduct a business not strictly in accord with honest principles. Manufacturers and merchants are not alone at fault in this matter of compounding food stuffs so that the original is degraded and cheapened. A cry has come from the people for cheaper food, not fully understanding that the demand

could not control the cost price. As is usual in these matters the demand was dictated and urged by the apparent and alleged need rather than by mature judgment.

**Fraud! Fraud!**

The inherent honesty of our people when besieged by popular voice and assailed by the clamor of thousands often wavers and sometimes falls. The result is that the table of the banker, like the table of the wage worker, is burdened

with fraud which represents the cunning of the serpent in the garden, and the seething compound in the witches' kettle. Nothing seems beyond the inventive genius of the imitator. The russet color is blazoned upon the yellow orange. Briny drops and butter texture and flavor appear in oleomargarine to the utter consternation of the honest herdsman and the patient cow. New Orleans molasses springs as readily from corn as from cane. Jellies are as readily expressed in December, in the back room of a canning establishment, as from the red cheeked plum in July. Meal passes for pepper, turnips for horse radish, chicory for coffee, red pepper for ginger, plaster Paris for cream tartar, and alum for baking powder. Beer glass washings ferment to cider vinegar quicker than from the penciled Tallman Sweet. Even smoked halibut is sliced from the ham of a dead sturgeon. Need the list be continued? We are a patient and long-suffering people. Are we not becoming a race of short lived people as well? Is it strange that wails rise to Heaven from the dentist's chair, and that the fires go out in the engines of our bodies, and that our stomachs put on their night-caps and fall asleep to wake in a land where the necromancer is unknown?

#### Our Resources.

Wisconsin is a broad and fertile state capable of producing more than enough to keep in comfort her two million people. To our native born have been added representatives of all earth's nations, contributing to our prosperity with their industry, frugality and intelligence. Our people have made homes of comfort and elegance. Wisconsin legislation has equipped health departments with license and authority. Millions are annually expended in sewerage and drain-

age. Health inspectors are tirelessly tramping through garbage alleys and miasmatic districts. Contagion is fought with science. Midnight processions glide silently by the homes where disease has found no foothold. Glandered horses are shot and burned to ashes. Pest houses are a public necessity. Every township, every village, every city, have watchmen to guard the health of their people. At any cost this must be done. Every house has a family physician. Every one is living a life of sacrifice that his general health may be better. This man denies himself coffee, that man shakes his head with a sigh at the proffered cigar, and another swears off on his morning dram. Why, every morning we say, "How are you?" meaning, what is the condition of your health. What is this thing we guard so jealously, that we are so anxious about, that we spend wealth so lavishly for? It is life. Aye, health is life. With loss of health comes loss of temper, with loss of temper comes loss of content. Feeble brains and an infirm body make a good match, and go halting round the track of life together.

#### Adulteration.

Despite all the precautions taken, modern civilization is threatened by an insidious foe which enters every home; a foe born of the greed of gain, a foe whose name is a household word, so common, that, like the tick of the old clock, we heed it never. We are all its victims. Its name is Food Adulteration.

Until recently no protection has been given society against the use of a great number of substances, furnished by unscrupulous dealers, although investigation has shown them to be pernicious to general health. I quote Dr. Beckwith of the Ohio Board of Health: "The use of alum, for instance, in bread making is a

common practice in this country and Europe. We will admit that no symptom of poison is evident from a single small dose of alum, but it is a well known fact among medical men and scientists, that in large doses it acts as an irritant poison, and that it has, in numerous well authenticated cases, produced death.

#### Health and Safety.

"It remains for this enterprising age to raise the subject to a destructive science. In the matter of teas, coffees, spices, syrups, sugars and other articles in daily use, short crops or sweeping changes in import duties do not trouble the consumer in the least. The beneficent manipulators of these goods take the import and bring the supply up to the demand in their own ware-houses." Laws are very stringent upon this subject in Europe, particularly in France and Germany. America, which has but recently passed laws regarding the matter, has been in a good position to catch the spurious goods from the old world which they could not sell at home. My friends, we refused to take tea from a foreign port once upon a time; are we not as independent now as then?

Wisconsin contrary to her usual custom did not lead the van to reform in stamping the fraud of adulteration as amenable to the criminal code. New York, New Jersey, Ohio, Minnesota, Iowa and other states have taken great strides in this direction. New York instituted 265 cases last year and collected nearly \$9,000 in fines. Thirty-five per cent. of milk tested in the state of Minnesota in 1887, was below grade. Only 2½ per cent. of milk tested in the same districts in 1889 was below grade. In 1888 sales of foreign cheese in Minneapolis was 727,000 pounds; state cheese, 582,000

pounds. In 1889—sales, foreign cheese, 394,000 pounds; state cheese, 1,456,000 pounds.

#### Let Us Have Pure Goods.

This radical change was brought about by enforcement of the law relating to the handling of pure goods. It is the aim of every state to protect the interests of her people. Four or five million pounds of oleomargarine are used annually in Wisconsin. This means the product of 30,000 cows. It means that 6,000 farms are deprived of profit and fertility that would naturally come from 30,000 cows. It means that 30,000 heifers remain unborn or are killed at birth. It means over a million dollars handled by manufacturers outside the state instead of farmers within our state who help bear the burden of taxation. No man can live in a business sense and place his butter in competition with tallow and cotton seed oil, so manipulated that it requires an expert chemist to detect the difference between the compound and dairy butter. It is not clear that we should prohibit the manufacture of any mixture that is not injurious to health, but we should strip oleomargarine of its power and that can only be done by obliging manufacturers to make it look like itself and not like butter. Butter has worked all these years to make for itself a market and a demand. Now that they are established it should not be robbed by an imitation. The attack has but just begun. No corner of the state is too remote for its presence. No table so humble, no dining room so grand, no lumber camp so rough, that oleomargarine, with its mellow name, will not walk upon and into, with a deceitful bow and brazen smile, with the claim that its name is butter.

#### Our Dairy Resources.

600,000 cows, patient and gentle, graze upon Wisconsin pastures. \$18,000,000 are invested in them by Wisconsin herdsmen. Are we to allow a Chicago corporation to drive our flocks from the fields and force men into business they are not fitted to by birth or training? It is not justice. It is against all ideas of right. The day is near at hand when public sentiment will demand recognition. No man or company of men have the right to stand in the light of a great and common interest. Shall the people and the legislature of Wisconsin show themselves more friendly to a Chicago fraud than they are to a Wisconsin industry? The legislature of 1889 said "No." The honest consumer says "No." We need more perfect laws on this question and I believe the sentiment of the state will be found solidly in favor of their enactment. The bone and sinew which has made Wisconsin a peer among her sister states will crush fraudulent interests to earth. When we consider that the welfare, the contentment and the prosperity of our nation depend upon the health and profitable industry of its people, these benefactions should be protected by decisive action and energetic discipline.

#### Adulteration—Poison.

Half the babies die before they reach the age of three years. Many undoubtedly are hurried to their tiny graves by adulterated milk. Righteous indignation should put a man in stocks who would dole out a thin excuse for milk to the puny child whose mother is too ill and weak to supply it proper nourishment. The greed of gain warps men's souls. A day of judgment is close at hand, and a righteous Father will hold them to strict account and demand full measure. The little band of

men who first conceived the Dairy and Food Commission saw clearly the finger board which marked the road along which unscrupulous gain was hurrying men. A halt was called. The momentum of the crowd is great. We had looked too long at the hustling procession with sleepy eyes. No man heeded the cry, but the voice is imperative and must be obeyed. The department is simply one of enforcement. The state has no use for laws that are not administered.

#### An Honest Business Usurped.

A business that has displaced 25 per cent. of legitimate production requires time to check. No state department can reach its utmost efficiency without the hearty co-operation of its citizens. I appeal to every honest merchant, every honest manufacturer, every economist, every honest farmer to join in the lists against the usurper of honest profits and the destroyer of human life.

To most of us it matters little whether death ensues from a large dose of poison, or from the cumulative effects of many small doses. To the philosopher the former is greatly to be preferred.

Wisconsin produces 50 million pounds of butter at 16 cents per pound, which is \$8,000,000. Wisconsin produces 40 million pounds of cheese at 8 cents per pound, which is \$3,200,000. The product of butter and cheese sells for \$11,200,000. Eleven million two hundred thousand dollars of the farmers' money is trembling before the onset of fraud. One-eighth of the total butter product is displaced by oleomargarine to-day, and the fight has but just begun.

#### Results of Dishonesty.

Two weeks since a circular came to my hands in which the name of Wisconsin was held up in shame before the whole



world because she put into the markets of the world fraud cheese. The Consul of America in England writes Secretary Blaine that Liverpool docks are covered with spurious cheese from Ohio, Illinois, and Wisconsin. Committees were appointed to investigate and I was obliged to write the chairman that a few men, and I was obliged to add, some of them farmers, were willing that the fair name of Wisconsin should be trailed through the mire of dishonesty and infamy for the sake of a few paltry dollars. To

them—a few hundred dollars—to the state, the loss of millions, and the gain of a tarnished name. Busy Chicago commission men were seen the other day scraping “Wisconsin” from the cheese boxes so that the word would not spoil a sale. Men who bring this about are unworthy the name of men. Honest men stand ready to cheer Wisconsin to the echo. In my judgment they stand ready to throttle a fraud that threatens to lessen their loyalty.

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## A FEW PLAIN THOUGHTS ON THE PRESENT AGRICULTURAL DEPRESSION.

By Gov. W. D. HOARD.

LADIES AND GENTLEMEN:—The world is full of doctors and whenever there appears a patient the aforesaid doctors have any number of diagnoses to offer for the cause of the disease and prescriptions for its cure. Agriculture is at present in a somewhat depressed condition. The profits of it have been lessened. You have listened this evening to a very clean-cut and philosophical essay from one of the most practical farmers and best thinkers in Wisconsin, Mr. Charles R. Beach, who gives you from his standpoint as an intelligent farmer, some good thinking upon this matter. No matter what may be the conditions that attend men and their effort, all solution of difficulty must first come from the standpoint of thought. Human thought is like a calcium light directed upon the facts to disclose their proportions, their relations and our relations thereto. Common sense must be the

great solvent of all our difficulties. What is common sense? It is the widest understanding possible of the relation of common things and our relation, if you please, thereto. We are surrounded by a complete environment of common things. As a consequence the best wisdom that we can get and the most of it concerning the laws that govern these things will be very much to our own profit.

A great many people in this country are looking up into the air for the solution of every difficulty. They are praying to a god in the distance and never to the Maker who is close by them. That is in a certain sense as true today of the agricultural mind as it is of everything else. I notice that a thousand farmers are directing their eyes to Washington for relief from agricultural depression, where one is looking to his own effort and his own understanding for that solution.

**Misdirected Effort.**

Now it has struck me that there is a reversion of intelligence in this matter, and I have a few facts to offer you. I have but little faith in legislation taking hold of agriculture and effecting much if any relief; I believe that what ails the farmer is what ails me in my business, which is partially that of agriculture, relating to the manufacture of agricultural products, and that is this: that if I do not obey the laws of success, if my efforts are misdirected, I must pay for it and there is no hope for me in any legislation or in any effort of my neighbor. Therefore the question of *misdirected effort* is a pertinent one to Wisconsin agriculture today. Are we engaged in misdirected effort, are we wasting our resources, are we earning to waste and not to save? This will be the scope of what I have to say.

Armour & Co. lay down one class of beef in Cleveland for five and one-half cents a pound, by the carcass, and another class or grade at eleven cents. Yet ten of the first grade are produced to one of the latter. Can congress pass any law that will make five cent beef sell for eleven cents? If the law cannot change this state of affairs, who but the farmer must change it?

**Over-Production of Inferior Products.**

In 1880 we had 35,000,000 of cattle; in 1889 we had 57,000,000; our population has increased 13 per cent. but our beef cattle have increased 62 per cent., if these figures are correct. But the increase is largely in the inferior grades where there is no profit in production. Who makes these unprofitable cattle but the farmer? Will any state or national law change him over to a good farmer?

**Millions Lost.**

In Wisconsin we produce about 50,000,000 pounds of butter; 10,000,000 pounds sold last year as near as can be estimated for an average of about 23 cents a pound; 40,000,000 sold for an average of about 13 cents a pound. Do you know of any earthly power but the farmer himself that can change this poor 13 cent butter to 23 cent butter?

**Competing Against the World.**

We have shipped as high as 226,000,000 bushels of wheat to England in wheat and flour in one year. Now we exporting 100,000,000 bushels. England took and now takes, all of our surplus wheat. Russia within ten years has reached an English export of 118,000,000 bushels. India last year supplied England with 54,000,000 bushels. Mark how small a thing has worked a great result. A decrease of 78 per cent. in the cost of jute bagging has made the India export possible. India ships all of her wheat in bags, and a decrease in the cost of the jute bagging made it possible to dump 54,000,000 bushels of her wheat into the maw of English consumption. Austrian-Hungary gave England 18,000,000 bushels last year. The Argentine Republic sent 9,000,000 bushels. All these nations have taken the English market away from the American farmer in ten years to the amount of 125,000,000 bushels of wheat. England being the only country that buys wheat and these outside countries being willing to lay wheat down in Liverpool at one dollar, the Englishman will not pay us any more than what he can buy of other folks for. He has never yet been known to sacrifice himself in behalf of any other country.

A bushel of wheat in Madison is worth 72 cents. It costs 21 cents to lay that down in Liverpool; wastage is 2 cents,

insurance, commissions and elevator charges are 5 cents; add this to the original 72 cents and you have one dollar. Wheat was selling last week in Liverpool at \$1.02 a bushel, and yet Wisconsin farmers are preparing to sow more wheat. In 1882 English farmers raised four million acres of wheat, but this outside competition has so reduced that acreage that in 1889 it was only two and three-quarter million acres. English wheat sells this year in England at the Exeter market at 90 cents a bushel. Russia has today a surplus over the foreign demand of 18,000,000 bushels of wheat. Were it not for the duty of 20 cents a bushel, Russia would unload her surplus in the American market.

#### Our National Crop.

We raised in 1889, 72,000,000 acres of corn producing two billion one hundred and fifty-six million bushels. England and the continent only want one hundred million bushels, leaving one billion fifty-six million bushels in our hands. Fifty million acres of corn fodder are about the same as wasted. One acre of corn and fodder in a silo will feed a steer a year. In Ohio on high priced land it cost \$12.25 an acre to raise and silo one acre of corn, allowing three dollars as interest on the land per acre. Those fifty million acres of corn if they had been handled economically, would have fattened fifty million beef cattle. On the contrary one-half of the feeding value of those fifty million acres was thrown away. Do you think the ranchman could compete with you in the production of cheap beef if you fairly and resolutely determined that you would take advantage of what you annually waste, and so establish profit where loss now exists?

#### Too Much Crude Thought and Crude Effort.

What is it that a man has to sell? Skill. If he does not sell skill, he sells to kill. Now, here is a thought which I wish were elaborated until it swelled to the size of our necessity. The trouble with Wisconsin farmers, very largely, is a lack of the sale of *skill*. Men are putting crude thought and crude effort into the production of farm products and contenting themselves with that condition, thus selling crudeness and not skill.

#### Lack of Skill.

An illustration: The town of Watertown is twelve miles from the town of Koshkonong in Jefferson county. The town of Watertown has the best land, and everything to its hand in the way of markets, as nicely as it could ask. In 1885 it produced 83,000 pounds of butter, which, because there was no skill used in the production, sold at an average of twelve cents and eight mills per pound. The town of Koshkonong, twelve miles distant, produced that year, 124,000 pounds of butter, which, by virtue of the use of better skill, sold for twenty-one cents and eight mills per pound, an increase of nine cents a pound. What the town of Koshkonong got the farmers of Watertown could have had. But no, they refused to pay the price of success; they paid no attention to skill. Now, what was the amount that they lost? Mind you, they had produced the butter, they incurred all the expense of producing *good* butter. They had gone to the expense of producing 83,000 pounds of butter and they lost 9 cents a pound. It amounted to \$7,470 or \$3.71 for every man, woman and child in the town, or once and a half more than all their taxes. There wasn't a

farmer in that town but would have been willing to have gone from home to Watertown a dozen times to save his taxes. Yet for the lack of a little intelligent judgment and understanding put into the manufacture of that 83,000 pounds of butter the result was as you see it. Is there any legislation on earth that can save to those farmers the loss that they have imposed on themselves?

#### The Farmers' Institute.

For this reason we gather in the Farmers' Institute. For this reason do we agitate this question, hoping thereby that we may fertilize our judgment and that thought, study and intelligence shall guide and control our destinies. What do they mean? They mean hope and encouragement to the farmer, they mean hope and encouragement to his family, they mean no additional burden but additional liberation. I have seen so many instances of it. I have seen so many men who have been leavened by the use of a little thought, taking hold of their destiny and thereby weaving for themselves a condition of prosperity, and doing it within the humble purview of a little farm, that I believe more than ever that "knowledge is power." I believe, to-day, that the plain simple truth with us is that, if we work out our salvation, we must do it not only with fear and trembling, but we must do it with a clear perception that knowledge and skill is to be our saviour. These are the true solvents; here is the philosopher's stone. Education is to be for us the final solvent.

#### What Is Education?

Passing down the River Nipigon, way on the north side of lake Superior, I had an idea forced upon me of the value of education. I was in the hands of two Indians in a birch bark canoe, the river full of rocks and with rapids flow-

ing, in places, at the rate of twenty-five miles an hour. One goes gliding along easily and swiftly when suddenly the river dashes over the brow of a hill and at the rate, as I said, of twenty-five miles an hour—you are precipitated down with a swiftness that appalls you. You see a rock rising as high as this building in the midst of the stream, and you say to yourself, "It cannot be in human fate that we shall escape that rock." You see yourself borne swiftly toward it. You are about to commend your soul to your Maker; you look inquiringly into the eyes and faces of those Indians to see if you can trace your destiny there. Not a muscle moves, not an indication of what they know and can do. But just at the right moment, as you reach the point of the reflex action of the water against the rock, a skillful turn of the paddle—not an unskillful one—and your danger is over and you dash by to meet another, and so on, for forty miles down the river, you find yourself constantly committed to the education and skill of those simple sons of the forest. What have they done? They have studied out *principles* which will guide them and which will bring them protection. They have studied the forces of nature. It is education in the highest sense of that word, it is education in the highest reach of the thought. It is by becoming masters of those forces that we make nature serve us as she should serve us. She never serves any one without skill. Therefore in our struggles, in all of our gettings, let us get understanding; let us learn that we must sell *skill*; that for every particle of our product that goes out crudely, that much is marked with the stamp of loss; that we must in these days become *skillful* farmers.



**The Value of Hard, Common Sense.**

Here is an illustration of the value of understanding. A dollar's worth of wheat sent to Liverpool will cost, as you see, in the neighborhood of 21 cents. Yet there are thousands of farmers who persist in subjecting that dollar's worth of hard work to that very condition. Here are two silver dollars; this is the wheat dollar in my right hand; this is a cheese dollar in the left. There are a hundred cents in each one, no more and no less. That wheat dollar pays a tax of twenty-one cents to get itself to the consumer; that cheese dollar pays a tax of seven cents; if it be butter it pays five. Now, my friends, here is one of the illustrations of the necessity of every farmer concentrating his product, reducing the crude product, that is, concentrating values and reducing bulk. You see there are but a hundred cents in each dollar, and yet the wheat dollar pays 14 cents more than

the cheese dollar and 16 cents more than the butter dollar, in the simple cost of transportation. But says the farmer, "the railroads charge me too much on this wheat dollar." They may—they will if they can. But let us look at it a moment. To carry \$2,000 worth of wheat in the old standard cars will require six cars. To carry \$2,000 worth of cheese will require one car—\$2,000 worth of butter half a car. Can a railroad company, build, equip, man and run six cars for the price of one car, or for the price of a half car? It is preposterous to think so, and, therefore, if we compel the railroads to carry bulky products for us, we must bear the punishment that that folly brings.

These are economic questions, but they reach down to the roots of our being. They take hold of our destiny, and I submit them as "A Few Plain Thoughts Upon the Causes of Our Present Agricultural Depression."

# SILO SESSION.

## SAVING AND APPLICATION OF MANURE.

By JOHN M. TRUE, Baraboo.

SUPT. MORRISON—I am very sorry that we have not a larger attendance to listen to the papers and discussions that we are going to bring before you today, upon the same line nearly that we had yesterday; but there is one consolation,—we are not working for this audience alone; we are working for an audience of over a hundred thousand that our bulletin will reach, and consequently we will do just as good work as if the hall was crowded.

In the absence of the governor the subject of the "Saving and Application of Manure" will be introduced by Mr. John M. True, who will give you a short talk on the subject, to open up the general discussion.

**Saving and Application of Manure, by  
Hon. J. M. True.**

It is always embarrassing to appear in the position of substitute for another speaker; it is especially unfortunate when one is called upon to speak upon a topic that has been assigned to such a speaker as Gov. Hoard, and this embarrassment is not very much relieved when we consider the importance of the topic that I am called upon, upon the moment, to present to you.

In my opinion the saving and application of manures upon the farms in Wisconsin represents one of the greatest leakages that our attention is called to; and while we may not be able to agree (as we doubtless shall not, at this time),

with reference to the best methods, especially of the application of manures to the different soils, still there is ground that is common to all parts of the state and to all methods that is worthy of our consideration.

### **Save the Liquid as Well as the Solids.**

When we come to recognize that it has come to be an accepted fact that the liquids in connection with the droppings of our live stock are equal at least in fertilizing value to the solids, the importance of the proper saving in our stables of the manures is seen in its full importance. Therefore, we will pass over this subject with the simple statement that a sufficient amount of bedding or absorbents of some kind should be used in the stable in order that there may be no waste in this direction. Passing from that to the handling of manure after this, I have to say that I have no doubt that under favorable circumstances, the greatest saving of fertilizing qualities of manure is obtained where they are drawn directly from the stable and applied to the land; but still there is a question yet that seems to me is not fully settled, with reference to the percentage of loss that may occur under certain conditions, depth of snow, rolling surfaces of fields to which the manures are applied, that render this uncertain whether this may be accepted as an infallible rule upon all of our farms.

**Our Experience.**

I propose this morning to speak especially of my own methods with reference to this matter, allowing other gentlemen who entertain different views to present the other side of the question. I have not been accustomed to draw the manure from my stables directly upon the field. Neither has it been a custom with me to remove the manure from my sheds to the fields and apply it to the soil in the spring of the year. I find that I am too busy in the spring of the year at putting in my crops to stop and apply the manure to the soil, and indeed it has been a question in my mind, during the past few dry seasons, whether those farmers that have made a practice of drawing green manure from their stables and yards and plowing it under, have received any great benefit from such application of the manure. Briefly, then, I am accustomed to piling, with considerable care, the manure as it comes from my stables, and retaining it until the next fall before it is applied to the land. I aim to use a great deal of care in the location of these piles and the manner in which they are constructed and handled. It has come to be a fact accepted by all that the great loss to manure occurs by leaching.

As was drawn out incidentally in the discussion yesterday, there is doubtless much less loss in the escape of gases from manure, even when undergoing fermentation, than is generally supposed. Not every offensive odor that is found around a manure pile represents escaping fertility.

**Loss by Leaching.**

The great loss that occurs to manures before applied to the soil is from leaching, through being spread out loosely over the yard, coming in contact with those little rills that are allowed to

flow through the barn-yard, or by being placed, as represented in the picture before us, under the eaves of the building where the drippings from the roof fall upon it, washing out the fertilizing qualities of the manure, from which place they are conveyed into little pools that either dry up or are evaporated or allowed to flow off into the pools in the yard, where the fertility is wasted. Then, locate the piles of manure where they will be free from contact with the drippings from the stable, and free from the little rivulets that sometimes may flow across the yard. I am accustomed in starting the foundation for a manure pile to lay it out with the regularity that I would a straw stack. I suggest that the top surface should be flat. My farm stock is largely horses, and you know that manure from the horse stable is much more liable to fire-fang, as we say, and become injured from this source than any other manure that we have around our stables.

**A Compost Heap.**

Keep the manure piles flat on top; spread the amount that is wheeled or drawn from the stables daily, evenly over the surface, upon which the stock are allowed to run as they will, and there is no danger of fire-fanging. I think it is a good plan to mix the manure from the cow and horses table in one pile. There is a lack of that fermentation in one case, which is necessary to produce good results, while the tendency toward too active fermentation of the other kind, has a tendency to make both kinds of manure better for the land. I think if the manure pile is arranged in the manner I have spoken of that there is very little loss from leaching. Talking with a gentleman here a few minutes ago I was struck by an illustration

of this point; he stated that it has been necessary in his experience, while drawing manure from his stable and piling it up in great piles, to even throw water on them to prevent them from heating to too great a degree. If this is the case it is not to be supposed that there will be a sufficient amount of rainfall from the clouds to injure the manure from leaching.

#### Surface Application.

Just a word as to the application of manure to the soil. I am aware that with the diversity of soils represented by the farmers in this audience, we cannot lay down any general rule alike applicable to all—sand, stiff clay and black loam will require different applications of manure to get the best results. My soil is a black loam soil, with a clay subsoil. I want to say that, in my experience, I find I get much better results in crops and in the staying qualities of the land, by a surface application of manure. Let this manure be applied in the fall of the year, either to the meadow after the hay crop has been cut, or, if upon land I wish to crop the succeeding year—as is usually the case—with the corn field—I first plow and then spread the manure evenly over the furrows, directly from the wagon.

#### Wasteful Method.

I wish to speak against a method, wasteful both of labor and fertility, that seems to prevail in a good many parts of the state, of drawing the manure to the field and piling it in neat little piles to be spread in the future over the surface. It seems to me the manure can be spread directly from the wagon, and then, if it leaches, the leaching is just where we want it, in order to prepare the soil for the crop we propose to put upon it. I am aware that with a stiff

clay soil, where the mechanical effect of plowing under manure is wanted, this rule may not apply. I think it applies in greater force, perhaps, than to the soil I spoke of, when the land you wish to manure is of a sandy nature.

#### DISCUSSION.

W. H. COLE—On soil like yours what crop do you like to put manure on immediately after?

J. M. TRUE—I apply immediately after the corn crop; and sometimes apply to winter wheat as a surface dressing.

W. H. COLE—How about pastures and meadows?

J. M. TRUE—I apply somewhat to meadows,—apply the well rotted manure after haying time.

R. B. BROOKS—Isn't there danger of taking it up the following season with the hay?

MR. TRUE—Not if the manure has become as well rotted as it will be, if it is handled in the way I suggest.

R. B. BROOKS—Do you ever plow under?

MR. TRUE—Not on my farm.

J. S. JONES—Have you ever noticed that in extremely dry seasons, when the manure has been applied as you suggest, immediately after the hay crop is removed, whether there was a tendency to draw the sun and to thus injure the grass?

MR. TRUE—I will state that I have never noticed it.

J. S. JONES—It has been my experience that it operates in that way.

R. B. BROOKS—With such dry falls as we have been having, don't you think there is waste in applying manure as you suggest?

MR. TRUE—I am aware that the idea suggested is a common one. The manure presents a shriveled appearance



and looks as though it might be of less value, but when the rains fall again the same fertilizing qualities may be leached out.

ORANGE JUDD—In your corn ground, don't you plow in the spring at all?

MR. TRUE—No; when I apply manure in the fall, I find that I can get better satisfaction by using a disk harrow in the spring.

C. P. GOODRICH—Do you think it a good plan to apply the manure to the pasture?

MR. TRUE—I cannot speak from experience.

C. P. GOODRICH—I apply more that way than any other. It is true that for a few weeks the stock will not crop the grass very close, but they have the rest of the field to feed on, and after two or three rains they will feed that off. I draw it out when I have opportunity in the summer time. It not only furnishes more feed, but it makes a stiffer sod to turn under.

MR. TRUE—How deep would you break that sod, Mr. Goodrich?

C. P. GOODRICH—I wouldn't plow more than three inches deep.

J. S. JONES—Where the manure is coarse and not fit to put on the meadow, but fit to put on where you want corn, by plowing about three inches and a half deep, I think in a dry season, the corn roots going down under the sod in this manure of a coarse nature, has a tendency to hold the moisture and I think is beneficial to the corn crop.

MR. TRUE—I want to say that two years ago it was very dry, and I know of places where manure was plowed under then and when they plowed the land up afterward, that manure was plowed up in just about the same condition as it was when plowed under. I didn't see

that it had rotted in the least during the entire summer.

J. S. JONES—Don't you think the manure has a tendency to hold moisture?

MR. TRUE—It would seem to have theoretically, but when turned into a dry soil it doesn't seem to practically.

W. H. COLE—I think coarse manure plowed under has a tendency to retain moisture. A good many times we have a good hard rain in the spring and then it is dry the rest of the season. If we can get the manure plowed down and wet it will retain the moisture.

H. C. THOM—If you don't get it wet you can't get corn enough off of forty acres to keep a steer.

C. R. BEACH—A neighbor of mine plowed under a crop of rye and the crop of corn was almost a failure; the rye dried out and the corn was not nearly as good as it was on the field next adjoining, owing to the coarse rye being plowed under.

C. P. GOODRICH—I had a little experience with corn two years ago. I put the coarse manure on in the spring and plowed it under, it dried out so I pretty much lost the corn crop, and I am not sure but I pretty much lost the manure.

MR. TRUE—If this soil is thoroughly wet down six inches deep in the spring there will be sufficient moisture in the soil as not to need manure to tide over the dry season, and manure would be unnecessary, and under those circumstances it would give better results to apply it to the surface.

R. B. BROOKS—I would like to ask what time that rye was turned under?

H. C. THOM—I would say that Rock county had a peculiar experience of this kind two years ago. They raise large quantities of tobacco in that county and a good many put in rye that they may

turn it under. They did it this year, which was a very dry year and I didn't see an acre of tobacco that grew on that kind of land. They plowed some of it as deep as eight inches, throwing this heavy crop of rye under and planted the tobacco on that seed bed; the result was that this rye which was turned into the bottom of the furrow effectually retained almost all the moisture that was below it and it was unable to come up through to the surface and the result was that that earth above the rye was absolutely dry and powdery, and they got no returns. The same year I planted twenty-six acres of corn that was heavily manured and I turned the manure under and there wasn't corn enough to swear by. I planted another field of corn that wasn't manured at all, and that bore a heavy crop.

MR. FRANCE—Had it been a dry season how much good would that manure have done on top?

H. C. THOM—The more manure on top the better, for it would answer the same purpose that the rye did at the bottom of the furrow, it would retain the moisture; turning a stone over a little piece of earth is the best thing in the world to keep the earth moist.

C. R. BEACH—Had that rye been on the surface of the ground would it have furnished a mulch that would have kept the ground moist?

H. C. THOM—It is my opinion that it would.

QUESTION—How about top dressing?

C. R. BEACH—I knew a man who put a shovelful of manure on the top of each hill of corn and all summer he was digging to get his corn hill.

VOICE—I have tried it with good results.

C. R.—BEACH—I think that manure on the top of land that you are going to

plant is the very best way to apply manure, and I have no doubt that it is best to apply green manure.

GEO. VAN HOUTEN—I spread the manure on top. It is sometimes difficult to spread it just where you want it. I spread it between the corn rows, sometimes before the corn is laid by, and sometimes after, and then afterward spread the manure. In south western Iowa in the last three or four years we have found that manure plowed under has in many instances been a positive damage, while as a top dressing it has always given beneficial results.

VOICE—With us the old style way of plowing manure under has been altogether abandoned; we apply it either to meadows or to pastures or spread it on top; in general there is more applied to meadows than in any other way; as the manure is accumulated during the winter it is immediately hauled out on the meadow and spread.

THOS. CONVEY—I prefer to haul out directly from the barn. I know that about fifty per cent. of the manure in this country is allowed to go to waste, if it is allowed to remain around barns and in yards. The style of allowing it to remain in compost heaps is better than allowing it to lie under sheds or in yards where it is allowed to leach away. There is less loss in applying manure of the right quality to the soil and it is a saving of labor. You have more time to handle it in the winter time, and it is more convenient to haul it then. I run my cattle in sheds and haul the manure directly from those to the field—that is, of my young stock. The dairy stock are kept in the barn where there are water tight manure gutters, and everything goes directly to the field. I prefer to top dress early fall plowing for corn ground,

but cultivate the manure in well in the spring; I would prefer to have it in good condition, of course, not having too much straw in it, but yet I have failed to see any damage done to a crop by top-dressing with manure, as has been stated. Of course, if you are careless in cultivating, and don't have it well mixed up with the soil, there is a disadvantage in handling it in this way, as it dries out; but with thorough cultivation, I have not been able to find anything that gives better satisfaction than to apply the manure directly to the field and spread it as hauled. The main loss in handling manure is by leaching. All manures must be in liquid form to be available as plant food, and the leaching should take place in the field in preference to barn-yards and about the stables. I have applied manure to pastures with decided advantage. Cows will not crop the grass so closely; they do not relish it so well as where it is not applied, but the pasture will yield double the amount of feed and will stand a greater amount of drouth. The effects of manure are not as apparent in a dry season as in a wet one, of course, because the fertilizing qualities of the manure are not leached out so much, but they remain in the soil, however, and when we have a wet season then the effect will be apparent on the soil.

ORANGE JUDD—I want to call attention to the value of concentrated manure upon hilled crops and those in drills, more immediately around the growing plants. I have advocated for years the importance of growing corn, for instance, of concentrating a little well prepared manure on the hill.

MR. RUNDELL—Our usual method here is to haul out the manure before plowing in the fall. It seems to me that

hauling manure on the plowed lands would be very hard on the teams in this country; they would sink in a good deal, and it would also make ditches where the water would accumulate and wash away the soil. I don't think it matters so much whether we get the benefit of the manure the first year or not; we will get it sometime; get it on the land and we will get the benefit of it sometime.

C. G. HENDY—A few years ago I had two objects in view with reference to a piece of ground—I wanted to kill some quack grass that was in it, and I wanted to get a crop of corn, and the question was, how I should accomplish both. I plowed the ground in the fall and then again in the spring. I prepared the land and put in my corn and went right to work with two teams and three wagons and manured six acres. Some of it was well rotted manure, and I supposed when I started I had enough well rotted manure to put over the whole piece, but I found I hadn't and so I applied green manure. I would never apply green manure in that way again. With the well rotted manure I had good results; where that was I had good corn. Where the green manure was, I hadn't so good corn. I had a fair crop of corn and succeeded in killing the quack grass.

T. J. VAN MATRE—I have a barn 50x70, which sits upon a basement nine feet high. A gangway passes through the middle of this barn. Above and on one side of this gangway we have room for twelve horses and five or six cows that we milk during the winter. The stock cattle are kept below in the basement. All the manure made above drops into the basement and is allowed to remain there until the fall of the year when it is hauled out. There is no leaching nor

no drying out by the sun, and where we put the manure we find that one load or one ton of it is worth two or three tons preserved as Mr. True stated, where it is piled up in piles and allowed to lie during the summer exposed to the rain and sun. Usually, if we can, we put our manure on the meadow; we have experienced the best results in that way, because the tendency of manure is downward, and the nearer you can get it to the surface the better.

JAMES SPENSLEY—My farm is a heavy stiff clay soil. I have obtained the best results by hauling the manure out all the time just as fast as it has accumulated, spreading it over the ground that I intended to plow in the spring. I plow as shallow as possible, cultivating the ground and getting a nice seed bed, plant the corn and we have splendid results. Of course, I agree with all the gentlemen, that all the manure must be saved, both liquids and solids; it is necessary to have it in that condition. But the difference is in the soil. What is the best method in one section is not the best method in another. As I said before, mine is a stiff clay soil, and the application of the manure in the way I have suggested makes a fine, rich, mellow seed-bed for the seed to grow in.

T. J. FLEMING—I think the gentleman's head is level. I, like all the gentlemen who have preceded me, am of the opinion that the manurial products of our animals is a very important subject. I think it is the ground work of our success in farming. Some of the gentlemen I cannot agree with, but a couple of them I do agree with. My practice for four years in handling manure has been this: There is an alleyway between my cattle, eleven feet in width; as my stock are driven out daily about eleven o'clock to get their drink, the

manure found behind each row of cattle is thrown to the center of the alleyway and permitted to pile and accumulate there for about three days. I should have stated, however, that I always use a sprinkling of land plaster and horse stable manure, which makes a combination adequate to absorb the liquids, especially the ammonia, the greatest element of fertility to be found in the manure, having a chemical value of 17 cents per pound.

There is one point in this system of handling manure which has not been brought before this convention and I think it should be. All who feed to their animals a corn ration, and I believe all farmers should and must do so, if they would have profit, will find that there is a portion of undigested corn ration in this manurial deposit. If it is hauled directly to the field you are losing the feeding value of that undigested portion. In order to govern against that I permit my stock hogs to go into the barn basement while the animals are out getting their drink, and I find they are most diligent workers, going through the manure piled there and taking out every portion of the undigested corn ration, and I then feel satisfied that that corn feed has either been converted into milk by the cow or pork by the hog. I have all of the liquids combined with the solids, and as chemists tell us that the liquids of the manure represent about 70 per cent of its fertilizing value, I believe that it behooves all of us to handle this manure so as to get this liquid portion as well as the solid on to that portion of the farm which, in our judgment, requires it most. As Mr. Convey told you it is the cheapest time to put the manure upon the land. The help which I must



have upon my farm is able to do the regular routine work and put this manure upon the farm without materially affecting the other work. It is a very pleasant fact for any farmer when spring comes upon him to know that the manure has been spread evenly over the field he wants to put it upon. It is all right possibly for those men who claim they put it over until fall, but I am speaking of a great mass of people who don't do that way, but who simply let it accumulate in the barn-yard every winter, and are then forced to draw it out upon the farm at a time when time is especially valuable. The land is soft and the manure can't be put upon it without cutting the land up, labor is valuable and it makes a combination against the farmer that should be carefully guarded against. By keeping that manure in the barn until fall you have lost the fertilizing value of it during the season. I continue this hauling out of manure until the first of April, when I intend the land for corn, as is usually my practice. I find it not profitable to continue hauling directly to this field later than the first of April, but up to that time I find the manure has sufficient time to leach and form a good mulch upon the soil.

H. C. THOM—I would like to ask three or four questions on this subject. If a man has got forty head of young stock and they are running in a barn and the manure is left there until spring, as Mr. Van Matre has said, I can't see that he has lost any liquid; I can't see that he has lost any solids; I can't see but that he is in the best possible condition to distribute the manure upon the land. I can't see that it costs as much to haul it then as it does in the winter time. I can't see but that manure in the fall, when carried out as Mr. Van Matre

says, will take one-third less time; the land is in better condition to scatter it over than in the winter; the manure is not two-thirds, or perhaps more than one-half as much in quantity and it is in the best possible condition. Then again there are two-thirds of the farmers of this state that don't do their plowing in the fall, and if they don't do their plowing in the fall, there isn't a place to put the manure if they haul it every day in the winter, unless they put it on the pasture, and no man can stand on a wagon and intelligently distribute that manure upon the pasture as it comes from the stable in the winter time. A man can go to work with his teams in the fall and distribute this manure a good deal easier.

MR. TRUE—Before the closing of this discussion I want to say that I think there is a disposition on the part of some speakers, as there is in every new thing that seems to be suddenly popularized, to give too much importance, by giving credit for loss of too much fertility by leaching. What I want to get at is the remark made by Mr. Van Matre that one load of manure housed as he suggests is worth a half dozen stored in heaps as I suggested. That being the case, the results must be remarkable on his land. I grant that upon the average farm this would apply, but I do claim that if the manure is carefully piled, as I suggested in my leading remarks, the loss from leaching is very inconsiderable. Another point is the advantage that we derive from the rotting of the manure before it is applied to the soil. Recent experiments made in Michigan show that this is much more considerable than we are inclined to give credit for. I do believe that perhaps there is a compromise between the positions assumed here, by

building sheds in which the manure may be stored when taken from the stables; in this way the danger of leaching is avoided and we are able to retain the manure until it is well rotted.

THOS. CONVEY—I would like to ask Mr. Thom if he would recommend storing manure on a dairy farm?

H. C. THOM—Yes.

J. S. JONES—You said that you hauled the manure on land you wished to put corn on; do you haul it on sod land and plow in the fall?

T. J. FLEMING—On sod which had been pastured before, and invariably get a good crop. I believe the practical question for most farmers, who are not peculiarly circumstanced, as Mr. Thom and myself are, is, shall we haul direct to the field versus storing in the barnyard. If such men do not haul directly to the field what are they going to do? They are going to cart it out and let it lay in the barnyard. I say to such farmers they should, even if obliged to hitch up every second day, draw that manure to the field and spread it, rather than to let it lie in the barnyard.

H. ROBBINS—I let my stock run out in the barn-yard to the clover stack, and the straw streck, letting the hogs and cows run together, and let them make all the manure they can until after haying and harvesting; I don't touch the manure until I get through harvest; then I haul the manure and spread it and at the same time put one team to plowing; I plow very shallow. Then in the spring I put my disk harrow on to the land and pulverize it just as fine as I can and plant it to corn, and the next year I put it to oats and seed it down to clover and timothy, about half and half; I have a splendid crop of oats, and the next year I have a splendid crop of clover, and the

next year I have a splendid crop of timothy. I have about 40 acres and it takes me just about four years to get around.

L. H. ADAMS—Is it a fact that we can follow either of the extremes we have heard here? Here is Mr. Thom feeding for beef principally, and there is no question that Mr. Thom is all right in the position he has taken in regard to feeding for beef; but here is a dairyman with 30, or 40 or 50 cows, who has got to have his affairs arranged so as to get along with as little bedding as possible. Then there is this question of how to apply the manure. The great objection is the coarseness of the manure, how to handle it and get the fertility out of the manure without the coarse part. We don't care for the coarse part. Now if the question hinges upon getting all there is in the manure, it has occurred to me we have left one point in the discussion. Why cannot farmers, at a little expense, save the liquid part of the manure by itself? That represents from sixty to seventy per cent. of the entire fertility of the manure. Why not save it by itself, and then you have got it in a way that you can apply it to any crop, to corn or whatever crop you choose, and the roots will take it at once; apply it on the meadow and there is nothing there for the hay rake to take up later on. Wonderful results are reported from the use of liquid manure in the manner suggested. This liquid manure can be saved easily by having a cistern running underneath the floor of the stable, which cistern is cemented so as to retain the the fluid. Let the stable floor have an inch taken out of it back of the cows, and let it also have an incline of half an inch, sufficient to drain the liquid manure down into the cistern, where it

may remain until the next spring; then it may be pumped from the cistern into a tank on a wagon, and may be taken out on to the meadow or wherever it is wanted and the flow regulated by some such an arrangement as is used on a sprinkling cart, and the liquid allowed to flow out upon a board and to spread upon the ground. Liquid manure can be applied in that way cheaper because it is condensed, and you can take out more fertilizing value in one load of liquid manure than in a half a dozen loads of common manure. Why not save that manure in the most perfect manner possible?

SUPT. MORRISON—I think that every man is confronted with this problem upon his own farm, and I think that the first thing he ought to make up his mind to save and to utilize all of the manure that he possibly can. That is the first thing that I would recommend. But you see you are surrounded by so many different conditions. Here is Mr. Thom feeding almost entirely for beef; here is Mr. Fleming running a winter dairy; and here is another man who has only got five or six cows; so that all of their conditions are dissimilar, and it appears to me that the only thing I would attempt to do would be to save that manure so that I could utilize it to the best advantage. I am very confident that there is a great waste in this respect in the state of Wisconsin; it would appall us if we knew the extent of the waste; it would more than pay our taxes, far more. Occasionally we come across a farmer who regrets that our state expends \$12,000 for farm institutes, but that is nothing but a drop in the bucket to the amount wasted in the handling of manure. I haven't any doubt that upon the farms of Wisconsin we are losing twenty-five or thirty mil-

lions of dollars, but it runs away so quietly that we do not notice it.

The only crops that pay are large crops and are produced by having the land rich and thorough tillage. This is secured by plowing under growing crops or the direct application of barnyard manure.

Ordinarily, commercial fertilizers are out of the question; the most profitable way is to manufacture on the farm by keeping live stock. There is a great difference in the value of manure. Straw manure and manure made by using bran or oil meal are very different. If the food is rich the manure will be rich and *vice versa*.

The elements that are lacking or apt to be lacking are nitrogen, phosphoric acid and potash, and which we wish to supply.

Different food contains these elements in different proportions. A ton of bran after you have fed it and extracted the feed value is worth 80 per cent. of its cost for manure. You can afford to feed largely of bran.

Malt sprouts is also a profitable feed and is very rich in elements of fertility, and best fed in connection with wheat, bran, corn meal, etc.

After you have secured the manure the question of applying to secure the greatest returns, don't let the manure heat and become fire-fanged, as the most expensive element, nitrogen, has evaporated. Valuable elements can also be washed out. The liquid as well as the solid parts of the manure is the most valuable, but to receive the greatest value they should be combined. How shall we save the liquid? will depend largely upon your surroundings. Use straw as an absorbent, or any absorbent that is most convenient. In the application the best way is to draw directly

from the stable and apply upon the land; if not convenient let it accumulate in the stable, it appears slovenly, but, I believe, it will retain all the elements of fertility that it possesses. Make the manure and utilize it by getting it out on the land and not waste its valuable properties by heating, evaporation or leaching.

The present depression in agriculture, low prices, etc., will teach us some valuable lessons. It is the little economies we must look after. The little leaks and wastes that run away with the small profits. Different economies make all the difference.

The owner of poor stock must visit his neighbor and learn of him, and note the difference. Of two men on lands originally identical one is thriving, the other says "farming don't pay." Prosperous farmers adopt systematic methods. Our best thinkers are getting the most profit. Attend the farm institute and question the most successful. Take courage. The world must be fed, and mouths are rapidly multiplying, while the acres cannot increase. The depression of farm property cannot last. Be hopeful, economize, improve, stop all the wastes. Different economies make all the difference.

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## SILO EXPERIENCE.

By L. H. ADAMS.

SUPT. MORRISON—The next question that we are going to present to you is one of vital importance, that is the silo question. This subject will be introduced by Mr. L. H. Adams, the superintendent of the Experimental farm.

L. H. ADAMS—Mr. Chairman, Ladies and Gentlemen: This very new and yet old question of the silo once more. It seems to be getting old to me, and yet I have been wondering why it is that we have got to prove, and reprove, and talk and preach about the silo and the merits of it, when we have such men as Hiram Smith, C. R. Beach and Mr. Goodrich who have used the silo, stand up before you and tell you their experience and what it has done for them. And yet we have got to pound away as we have to do on so many farm topics.

A close and intelligent observer can-

not have failed to notice that the inquiries on silo topics are taking a new direction. It is not so much, Does it pay to build a silo, as it is, How can we perfect the silo and get still better results? I can see we are making a great deal of progress, but we have got very much to learn yet on this question. There is a great deal about the fermentation in the silo that we do not understand, and it will probably be sometime before we do, but we know enough about it already to enable us to preserve our corn crop in a way that we cannot do by any other means.

I shall quote a few experiments to you, showing what ensilage will do when compared with dry fodder. One of our experiments lasted forty-two days. We fed sweet corn ensilage against the same kind of dry fodder.



Four thousand nine hundred and sixty pounds of ensilage produced 1,688 pounds of milk, which made sixty-two pounds and three ounces of butter; 1,227 pounds of fodder produced 1,487 pounds of milk, which made fifty-eight pounds eleven ounces of butter; excess in favor of ensilage, 201 pounds of milk and three pounds eight ounces of butter.

Another experiment with B. & W. ensilage corn we fed for a period of twenty-eight days; 3,600 pounds produced 1,100 pounds of milk, which made forty-four pounds ten ounces of butter; 820 pounds of fodder produced 1,113 pounds of milk, which made forty-four pounds nine ounces of butter, excess in favor of fodder thirteen pounds of milk, and in favor of ensilage, one ounce of butter.

In another trial where whole ensilage was fed against whole fodder—I mean by this, corn that was taken from the field and laid into the silo without passing it through a feed cutter—of B. & W. variety, 2,298 pounds of ensilage produced 694 pounds of milk, which made thirty pounds four ounces of butter; and 887 pounds of fodder produced 715 pounds of milk, which made twenty-seven pounds and fifteen ounces of butter; excess in favor of fodder twenty-one pounds of milk; in favor of ensilage, two pounds five ounces of butter.

Ensilage comes the nearest to taking the place of green grass in the winter time of any feed we can give our cows, and as you are well aware that the butter comes quicker and nicer in the summer time, when the cows are on pasture, than in the winter when they are on dry feed, you can understand the effect that the ensilage has upon the cows.

Let us consider the ensilage question in connection with beef production.

Eight steers were divided into two lots of four each and were fed for 36 days. The first lot were given 7,898 pounds of ensilage in all; it was mixed B. & W. and a flint variety of corn; that is, they were fed 55 pounds each daily and they gained one and one-half pounds daily. The other lot of cattle ate 3,502 pounds of ensilage, which was nearly 25 pounds each daily, together with 14½ pounds of shelled corn, six and three-fourths pounds of bran, and gained three and seven-tenths pounds each daily. Four hogs ran with the steers getting the corn, and by feeding 92 pounds additional to them they made a gain of 100 pounds.

Therefore, to make 100 pounds of gain from ensilage we have 3,558 pounds of ensilage at \$2.50 per ton, \$4.44. To produce 100 pounds of gain of steers and 100 pounds of gain with hogs, required 669 pounds of grain at \$15 per ton, and 654 pounds of ensilage at \$2.50 per ton, or a total of \$5.82.

If we allow that an acre of land will produce 25,000 pounds of wilted ensilage, such as was used in these experiments, since 3,558 pounds made 100 pounds of gain with the first lot of steers, an acre of ensilage will give over 700 pounds of gain. So much for experiments regarding ensilage and dry fodder.

Now what other advantages does the silo offer over the old method of curing fodder and stacking it, or leaving it in the field, as is the ordinary practice. The first great advantage is this—the silo enables you to take the green crop and preserve it one year the same as another. Can you do that when you undertake to cure your corn? When fodder is stacked there is a loss equal to that which takes place in the silo. Last fall we took a shock of corn cured in an excellent manner, and after

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taking a small sample of it for chemical analysis, we wrapped the remainder up in a sheet, so that it could by no possibility be mistaken, and we put that shock in the center of a stack, where it was not exposed at all, and where it remained for five months. We took it out a short time ago and cut it all up and took another sample for chemical analysis and found that the loss of feeding matter in that shock was 22.6 per cent., while we only allow about 10 to 15 per cent. loss in the silo.

#### Another Saving.

Another advantage that the silo offers over the ordinary process of curing fodder is in the lessened cost of taking care of the crop and getting it to our animals. How does it do this? First, by cutting off the expense of husking the corn. It will cost you an eighth of the expense of a corn crop to husk it alone. By putting the corn into the silo you do away with the expense of grinding, which will cost another eighth. There is a quarter of the corn crop for those two features, that you can cut off and it is this lopping off of the square corners that we have been turning so long that the silo offers its greatest advantages.

One more advantage of the silo is that it offers you a succulent food for your cattle in the winter time, and gives you better results as a consequence.

Perhaps you doubt my statement when I say that ensilage will take the place of a grinder. I have made a few observations in this respect which I wish to relate to you. On the Experiment farm, some cows were fed ensilage and others dry fodder, I noticed that there was not nearly as much corn in the excrement behind the cows being fed ensilage as in that behind the cows being fed dry fodder. I saved droppings for twenty-four hours behind the cows,

or rather the droppings of two cows for twelve hours. Then I washed the grain out of the excrement thoroughly, and remember that if there was any error it was on the other side, it was rather in favor of my not getting as much corn out of the manure, than of getting all of it, for in washing it there was a good deal that washed off and we couldn't recover it. But I found that one cow in twenty-four hours was voiding that quantity (exhibiting can) of corn, that is the one that was being fed dry fodder, and the one being fed ensilage was voiding that amount. (Showing another can.) Ten per cent of the grain fed to the cow kept upon dry fodder was being voided, and not one per cent. of the grain was undigested when fed upon silage.

#### Advantages.

Now, farmers, it is time that we were coming down to sober, practical sense in regard to this silo. There is nothing gained by claiming all creation for the silo. It has enough of merit to commend it to the thoughtful consideration of the beef feeder and the dairyman, without making extravagant claims for it, and the advantages that it possess are substantially what I have told you, nothing more and nothing less. You do not take out all of the feeding value that you put in your silo. Why? Because it is burned up, destroyed by the heat that is generated in the silo. We are learning to reduce this heat. We at one time thought it was necessary, but we are learning to reduce it as fast as possible, and my last impressions and ideas in regard to the preservation of ensilage are that we have got to go back partially over the ground that we passed in our rapid change from over-weighting to non-weighting. I think we have got to take an intermediate position. We

know that when we first started out we weighted heavily and excluded the air, and then one man reported good results without weighting and over we went to non-weighting; but it is the exclusion of the air in the silo that preserves the fodder, and the more air we keep out the more perfect the preservation.

#### Some Weighting.

I give it out as my last impression that a little weighting is necessary, and that that is the proper thing to do in our silos. It may be done in this way: take a plank and lay it alongside of the wall, not tight up to the wall but off a half an inch or

an inch, and across the ends of the silo also; then take nail kegs or barrels and fill them with earth and set them on these planks so as to compress it as rapidly as possible. The latest experiments in this silo question are to this effect, that the only advantage of heating in the silo is in aiding to exclude the air. When the mass begins to heat up you at once begin to see it settle down and pack, and when it is undergoing the settling process the air is going out of it, and the more that we can hasten that settling and the tighter we can get it, the more air it will expel and the better ensilage it will be.

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## SILO EXPERIENCE.

By WELDON VAN KIRK.

#### A General Success.

In a winter's intercourse with the farmers of Wisconsin, we have failed to find the man, who having built and filled a silo, has said he regretted the move. Occasionally the man has put in an appearance who has chosen to champion dry feed as a better ration than ensilage, upon the ground that it is a more natural food for winter. That it can be preserved cheaper. That there is less loss, etc. But it is a noticeable fact that all such persons are without experience upon which to base their conclusions. True, not all have reported entire success. Some have made partial failures from one cause, and some from another, but all have seemed confident of their ability to trace the cause of their trouble to some mistake that may easily be avoided in the future.

#### Who Need Silos?

The discussions of the subject at the institutes we have attended, while not marked by that enthusiasm so often aroused by the early advocates, has yet shown a degree of satisfaction on the part of men of experience and of inquisitiveness on the part of others, that denotes a possibility of extensive silo building for the future. After three years of personal experience and after having had an opportunity of hearing the ideas of scores of men of more or less extended experience, we have arrived at the conclusion that no farmer has any use for the silo who ordinarily has more fodder than he can dispose of to advantage with the stock that he keeps; who always has hay to sell and straw to be trampled under foot and who thinks corn stalks are not

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worth cutting, and allows them to stand in the field and turns the cattle in for a few days after husking; whose cows habitually dry up in the fall and remain so until spring, spending their days rustling around the yards and their nights tied in cold stables.

#### The Silo, Success and Fertility.

On the other hand we believe that the man who realizes the necessity of extensive stock raising in order to maintain the fertility of his farm will find in the silo one of the most potent agencies for the accomplishment of his end. He who provides for his stock warm stables and wishes to produce milk in winter when it is worth most, or who wants a succulent ration for fattening steers, for young cattle, or even for sheep or horses during the long months when stock are otherwise obliged to live entirely upon dry and more or less indigestible food, will we believe appreciate ensilage. Nor is its use necessarily confined to winter; each of the past two springs we have had a little remaining that has been very satisfactorily fed the following August. This year we expect to have left about one-fourth of our entire lot of silage which will go a long way toward piecing out short pastures next summer, and will obviate the necessity of cutting any of next year's crop for soiling purposes before it reaches a desirable stage of maturity.

#### What to Build of.

To the man of limited means who must build cheaply or not at all we would still recommend the silo built of lumber. Wherever it may be built in the bay of a barn the material of its construction ought not to cost over fifty cents per ton of its storage capacity. The expense of our own was a trifle less than that amount. To the man who has capital

at his disposal and wishes to build in the most durable manner possible and at the same time secure the very best possible results in the preservation of his silage we would say, build of masonry.

This may seem like heresy to persons who have kept posted regarding the teachings upon this subject of the past few years, but to such as think it impossible to preserve the best quality of silage in a stone or brick silo we would recommend a visit to the farm of Mr. J. W. Hays, of Alderly, or Mr. Schradler, of Hartford.

At either place will be shown silos of this sort by the owners who enthusiastically recommend the plan. At Mr. Schradler's we found an article of ensilage that for quality has not been surpassed by any of the numerous good samples it has been our good fortune to inspect. As a matter of course these gentlemen have taken the precaution to prevent frost from penetrating the walls by boarding up the outside in such a way as to form a dead air space. The walls of stone or brick are carefully built and plastered with water lime, as are also the bottoms of the pits. The only objection we are able to find with this method of building is the expense. As nearly as we could ascertain the cost of construction was about three dollars per ton—and cost with the most of us cuts a big figure. Undoubtedly where sufficient depth is attainable one pit is better than two or more.

We consider depth desirable, first because the silage settles more solidly and enables us to store a greater quantity in a given space, and second, there is a smaller percentage of the whole damaged by exposure at the top.

In silos less than 25 or 30 feet deep we prefer the partition, not from any benefit to the silage to be derived from fill-



ing first a few feet into one pit and then a few into the other, but because we dislike to have so large a surface exposed while feeding out. We prefer feeding from the top, *taking care to keep the surface level* rather than to cut it down in sections, or feed from a slanting surface, for by the latter method, unless the building be long and shallow, a larger surface will be exposed than by the former method.

The variety of corn that may best be depended upon is still and may perhaps remain a somewhat unsettled question.

So much depends upon soil and climate that a kind suited to one locality might not prove good in another. Whatever proves most satisfactory as a crop to be harvested in the ordinary way will, we think, make the best silage crop.

About one-half of our last summer's make was of mammoth sweet corn, and while it is not as sweet silage as we wish it was, yet it certainly is richer than that made from the B. & W. corn. We have not found it necessary to feed so much of it, nor so much grain with it as with the B. & W.

Figuring the weight at 40 pounds per cubic foot in the silo, we find that the B. & W. with us yielded 16 tons per acre and the sweet corn 12 tons.

We estimate that we have fed 10 per cent. more of the large than of the small kind and about 10 per cent. more of grain with it. And as the grain is the more expensive part of our ration we consider this something of an item.

We believe that it may be possible to harvest the remarkable yields, that have sometimes been reported, of 30 or 40 tons per acre by a system of thick planting and cutting while immature, but we do not consider it profitable. The question with us is not how many tons of green sour silage we can produce

per acre upon which to expend our strength in harvesting, but how many tons of mature corn with plenty of well developed ears can be produced with just moisture enough remaining in it to produce the desired results.

#### DISCUSSION.

QUESTION—I would like to ask Mr. Van Kirk what he covers his silo with?

MR. VAN KIRK—With green grass this year. The results were better than with anything else we have tried, although the grass was not as green as we like to have it.

J. S. JONES—Were the corners square or round?

MR. VAN KIRK—Ours are square, but I should prefer to have them round.

J. S. JONES—How would you round them in a house already built?

MR. VAN KIRK—About the only thing that can be done is to bevel the edge of a plank and nail it in the corner and fill in the space behind with sawdust or clay or something of that kind.

O. S. JONES—Would you build them above or in the ground?

MR. VAN KIRK—Above ground.

QUESTION—How do you fill them, rapidly or slowly?

WELDON VAN KIRK—Just as rapidly as possible.

J. S. JONES—After putting in ensilage slowly have you ever found out that it was moldy?

WELDON VAN KIRK—The first two years that we filled the silo we supposed it was imperatively necessary to fill it slowly, and in some instances we allowed it to remain three and even four days, until it reached a temperature of 125 degrees before putting in any more, and we did find mold on the surface to some extent; we have lately put it in just as fast as possible with better results. It

was more moldy in the corners than any other place.

G. C. HENDY—I would like to ask if a round silo wouldn't be better?

WELDON VAN KIRK—I think so; that is mere theory, however.

JAMES SPENSLEY—Wouldn't a stone silo do just as well under ground as entirely above ground?

WELDON VAN KIRK—Certainly, as far as the preservation of the ensilage is concerned, but you can elevate it into the silo cheaper than you can elevate it out.

JAMES SPENSLEY—Suppose it was on the hillside?

MR. VAN KIRK—Then that would be a good plan. The stone wall as far as it was banked on the outside by dirt wouldn't need to be protected in any other way, but wherever the stone wall had been exposed above ground there has been damage to the ensilage next to the wall.

G. C. HENDY—I would like to ask how you take out ensilage in using it without damage to it?

MR. VAN KIRK—We feed from the surface and we throw off a layer each day and we don't find it is damaged to any extent by being exposed for one or two days. We do not cover after removing a layer. We find when we commence feeding again that it is destroyed just as far down as the air penetrates it.

W. H. COLE—I would like to inquire if it is best to put partitions through the silo, provided it is of large capacity?

MR. VAN KIRK—That would depend entirely upon the depth. I recommend partitions in shallow silos that contain a large amount of ensilage, because you readily see a large surface would be exposed, and it is desirable to have just as small a surface as possible.

MR. RUNDEL—In an underground

stable, could a silo be built say, in the upper part by the barn, and feed through a drive-way in the stable; if you had a silo built in the bank could you feed right out of the side of the silo, say, by having a door into the silo leading immediately into the gangway of the stable?

MR. VAN KIRK—I think that is a very good plan. Our silo is 24 feet deep with door from top to bottom, through which we pitch the ensilage.

O. S. JONES—What kind of material would you recommend a person to build a silo of, stone, brick or lumber?

MR. VAN KIRK—I stated in my paper that if one has the means, and wishes to build a most durable one, I would recommend a stone or brick silo, with a protection on the outside in some way, making a dead-air space, thus giving protection against frost. For the man who must build cheaply I would recommend the silo of lumber, two courses of boards, with tar paper between, which will give very good results as I can testify from experience.

T. J. VAN MATRE—I would like to ask if there is any advantage in siloing clover over the plan of cutting it and storing it for hay?

MR. VAN KIRK—There is, but we have got much to learn about clover, and it is well that this question was brought up. We put in clover last year in the silo and it made excellent ensilage; we put it in this year and it didn't keep so well. I think this was the cause of it: It is more difficult to exclude the air when a silo is filled with clover than it is when filled with cut corn. It doesn't pack so closely and to overcome that we will have to put the clover in a little greener in my estimation; say when it is in full bloom, then weight it a little heavier than we would corn and let it settle. One of the great advantages is

in being able to preserve our clover crop in a way we are not able to otherwise. Good clover hay is one of the best feeds, and poor clover hay is one of the worst.

H. C. THOM—Would you recommend running clover through a feed cutter?

MR. VAN KIRK—I don't. I should keep it spread evenly as it goes into the silo, so that the settling is the same all over. Don't pile it up at one end and have that weighted down and the other end way up. I try to keep it spread evenly and pack it on the sides and weight it pretty heavily after you get through.

W. H. COLE—Would you allow clover to wilt any after cutting?

MR. VAN KIRK—I shouldn't object to having it wilt from two to five hours; you would get that much wilting the best you could do.

MR. FLEMING—I will simply give you my experience. I have operated a silo for four years with good success. The first year I filled half of my silo with Southern corn, and the other half with another variety of corn. I was dissatisfied with the Southern corn, and what I saw then and have observed since, has led me to believe that the Southern varieties of corn have no business in my locality for the silo. My silo is constructed of wood at a cost of 70 cents per ton of storing capacity. I cut my corn as it is about to dent, passing from the milk stage to maturity, or when the lower leaves on the stalk show a brownish color. At that time I believe that all the food there is going to be in the plant is in it, and as I propose to use the whole plant I don't care whether it is centralized in the ear or distributed through the whole. I run it through a feed cutter and cut it into one-half inch strips. The past year I cut it a half

and the year before I cut it a quarter. I think you can get a little more into the silo by cutting it fine. I have filled rapidly and have filled slowly, with no material difference in results. I have come to the conclusion, however, from my past experience, that the coming system for filling the silo is to fill it as quickly as possible, being careful, however, as to maturity of the corn. In order to maintain this maturity through the whole period of filling, I plant two varieties of corn; first, Yellow Flint, and second, the Yellow Dent. I fill from the Yellow Flint first and from the Yellow Dent afterwards, as there is little difference in maturity. In this way you are able to fill the silo with corn in very nearly the same stage of maturity. Cover the silo as quick as filled.

As your silo is filled the top portion of the ensilage will heat most quickly, not only from the heat which it itself generates but from the heat arising from below. I have covered my silo the last two years with wild grass, that has had considerable moisture in it. It was not cut until it was wanted to cover the silo. I put on about 12 inches of it, as much as there was room for in my silo, couldn't reach up into the gable, and I found it made a perfectly hermetical covering. There was positively no loss when I removed it; no weight was used more than that. I do not think hay would give the same results. It must be sufficiently wet in covering to follow the ensilage as it settles and to follow close to the wall. I found that the animals partook greedily of the hay with which the ensilage was covered. The doors are in sections from the ground to the top; we took out the top section and raked off the top evenly; we take off in the morning what we purpose to feed in the evening,

and what we purpose to feed in the morning we take off in the evening.

MR. GOODRICH—I will confine my remarks to just one point. I commenced to study the silo in the year 1876. I saw the first silo that was built west of the Allegheny mountains, and I saw the first ensilage taken out of it, the idea struck me then, How will that effect the butter? I asked that question for thirteen years before I could answer it. Every man that had a silo said it didn't hurt the milk, and every man that didn't have one said it spoiled it. But I found out as soon as my butter made from the ensilage began to get into the Chicago market, the commission men voluntarily wrote to me, and said: The flavor of your butter is splendid, and I was able to raise the price two cents a pound in a very short time. That satisfied me; that is what I am after; it makes no difference whether anybody that sits at my table can eat it or not. Now, there has been butter injured by feeding ensilage, there is no question about that. You feed damaged, rotten, bad-smelling ensilage, and you will get damaged, rotten milk. Some men have told me it didn't make any difference, but I have turned away from them, for they don't know anything about it. You feed good ensilage and it makes better flavored butter than can be made from dry feed. I not only know it, but the customers in Chicago know it, and that is the point I am after.

There is one other point as to the cost of a silo. Men are sometimes misled by being told that a silo can be built very cheap, for 15 or 20 or 60 cents a ton. He has not counted in his own work when he comes to tell you about that. One man told me it hadn't cost him anything but for the nails. He had the lumber in a tobacco shed that he took

down and he did the work himself, and it didn't cost him anything. That cost just whatever was put into it. I built what they call a 200-ton silo, that is, there are about 8,000 cubic feet in it, but you can't get 200 tons into it by any ordinary human power, even if 40 cubic feet will make a ton; it has got to settle. It probably holds 160 tons. It cost me \$240 to build it. I can give the items for all of it. The lumber bill was something like \$175 at Ft. Atkinson. The \$240, at 160 tons capacity, would make the cost \$1.50 per ton. I might perhaps have built it a little cheaper, and I built it perhaps stronger than necessary.

SUPT. MORRISON—What size is it?

C. P. GOODRICH—It is 36 feet long by 17 feet wide, outside measure, and 16 feet deep; I have no partition in it.

L. H. ADAMS—Your silo is an outside silo, isn't it?

C. P. GOODRICH—Yes, it is built practically detached from the barn; that is the cost of the separate silo.

L. H. ADAMS—The cost that Mr. Van Kirk gave was for a silo in the barn.

T. L. HACKER—My experience with the silo has been for only three years. I had a barn in which there was an old bay; I took out the flooring and put up the joists, 2x10. The full height of the bay was about fifteen feet. The first year I put in B. & W. corn. I put it in a little too green. I cut it about half an inch in length and elevated it into the silo, but I did not, as was the custom at that time, weight it any. I simply leveled it off and threw on a little straw that I happened to have, to gather the moisture as it was evaporated. That ensilage was not satisfactory to me. It didn't give as good results as I had had the two years previous in cured corn fodder, which I had planted, the B. &



W. corn, and cut it as I fed it, into strips about half an inch in length. There was less loss in the manger with the fodder corn than with the ensilage, although there was not much loss with the ensilage. The ensilage was too sour. I attributed it to a lack of maturity. The next year I planted the Dent corn and the B. & W. corn. This time I cut it in two-inch lengths. The silo was filled half full of Dent corn, cut from the milk stage to the glazing stage, and then I filled up with the B. & W. corn, and for some reason or other there was considerable spoiled ensilage with the last; it was too sour to suit me, although my cattle seemed to like it and did very well on it.

The last year it was Dent corn and I put it in whole; I let it get beyond the milk stage, and it was fairly glazed, and the kernels were like dough. I cut it with one of these sweep rake reapers and put it in whole and it has been a failure so far as being good ensilage is concerned.

SUPT. MORRISON—Wasn't it too dry, too mature?

T. L. HACKER—It heat up and actually dried out, there wasn't a particle of moisture in that silo from top to bottom.

QUESTION—What did you cover it with?

T. L. HACKER—I covered with green marsh grass; I put on about two feet of settled grass; there was room above the silo so I could pile it up, so I put in two feet of settled green grass.

QUESTION—How did you build that silo?

T. L. HACKER—I put on the inside good stock boards; then I covered it with black felt; and then I put good common stock boards over that; my bill I think was \$53, not counting the labor of myself and hired men.

I was going to remark about the cured fodder that I have this year. Every bit of that corn has been eaten up, there hasn't been a particle waste, even the stalks. I haven't fed it to dairy cows but I have fed it to young stock and the other cattle that I was not milking, and they have certainly made very good use of it and have done very well on it; I have not fed the cattle a particle of grain this winter and they are looking well.

H. C. THOM—Two or three kinds of corn are not necessary to put in a silo. One is enough. The place for a silo is in the barn. The cost to me of building a silo that holds 250 tons, is \$112.60. If you haven't anything else to cover with, cover with straw, run it through a machine and weight it. More damage is done to cattle by over-feeding silage than we suppose; 45 pounds is enough for a cow, and 50 pounds is enough for a two or three year old steer. Exclusive feeding of silage will taint the milk. The kind of corn to put in a silo, in my opinion, is the kind of corn which will produce the largest stalk that will get ripe. If we could raise a kind of corn that had no ears on it, it would answer the purpose of dairymen, I am sure, and I know it would those of beef producers. The function of a silo is to take the place of pasturage, which we get in summer, in the winter time. There is more danger of losing silage from putting it in too late than from any other one cause. It will dry from top to bottom if put in too late. If silage is put in too green it will inevitably turn sour, and we don't want it.

C. R. BEACH—I have used ensilage three years. I have used the Yellow Flint and Yankee corn planted with a horse planter, in hills twice as thick as I ordinarily plant Dent corn, about eigh-

teen inches apart. We cultivate it, hand-hoe the rows, and in this way raised 130 bushels to the acre this year. We cut it with a reaper and lay it off in bundles. We use two drays to pick it up, run it through a cutter which we run with a one horse power, and in that way four men put in an acre and a half a day. I feed it exclusively to cows. We cut it an inch and a half long. Mr. Adams was down there and said our corn would yield about fifteen or sixteen tons to the acre. We find no bad results from feeding it. We feed it in connection with bran and hay, about forty pounds a day of it, with ten or twelve pounds of bran, and upon it the cows fresh in milk will give a pound of butter a day for 200 days. We like it and don't know how we could do without it. On a farm of seventy acres we have wintered for three winters forty cows. This year we shall have thirty tons of hay left over. Under this system we can harvest an acre of corn cheaper than by any other possible process. The corn is thoroughly digested, the cows like it and give large quantities of milk, the butter is good and everything satisfactory.

J. S. JONES—I have a silo 16 by 30 feet. I filled it this last season, and in taking out the ensilage I find a great deal of it got moldy in patches. In filling it I went according to the directions of some man who had built a silo. He said to keep the outside sloping; tramp the outside and never mind the middle. I did so, and in filling it I didn't pay any attention to the holes, until I straightened it out on the top, and then I tried to make it level, and I think that in most of the places the mold was the consequence of the ensilage not being kept solid in the center.

SUPT. MORRISON—Farmers never seem

to think their own time is worth anything. I have an estimate here of the cost of putting ensilage in a silo, which estimate was given to me by Mr. Foster, deputy railroad commissioner; he had to hire it all done and consequently he had an account of it, and I think that you will be very much interested in it. It is as follows:

COST OF ENSILAGE.

*An Estimate of Raising, and Putting Into the Silo an Acre of Ensilage Corn.*

Hauling out, and spreading, 20 loads of manure.....	\$3 00
Plowing, dragging, and seeding one acre..	3 00
Cultivating one acre six times.....	3 00
Cutting up one acre of corn, and laying in piles, ready for hauling.....	2 00
Labor of two men, at the cutting machine.	3 00
For use of machine, and carrier, and power to run the carrier.....	3 00
Hauling one acre of corn to the silo.....	3 00

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Total cost of raising, and putting into silo an acre of corn..... \$30 00

An acre farmed as here suggested, would produce 16 tons—making an average cost per ton—of ensilage \$1.25.

Six tons of this ensilage would furnish a cow 240 days, or 8 months, with a feed of 50 pounds per day. The cost would be .....

\$ 7 50	
Ten pounds of hay per day—2,400 pounds, at \$5.00 per ton.....	6 00
One ton of bran—for the 240 days.....	10 00
Pasturage for four months.....	8 00
Bran for the four months (one-half ton).	5 00

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Total cost of keeping cow for one year.... \$36 50

That kind of feed should make 350 pounds of butter.

So you see at the end he is going to figure out a good margin. There you have the total cost of putting in an acre of ensilage corn and also the cost of keeping a cow a year by a business man.

H. C. THOM—There are two reasons why it will mold in the middle of the silo in patches. I think the main reason is because you put some corn in when it was wet on the outside.

J. S. JONES—No, sir, it was not; I think it was because it was dry on the outside.

H. C. THOM—Those are the two reasons I was trying to get to; the one that it was too wet and the other that it was too dry.

SUPT. MORRISON — I would advise any contemplating building a silo to visit some man who has one and who has been successful with it. You will find lots of them all through the state, and if you go and visit them, then you can make up your mind whether to build a silo or not.

# SWINE SESSION.

## HOW TO BREED AND FATTEN SWINE.

By GEORGE WYLIE.

### No System.

Many farmers go into swine raising without distinct or well defined plans as to the object to be finally attained. With them numbers is of the first importance, when in reality the point to be reached should be the greatest profit in the shortest time, which means the hog that can make the most pork on the least food.

It follows then, that the assimilative capacity of the swine fed, is of the first importance, and it goes without saying, that by proper selection and cultivation the assimilative capacity may be maintained or largely increased; but can also be lost in less than a single generation by careless feeding and improper management, no matter how high a point it may have reached.

Strong powers of assimilation are never found in swine that are lacking in constitutional vigor and substance. In breeding swine there is a point on the side of fineness and finish beyond which it is not profitable to go. A hog that at maturity cannot from the fineness of its breeding be made to weigh much over 300 pounds will not be a profitable feeder even up to six months of age. A hog that at maturity weighs 500 pounds with other things being equal will be a more profitable feeder when young.

There is such a thing as people being "governed too much," and it is possible

for swine to be bred too far in certain directions to get the greatest amount of profit out of them. When hogs are bred for mere fancy points and finish, and constitution is lost sight of they soon cease to be profitable assimilators of food, notwithstanding the fact that they may have gilt-edged ancestry and themselves be on record in the respective herd book to which they belong. On the other hand there is a point on the side of coarseness beyond which the hog becomes a hard feeder.

### The Profitable Hog.

Slab sided, coarse boned hogs that will not fatten under two years of age are not desirable, "but the general tendency of the times is more toward breeding too fine than too coarse" Coarse hogs can be improved in the direction of fineness easier than fine hogs can be brought up to coarseness. At a point between these two extremes can be found our profitable hog. I will not say that this point is midway between these two, as in my judgment the farmer or breeder is safer in finding that point a little nearer the side of coarseness than over the line toward fineness. "Once having a herd of swine with constitution, size, and bone, breed as near as possible to a profitable conformation;" the farmer will find no small amount of thought and study necessary to maintain them at that point; "when the herd



begins to show weakness at any particular point" the next infusion of fresh blood should be strong in that direction. But guard against sacrificing one point of merit to obtain another. Hold on to what excellence you may have with one hand while reaching out with the other to add more excellence to it. In the mere study of keeping the different profitable points of the animal well balanced the constitution and size is frequently lost sight of, and the herd sinks below the point of the greatest profit before the owner is aware of it.

#### Infusion of New Blood.

Again, while the owner may be adding from time to time what he considers sufficient bone and substance to maintain the herd at a profitable standard, if he feeds largely on corn he will find the general substance of the herd growing less and less, and instead of studying out the cause he is liable to conclude that this particular breed has become too fine for profit and he will try a cross or a mixture of something else. And with this resolution, qualities that have cost breeders years of patient work are cast aside and lost, for with the infusion of blood from another breed, the whole concern drops back to first conditions. When by a judicious infusion of new blood from the same breed and a change to food of a protein nature the herd in a short time might have been bred back from the danger line and placed on a profitable basis. I take it for granted that it is unnecessary to go into any argument as to the necessity of using pure bred sires of the breed that you propose to stand by. The beginner who expects to breed for pork only may start with such sows as he may have at hand, but he should fix a well defined type in his mind toward which to breed, and always make

selections with that type in view. The nearer the stock approaches the typical representatives of the breed you are working with, the more difficult will the selection of the right kind of a sire become.

#### Careful Feeding.

In order to obtain the best results all around, pigs should be taught to eat as early in life as possible. In some cases this will be when they are about two weeks of age. The time of teaching them to eat will vary. The size of the litter in some cases, and in others the amount of milk given by the dam, will govern it. Teaching them to eat is best accomplished by placing a small trough out of reach of the dam and supplying it with warm sweet skim milk and soaked corn. When the pigs have fairly got to eating be careful to increase the feed as gradually as the pig's power of assimilation increases. And right here care should be exercised in feeding the dam; avoid getting her "off" her feed. There is nothing so well adapted to make young pigs grow as their dam's milk, and while feeding the pigs liberally the sow should be fed all she will eat of the food best calculated to make her give large quantities of milk. Good shorts mixed with bran, or the shorts alone made into a slop and soaked between feeds, accompanied by a few ears of corn make a good milk-giving ration. The sow is first fed all the slop she will eat up clean, and then fed the corn. If you can follow the corn with a supply of skim milk, you will be getting nearer perfection. There are other combinations of feed equally as good as this, and if you can make an occasional change all the better. But when pigs are very young, sudden changes of food for the dam should be avoided, or if made must be made with care, as such

changes are liable to have an injurious effect on the pigs.

#### Damaged Grain.

Musty or mouldy corn, or in fact damaged grain of any kind should never be fed to a brood sow or her pigs. The right kind of feed, a sensible feeder, a good brood sow with a well-bred litter of pigs 6 to 10 weeks old, make a combination for the production of pork that is very near the highest possible limit of profit, a combination that will come as near keeping even with the big four, as near legislative enactment.

#### A Well Balanced Ration.

While pigs of this age are being rapidly grown, care must be exercised that they are receiving food of the proper kind to make bone and muscle sufficient to carry them. If fed too heavily on corn at this age they will get weak across the loins, the hind feet will draw up closely together and frequently the pig will be unable to rise without help. When you find one or two of your pigs in this way it is a danger signal and tells you plainly you are feeding too much corn, and a change to a ration containing more protein should be made at once. The object for the first four or five months should be to grow bone and muscle of sufficient strength to carry the fat put on by corn later on. It is understood, of course, that the brood sow and pigs are having the run of a good pasture of some kind. Clover will supply the most feed to the acre, but blue grass is good, and even young timothy is not to be despised. After the pig has reached five months of age the ration of corn can be increased, but not too heavily at first. If the profit is in the first 250 pounds, the quicker you can get your pig to that weight the better after getting on the corn ration.

#### Hogology.

Good feeding is regular feeding and giving the hogs all they will eat without losing their appetites. To do this successfully the feeder must study closely the capacity of the swine being fed. A feeder who leans over the fence, apparently in a brown study, while the hogs are eating, and then quietly throws over another shovelful of corn or pours in another pailful of slop, is getting better pay for his time than the feeder who, day after day, throws the same amount of feed at the hogs, but has no time to waste studying "hogology."

#### Food of Support.

The value of different foods, as demonstrated by chemical analysis, are not always borne out in practice. The digestive and assimilative capacity of the animal to which the food is fed cannot be determined by the chemist, and on these depend in a great measure the results obtained by feeding. Considerable more feed will be found necessary for the maintenance ration of 100 pounds of "shark" than 100 pounds of straight Poland China or Berkshire. The small pig that consumed a pailful of rich slop to the surprise and disgust of his owner, who when the pail was empty jammed the pig into it and swore that the pig didn't begin to fill the pail, was taking pretty near 100 per cent. of the food consumed for a maintenance ration. If you desire to know how much the food of support amounts to in a pig that you propose to sell at 200 pounds weight, we will suppose that he reaches that weight in 200 days. As he increases from nothing to 200 pounds the 100 pounds is his average weight for the entire time. And the amount of food per day that will hold him at 100 pounds without losing or gaining will be the



THE FAMILY DINNER PARTY. From Breeders' Gazette, Chicago, Ill.





average food of support per day for the entire 200 days.

It is about time farmers were beginning to realize that greater profits are made from feeding young animals than from feeding old ones. That no one food is as good as a combination of foods. "That good blood will tell." That good common sense is just as essential to success in swine raising as in any other business.

## DISCUSSION.

MR. RUNDLE—What do you consider a satisfactory, cheap and practicable ration?

MR. WYLIE—Well, if you are running a dairy, and have lots of milk going to waste, milk would be as good as anything in that case. If you are not a dairyman, shorts will do as well; oats are one of the best feeds in the world.

JOHN MARCH—At what age would you prefer to have your sires for best service?

MR. WYLIE—Yearlings, two-year-olds, and three-year-olds.

JOHN MARCH—At what age or weight can you make pork the most profitable?

MR. WYLIE—Well, in a well-bred pig that is grown right and fed right there is no time in the pig's life that he will make any more pork than between eight weeks and three months of age, or perhaps up to four; it will vary in different individuals.

THOS. CONVEY—You mean if fed corn?

MR. WYLIE—Yes.

J. M. TRUE—For how long a time would you feed them corn to finish them for market?

MR. WYLIE—Well, as soon as you begin to feed corn largely, you want to get them to finish up as quickly as possible on the corn.

J. C. MARTIN—How many pounds of pork do you make from a bushel of corn?

8—INST.

MR. WYLIE—Well, that is a large question. The amount that may be made varies with different animals. We sometimes hear of 17 or 18 pounds being made, and other cases of 14 pounds per bushel, but I don't think the average amount made throughout Wisconsin today will exceed 8 pounds. In fact, I know more men that are producing pork at 6 pounds and less, than I do who are producing ten and twelve to the bushel.

J. C. MARTIN—To what do you attribute this?

MR. WYLIE—It is to a difference in the animals that are being fed; this represents the difference between good, well-bred hogs and hogs with no breeding at all.

MR. JOHNSON—In fattening hogs would you confine them in a close pen or let them run in a yard?

MR. WYLIE—I would never confine a pig in a close pen.

GEO. MCKERROW—Would you feed corn entirely at any time, even in the fattening period, to get the best results?

MR. WYLIE—No, sir, not exclusively although you can feed it more then. It is the cheapest food in the world, and they will probably stand more of it then than at any time.

SUPT. MORRISON—Do you advise cooking the feed for hogs?

MR. WYLIE—Not exclusively; it has been pretty thoroughly demonstrated that there is positive loss in feeding hogs exclusively on cooked food.

H. P. RUNDEL—Is there really any advantage in feeding cooked feed at all?

MR. WYLIE—Yes; you can feed three or four meals a week of cooked feed, or perhaps more, with beneficial results; pigs like a change, a variety in their feed, and it is mainly to supply that change that I feed cooked feed.

R. B. BROOKS—Do you feed roots?

Mr. WYLIE—I do—mangel wurzel.

T. L. HACKER—At what time do you advise turning off a pig; at what weight?

Mr. WYLIE—Well, it has been pretty well demonstrated that the largest profit has been in the first 200 or 250 pounds; when a pig gets up to that weight, if you can by any manner or means do so, turn him off and put the feed into another pig. Better let him go.

MR. HEARD—Have you ever tried peas?

Mr. WYLIE—Yes, and they are a very fine feed. I think in this country they are better than corn.

T. L. HACKER—Do you thresh them and grind them?

Mr. WYLIE—No, sir; I turn the pigs in and let them harvest them.

T. J. FLEMING—At what age would you change from a bone and muscle producing food to a fat producing one on pigs intended for pork?

Mr. WYLIE—Four to five months' old.

JOHN MARCH—At what time of the year do you prefer to have your pigs come?

Mr. WYLIE—Generally not before the 15th of April; there is a mistaken idea as to early pigs; a young pig is a very delicate animal; he needs warm air and sunshine, and you do not always have them in March and early April. Pigs that come when there is snow on the ground can't get out on the ground and they are kept in a small pen, and the result is they show their proclivities for fattening up and sleeping, and the first thing you know, when they are about four weeks old, they die with the thumps.

JOHN MARCH—Isn't there any cure for the thumps?

Mr. WYLIE—The only cure is to put in plenty of dirt in the pen and make

him take exercise; drive him around if you can't do any better.

JOHN MARCH—What is the profit of carrying pigs over winter for the early market?

Mr. WYLIE—I have known lots of men to make money carrying over to September and August.

JOHN MARCH—Wouldn't skimmed milk be a valuable article of food during winter?

Mr. WYLIE—I think it would. You are fighting against weather then; you have got that to contend with, and as pigs are generally wintered in Wisconsin they don't pay for the feed they consume. I believe it possible, though, to winter them at a profit.

C. I. BRIGHAM—At what age do you sell brood sows?

Mr. WYLIE—I have kept them till eight years old. I think four years is old enough.

T. J. FLEMING—Isn't a September farrow pig the most profitable for a winter dairyman to keep?

Mr. WYLIE—I am not a dairyman. If you have got milk it alters the case entirely; you can keep pigs profitably whenever you have milk, and if you can shelter them it is all right. A dairyman can generally keep turning off pigs every three or four months.

T. J. FLEMING—I want to make a point here, being a dairyman myself, that I think it is possible to keep just that kind of a pig, that is, a September farrow pig, instead of a full grown one. The point I think is worthy of consideration from a dairyman's standpoint.

Mr. WYLIE—Well, there may be something in what you say from a dairyman's standpoint, but on general principles, from any other standpoint, I would say no. If I were a dairyman I would never fed my pigs whey.

C. P. GOODRICH—Don't you think a little milk in connection will add to the value of the corn?

MR. WYLIE—Yes; it not only adds to the value of the corn, but it increases the value of the milk.

C. P. GOODRICH—I will read the result of a test I made a few years ago. I had some pigs that averaged 125 pounds each. I divided them up to experiment with. Feeding corn alone, one bushel made ten pounds of gain; feeding milk alone, 100 pounds of skimmed milk made five pounds of gain; it made just half as much gain as a bushel of corn; and feeding separately a bushel of corn and 100 pounds of skimmed milk and they will make together fifteen pounds of gain; but when fed in connection it made eighteen pounds of gain, which made twelve pounds of gain for the corn and six for the milk. Fed separately with hogs at four cents per pound it made corn worth forty cents a bushel and milk twenty cents a hundred; fed together corn was worth forty-eight cents a bushel and milk twenty-four cents a hundred.

QUESTION—At what age should a pig be weaned?

GEO. WYLIE—I would say a pig should never be weaned. If you feed your pigs in a proper manner scarcely any of them will suck at ten weeks old.

SUPR. MORRISON—How do you feed these summer pigs?

GEO. WYLIE—I feed them all they will eat.

SUPR. MORRISON—In what way?

MR. WYLIE—I feed them shorts and skimmed milk and a certain amount of corn.

J. M. TRUE—Dry, hard corn?

MR. WYLIE—No, sir; soaked corn. People make a great mistake in feeding young pigs dry corn. Now, I don't

want to claim that soaking the corn adds anything to it at all, but you feed a young pig dry, hard corn and you will very soon cloy that pig of that kind of feed, his teeth get sore and he will not eat; now if you soak the corn it makes it more easy of assimilation, and the pig is always anxious for it; the pig will never leave any soaked corn.

C. I. BRIGHAM—How long do you soak it?

MR. WYLIE—Usually not more than twenty-four hours. The quality of corn differs a little in regard to that; it should be soaked until soft, but not allowed to sour or anything of that kind.

WELDON VAN KIRK—Would you soak rye?

MR. WYLIE—I never feed soaked rye; I usually grind rye because it makes such splendid slop; rye is one of the feeds I think it best to grind for very young pigs.

W. H. COLE—Can you tell me how to pick out a hog with a good quality of bone, one that will carry the most pork?

MR. WYLIE—The general appearance of the animal indicates the quality of the bone a good deal; now, you don't want too coarse a bone, and you don't want a bone that is too soft and spongy; you want a good bone but you don't want too much of it, and you don't want too fine a bone.

JOHN MARCH—How do you judge of what may be termed the essentials of a good hog; just give us the essentials and the non-essentials?

MR. WYLIE—One of the first things to go by in a pig is his head; if he is lying down and I don't like his head I never stir him up; never look any further. Whenever you find a pig that is narrow between the eyes and has a long, sharp nose, you always find a hog that is never satisfied with what you give it,

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and it is always looking around the fence for a chance to get out.

MR. JOHNSON—You stated that breeding stock should be over one year old, from one to four; don't you think it possible to be successful with breeding stock less than one year old.

MR. WYLIE — Perhaps on the sire's side, yes; on the dam's side, no. The sow should be at least one year old when she has her first pig.

MR. JENNESS—Don't you think a hog should be slopped all the while?

MR. WYLIE—Yes, it should have a certain amount of slop.

MR. JENNESS — Well, do you think there would be profit in wintering shoats over, and clovering them, and slopping them?

MR. WYLIE — Yes; it would depend largely on the market, however, in regard to that. There is a point that farmers do not study closely enough, and that is the markets. If you will study the markets for the last twelve years, you will find that it has usually been better during the months of July and August than any other time of the year.

MR. SANDON—I would like to ask Mr. Wylie as to the relation of clover hay and raw potatoes in the winter, giving them three feeds a day and with slops. In the morning I would give them a ration of clover hay with slops, such as milk and house washing; at dinner I would give them a ration of oats, and at night I would give them their potatoes; is that a good ration?

MR. WYLIE—Well, I shouldn't call it the right kind of ration, but you can make the hogs live on that; it isn't a proper combination at all.

J. M. TRUE — What does it lack, Mr. Wylie?

MR. WYLIE — It lacks a little corn to bring with, and corn is the cheapest

feed there is. If you are feeding in that way you would find this objection to that, you couldn't get them to eat very much of the clover hay, and there is too much of the potatoes.

MR. SANDON — I don't feed mine in that way, but I wanted to know if that was a good way.

MR. WYLIE—I have had the best results for a ration made up thus: One-third oats, one-third shorts, and a third corn.

C. I. BRIGHAM—How are the oats and corn fed; in what way?

MR. WYLIE—I never feed whole grain of any kind to hogs in a trough, because they bolt their feed. I feed the slops at noon, warm, and feed the corn at night.

J. M. TRUE—Couldn't there be a feed of potatoes given each day to advantage?

ANSWER — Yes, sir; in addition to this ration I feed my hogs three or four meals of mangel wurzels every week; I don't feed them, however, for any fattening qualities that they may possess, or anything of that kind, but to keep the system in good order.

T. J. FLEMING — Were those potatoes raw or cooked?

MR. WYLIE — I think it would pay if fed raw.

MR. SANDON — In the morning I give my hogs a ration of oats. At noon I give them their clover hay with their milk and slop and give a feed of bran and shorts mixed; at night I give them their potatoes and corn.

MR. WYLIE—That is a good ration.

T. J. FLEMING—Anything better than milk and corn for a hog?

MR. WYLIE—That is an awful good ration.

T. L. HACKER—I would like to inquire how you feed clover hay?

MR. WYLIE—I do not feed clover hay



to any alarming extent. I found that it was not very filling.

MR. SANDON—I first put the clover hay into a trough and then I take my shorts and feed and sprinkle over it before I pour my slops on top of it, and they eat it all and make a good ration out of it. My hay is cut very fine.

QUESTION—What breeds of hogs do you consider best for the average farmer?

MR. WYLIE—The breed that pans out the best.

J. C. MARTIN—What breed is that?

MR. WYLIE—I shall have to ask you to come up and see me.

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## EXPERIMENTS IN PIG FEEDING.

By L. H. ADAMS.

MR. ADAMS—Whenever there is a hog discussion on there is a tendency to levity, but I don't know why it is. It seems to me that there is no animal that we keep on the farm that has done more to lift the mortgages that have weighted the farms down than our hogs. Not only that, but there are many valuable lessons in breeding that can be obtained from swine, without wasting a life to find out the points that you are after.

### Station Experiments.

Now we have been conducting some

experiments as to the relative merits of corn meal versus other feeds, and I am going to give you some of our results. We are charged sometimes with being so intensely scientific that we can't come down to the practical on the farm. Now I have endeavored here to draw just as practical conclusions as it is possible to draw and yet keep on the safe side. On the farm we are often compelled to do not as we would like but as circumstances force us to do. It matters not how thoroughly we may be posted on the science of stock feeding, it sometimes becomes necessary for us to make

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the most of feeds we have on hand, even at the risk of feeding an unbalanced ration. Therefore, I will confine my remarks to a few vital considerations that every farmer who raises hogs is obliged to contend with, and shall endeavor to show when and under what circumstances a feeder may or may not depart from a strict observance of scientific principles in feeding with a certain degree of safety and without incurring disastrous results.

#### Corn to Pork.

In swine husbandry we have the great problem before us of how best to convert our great corn crop into pork, for that crop has not only formed the almost exclusive ration of our hogs in the past, but is bound to be so in the future, for there is no grain that we can raise with the same outlay that will bear any comparison with corn for the rapid building up of fat, and as we stand and look upon a bunch of broad backed, thick joweled hogs, we are inclined to regard with contempt the statement that corn is an unnatural or unhealthy diet.

#### Constitution First.

But we should not forget that fat often covers a multitude of defects, and, I will add, that some of our horse breeders of today have no more—if as much—reason to forget this fact than the swine breeder has. It is life, energy, substance, great powers of endurance, and capacity for resisting disease; in short, constitution, that we want, more especially in the horse, but also, to a greater extent than we now have, in our great American hog. In the mad rush and scramble among breeders to develop ponderous frames, the truth should not be lost sight of that the scales do not tell the whole story, and that continued

neglect of a few fundamental principles in breeding and feeding can only result in disaster in the long run.

#### Breeding Animals.

It is very important, therefore, in swine husbandry, that the selection of breeding animals receive careful attention; only those possessing inherited vigor to start with; a rangy form, and strong limbs, that are calculated to hold up weight, should be chosen. When a sow has given evidence of possessing the desirable qualifications of a brood animal keep her. Don't make the mistake of breeding from immature stock.

#### An Experiment.

After the selection of breeding stock has been made, the one idea that we should ever keep before us is, to encourage the development of bone and muscle rather than fat, by the use of such feeds as clover, peas, shorts, oats and dairy waste. Don't pave the way to failure in swine husbandry, by feeding corn to the brood sows, and then have to fuss and worry every spring with a lot of weak, puny pigs, that are predisposed to weakness and disease. And, in order to impress the truth and importance of what I have been saying upon your minds, I will relate the life history of a litter of pigs that we raised at the Experiment Station farm last year. The pigs, seven of them were born May 24th, and weighed  $18\frac{3}{4}$  pounds the day they were born. The mother of the litter was a cross-bred Poland China and Berkshire, twenty months old at the time the pigs were born, this being her second litter of pigs. She was a strong, rugged animal, and a good mother. The pigs gained 302 pounds 5 ounces during the first seventy days with their mother, which shows conclusively that the litter was all right to start with. The sire of

these pigs was a full blooded Poland China, bred by, and purchased of, Mr. Geo. Wylie. The mother, while sucking the pigs, was confined in a large, roomy pen, with an earth floor, and she had constant access to a small outdoor yard. Her feed, and also that of the litter, when they got old enough to take an extra nourishment, consisted of corn-meal and skim-milk, in the proportion of three pounds of milk to one pound of corn-meal. The pigs were allowed to remain with their mother seventy days; they were then separated, and from that time on were destined to receive nothing but corn-meal. Here we have a litter of seven pigs, born right, and fed more rationally than the average farmer feeds his sows and litters, all thrifty and promising at the age of seventy days, and weighing 321 pounds. Now, mark the changes that take place during the following 140 days. For the first seven weeks after weaning, the litter was kept together, but fed entirely on corn-meal and water. Instead of going on and increasing the daily gain, as they ought to in proportion to the daily gain in capacity for taking and assimilating more food, we find it is just the reverse, for the seven pigs only gained 148 pounds during the seven weeks, or 6.9 ounces each, daily.

#### A Corn Ration Only.

At this time it was decided to select six of the most even pigs out of the litter, divide them into three lots of two each, and feed all of them on corn meal with what salt they wanted and rain water to drink, but to give one lot wood ashes and another lot ground bone meal, in addition to corn meal; the third lot was to receive nothing but corn meal and water. The purpose of the experiment was to feed them as long as they could bear up under that kind of a ration,

and then kill them and study the effect of the feed upon the carcasses and viscera of the different lots. Thirteen weeks from the time the experiment commenced, the pigs that received nothing but corn meal had reached the limit of their power of endurance; it was with difficulty that they got to the trough; they were dwarfed in size, but excessively fat, and their appetites were failing daily. The pigs in the other two lots could undoubtedly have gone on a few weeks longer, by reason of the mineral matter they got from the ashes and bone meal, which, to a certain degree, supplied the elements of food lacking in corn, but so necessary to a healthy and symmetrical development of all farm animals. Fearing that one of the pigs, fed exclusively on corn meal, would die, it was thought best to kill them all at the same time in order that the different lots might be compared with one another.

#### Results.

After killing, the thigh bone, from the ham of each pig, was dissected and tested for its breaking strength. In the case of the pigs that received ground bone meal, it was found that the average pressure required to break the bones was 407 lbs. The bones of the pigs getting wood ashes snapped at a strain of 340 lbs.; the bones of the pigs that received nothing but corn meal gave out at a pressure of 306 lbs. After getting the breaking strength of the bone, they were burned by the chemist, in order to find how much mineral matter they contained. It was found that the bones of the pigs fed upon bone meal contained 109 grams of ash; the bones of those fed wood ashes had 99 grams, while the bones of those fed corn meal exclusively had but 89 grams. It will be seen at once that the strength of bone was just

about in proportion to the amount of mineral matter it contained. The odd pig that was left after the six had been selected for the experiment was turned out into the barn-yard with others, where it got a variety of feed; it went on, and developed into a fine, large animal. The only evidence he gave of having received too much corn at some stage of his life was a little soreness in the limbs; it was very evident that the bones were not strong enough to support the weight placed upon them. It is proper to add that all of the pigs on this experiment had an outdoor yard in which to exercise; the yard was floored, however, to prevent the pigs from getting anything other than what was weighed out to them. Now, think of it, starting with a thrifty, healthy litter of pigs at the age of seventy days, it only took twenty weeks of exclusive corn feeding to reduce those pigs to a condition of utter helplessness. For the last two or three weeks of the experiment, the pigs on corn meal alone did not gain anything at all.

#### Lessons Taught.

Now, it seems to me that this experiment demonstrates clearly the necessity of first getting our pigs well born; second, the importance of providing the pigs with a variety of muscle and bone forming food for the first three or four months of their lives, or until they have been enabled to store up enough mineral matter within their bodies to permit of a full and normal development of the bone and frame, while you are engaged in the forcing process with corn, and nothing but corn, in the middle or latter end of the pig's life. The first week of a pig's life is the most critical and trying period of its existence, as it is also the most

important to the breeder, for if the pig at this tender age lacks strength and energy to assert and maintain its rights, it will soon be brushed aside and outstripped by its mates, and the loss thus caused can never again be made up. Unless a man is especially equipped for the raising of early March and April pigs, he had better not undertake it, for close confinement in a pen that is always more or less damp, and lack of exercise, will prove fatal conditions to many, and start others on a squealing career for their lives.

#### General Suggestion.

Have the pigs come the latter part of May or the first of June; and you will find that it is easier and cheaper to battle with the cold at the latter end of a pig's life, than it is at the first. Provide the sows in the fall with dry and comfortable quarters, where they will have constant access to the barnyard; they will then take care of any grain that might otherwise be wasted in the manure. In case the sows were in a yard where steers were being heavily fed with corn, the sows should be taken out for they would then get too much heating food, and that is not what they want. They should have a sufficient allowance of oats, shorts, roots, and such slops as the farm affords; fed sweet, and not in the highly fermented condition it sometimes is, to keep them in a thriving condition, not fat. In the spring turn the sows in a clover pasture, if possible, and sow a field of oats and peas, for the sows and litters later on. The sows should be accustomed to being yarded every night, and then, as farrowing time approaches, they will naturally resort to their pens, which should be provided with a narrow shelf or fender



around the inside of the walls, and 8 or 10 inches from the floor, to prevent the mother from lying on her young. A trough should be provided, where nothing but the litters can get to it, and if there is any skimmed milk to be had on the farm, it should be warmed to 90° or 95°, a little shorts or corn-meal stirred into it, and the pigs taught to drink just as soon as possible. As soon as I can get a pig to taking a little extra feed in this manner, I feel that I am well on the way to success. The feed should be increased as fast as the litters will take it, and the question of weaning them will settle itself without any interruption of their progress. And now with a strong, healthy, thriving pig to start with, we have got a shoat that we can force along on a field of peas, and top off with corn at any time during the following winter or spring without any ill effects resulting from the exclusive use of corn, and with profit to the feeder. Or, to state it in another way, the time to make preparation for a profitable hog is before he is born, for I firmly believe that there is more in the proper care and feeding of the sows, and having a pig that is born right, healthy, and thriving to start with, than any ration we can give them at the latter end of their lives, I care not whether it is balanced or unbalanced.

## DISCUSSION.

W. H. COLE—Don't you think that you have set that a little too far down; don't you think the middle of April or the first of May would suit us better?

MR. ADAMS—If we could have them just exactly when we wanted them the first of May would be a very satisfactory time.

In regard to this question as to the quality of the bone, put to Mr. Wylie a

few minutes ago, I wish to say that I think there is a great difference in the character of the bone. I do not think that a great big, rough bone is what we want. Now, in breaking the bones of these pigs I found that the largest were not always the strongest, but sometimes a bone would bend long before it would break; and seem very flexible.

SUPT. MORRISON—I should like to ask, after pigs have been confined to a corn diet for three months, if there is any use in feeding to make bone and muscle?

MR. ADAMS—It is possible that you can restore partially but never to their normal condition after a pig has been on corn for three months of his life.

J. H. WISE—Can a fattening hog be fed as profitably on corn meal exclusively as he can on that with something else with it?

MR. ADAMS—It is better with milk.

C. P. GOODRICH—How much corn will a hog of 150 pound weight consume in a day?

MR. ADAMS—From ten to twelve pounds a day.

H. ROBBINS—What will be the gain?

MR. ADAMS—Five to seven pounds of corn meal should make a pound of pork on a mature hog.

QUESTION—Do you mean a hog that has been fed all he can eat up to maturity?

MR. ADAMS—Yes, and then put upon corn meal and forced.

THOS. CONVEY—Do you advise feeding corn meal alone for fattening hogs?

MR. ADAMS—I do not.

GEO. WYLIE—You can't make a fat hog gain two pounds a day?

MR. ADAMS—I can a lean hog, a hog fed on nitrogenous foods, such as clover, shorts, etc., enough to keep him gaining.

GEO. WYLIE—At present prices would

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you consider it profitable to grind feed?

MR. ADAMS—No, sir, I wouldn't grind feed for hogs; I would prefer shelled corn rather than to grind it.

QUESTION—Do you claim peas won't fatten hogs?

MR. ADAMS—They will, when you turn them in where they can get all they want in a soft succulent condition, but I don't know whether the pork will be of as high value.

T. L. HACKER—I am inclined to differ on that point. I think the nicest pork that can possibly be grown is from peas, oats and milk; I think it is equal to fowl.

MR. ADAMS—Mr. Hacker introduced two or three other feeds in connection with peas. My answer was in regard to peas alone.

T. J. VAN MATRE—I wish Mr. Adams would describe to us what he understands by a mature hog and when he would begin to feed corn to finish off?

SUPT. MORRISON—Maturity is an unfortunate phrase to use.

MR. ADAMS—That question of maturity will depend on the breeds, one breed will mature quicker than another.

J. M. TRUE—If you aimed to grow pigs to a weight of 250 pounds before selling them, at what stage of growth would you commence to ripen them for the market?

MR. ADAMS—I should aim to get pigs to the market at the age of from eight months to a year old. The most profitable feeding is done in that period, and if the pig is fed as I urge it should be the first three or four months of its existence, with the proper kind of food so as to get that frame to growing and developing properly, you can with corn then, along at the eighth to the tenth months of that pig's life, lay on a sufficient amount of fat to command the

highest price in the market and have the most valuable pork.

GEO. WYLIE—Are you not mistaken as to the age? Isn't it rather under eight months than over eight months?

MR. ADAMS—A fifty pound pig will gain more with less feed than a hundred pound one, and it increases as it gets heavier.

J. M. TRUE—If a pig has reached a weight of 150 pounds, at say five months of age, without corn coming largely into its diet, at what time would you begin increasing the feed of corn, in order to have him mature at 250 pounds at about eight or nine months, as you have suggested?

MR. ADAMS—If you do not desire to market your hog until he weighs 250 pounds, you don't want to commence feeding corn when he is five or six months old; don't feed it to him heavily or exclusively until the last eight or nine weeks before you get ready to sell him. But let corn form an increasing ratio from five or six months up to within eight weeks of the time you want to let him go, and then make it all corn, if you will.

GEO. MCKERROW—How much should a good, well-bred pig gain every day from the time he is born until he is put on the market?

GEO. WYLIE—A pound a day is a very good gain.

GEO. MCKERROW—Then how old ought an average hog ought to be when he weighs 250 pounds?

GEO. WYLIE—Two hundred and fifty days, but you can do a great deal better than that.

GEO. MCKERROW—How much better?

GEO. WYLIE—I have had pigs weigh 200 pounds at six months.

SUPT. MORRISON—At what age can a pig be turned off most profitably?

GEO. WYLIE—I think at about seven months; twelve months is too long.

T. J. VAN MATRE—Isn't it a fact that in the Chicago market well matured hogs bring a larger price per pound than lighter hogs?

GEO. WYLIE—Sometimes it is and sometimes it is not, and it is as often in favor of the light hogs as in favor of the heavy ones.

ORANGE JUDD—You will find there is a class of nice shoats, 190 pounds and downwards that sell at the same prices as heavy weights; the highest price is paid for large shoats, 150 to 180 pounds, and then you strike up above 300, from 300 to 350; from 200 to 250 pounds do not sell as high.

G. C. HENDY—Many of us when fattening a hog for our own use would like to have them weigh 250 pounds, but we would like to have a little more lean meat?

L. H. ADAMS—You will have plenty of lean meat if you bring the hog up on dairy slops, clover, peas, and finish it off with corn.

THOS. CONVEY—Has exercise anything to do?

L. H. ADAMS—It has something to do with it in this respect, that you can't hope for a normal development without proper exercise.

T. L. HACKER—In preparing a hog for your own family use, why finish off with corn? Why not be satisfied with a nice lean piece of pork?

L. H. ADAMS—Because the highest quality of beef and the highest quality

of pork is that in which the fat is all the way through it, marbled, as it is called; it is that that makes the juicy, palatable article so much desired, and a you can't put it there with anything but carbonaceous food, like corn.

T. L. HACKER—Now, I have just killed five young shoats, weighing probably 180 pounds each; they were raised on oats and peas ground and they were not finished off, but the pork is finished off; it is just the kind of pork we can eat with a good deal of relish. I think if I had finished off those pigs with corn they would have been too fat. I am not speaking of pigs for the market now, but for family use.

ORANGE JUDD—We used to fat a great many hogs; they were kept on clover in the summer, and mast, of which there was plenty, and then finished off on corn, and we had the pork, the lean and the fat.

T. L. HACKER—For the last three years I have sowed three bushels of peas and oats to the acre, half and half, and I have reaped them and thrashed them just the same as I do oats, and for dairy animals I have them ground; for pigs and young stock I feed them whole, and the result is exceedingly satisfactory. Every dairyman will admit that oats and ground corn is a first class feed but it is not equal to oats and peas.

W. H. COLE—How many bushels do you get to the acre?

T. L. HACKER—Last year I got forty bushels.

## HOW CAN WE MAKE PORK AT LOW COST.

By THOMAS CONVEY.

### The Best and Cheapest Ration.

If asked, which is the cheapest hog food we can produce? I would unhesitatingly say, clover. If asked, which is the best single food? I would answer, corn. But in the combination of these two foods lies the security of the pork producer. You may say this necessitates exclusive summer feeding, not necessarily clover hay, and clover ensilage, now forms part of a ration for hogs in many portions of the state and is giving the best of satisfaction, especially where fed to mature stock, kept for breeding purposes, and some parties reporting that they have kept brood sows on good clover hay each receiving two pounds of corn meal per day in addition to the hay the latter fed without preparation of any kind, while this style of feeding is practiced quite extensively in the eastern part of the state, and by the very best class of farmers. Yet I can not speak of it from experience, but consider it worthy of trial. But, I can speak from experience in feeding grain on clover pasture, and I prefer corn, and can honestly say, it is one of the best, if not the very best way to produce pork at a low cost, and it is somewhat strange so few farmers avail themselves of its advantages. At present prices pork can not be profitably produced on an all-grain ration, and yet it is equally true it can not be profitably produced on an all-grass ration, but the person who has never tried feeding a limited amount of grain to thrifty hogs on a good clover pasture would be surprised at the results. The practice of many feeders of

feeding milk to hog on grass in the absence of a grain ration, is not to be recommended, while young pigs do not derive much benefit from pastures except through the exercise and contact with the soil, and yet when the weather is suitable it is the safest place to keep them, as old pens with their unhealthy surroundings, and bad atmosphere, are particularly injurious to young pigs. Winter feeding should be avoided as much as possible, especially the practice of keeping what are termed store hogs, when not kept for breeding purposes.

### Early Pigs.

Early pigs, like early lambs and chickens afford the best chance for profitable feeding, they are capable of utilizing grain when it comes, and by liberal grain feeding, can be got in constitution to sell on the early fall market. The risk of losing winter pigs will prevent this practice from becoming general. Some feeders advocate having pigs come in the fall, carrying them over to the June and July markets. But the men who raise two litters a year from mature sows, claim this to be the way to produce pork at the least cost, also that they get the best prices. I have always preferred raising one litter a year, never weaning the pigs, but I have my doubts about its being the most profitable way.

### Not Corn Alone.

In recommending corn and clover I would not advise their exclusive use, as no food comes amiss with the hog, and his diet should consist of cheap rations,



when possible. But one thing should not be lost sight of, and that is he should make a reasonable amount of daily gain, for that represents the profit. And in the absence of it, there must be a daily loss, as the pig gains nothing by age if he does not increase in weight, on the contrary, he gets out of constitution, and this naturally interferes with profitable feeding thereafter. So the daily loss is not represented by the daily amount of food consumed.

Ignorance, or neglect of this principle is the source of more loss than anything else connected with feeding, and makes our meat products cost from 25 to 50 per cent. more than it should; without either pleasure or profit to any one, or anything concerned. The greatest possible daily income of weight, may not represent the greatest possible profit. We must consider the cost of a food as well as its nutritive value. Therefore, an all grain ration will not bear comparison with a mixed grain and grass ration.

Pork made in this way is at a minimum expenditure of labor, and there is the least possible loss of fertility, this, of course, refers to pasturing, and pork made in this way does not incur the extra expense of keeping up animal heat during cold weather.

#### Roots and Squash in Winter.

In fall or winter we should strive to supplement or supersede a grass ration with roots, potatoes, squash, pumpkins, cabbage, apples, or any of these. Some of them are better cooked and mixed with meal, they should be fed in connection with grain, and in cold weather less of this class of foods are needed, but they should never be entirely dispensed with, variety in food promotes digestion and improves the appetite, and the more an animal can assimilate, the greater the profits in feeding, but in

feeding animals for meat production it is just the same as in the production of the butter cow or the trotting horse. The animal having the greatest capacity to accomplish the object for which it is kept affords the greatest profit.

#### DISCUSSION.

MR. JENNINGS—Would you feed corn with your clover?

THOS. CONVEY—Yes; if I wanted them to produce the greatest growth I would feed about one-third the ration.

MR. JENNINGS—What if you should feed more?

THOS. CONVEY—Well, they would cost you more.

MR. WEST—I would like to ask Mr. Convey whether in feeding skimmed milk to pigs in the summer he has to warm it?

MR. CONVEY—It is better to warm it in the summer time for very young pigs.

L. H. ADAMS—What is a good gain on clover?

MR. CONVEY—I always strive to get one pound per day and usually get it. I have had as high as one and one-fifth pounds per day; if you work more on grass and less on corn of course you may gain something less than that.

J. M. TRUE—Have you had any experience in feeding peas to hogs?

MR. CONVEY—Yes, I have raised peas and oats, as Mr. Hacker states, and it is a very fine feed to balance up with corn. I think it is cheaper than bran and shorts. I produced this last year 46 bushels to the acre, and the year previous I produced 40 bushels to the acre. There is one objection to it, and that is that it will go down on rich land.

H. P. RUNDLE—I would like to ask if the peas and oats ripen at about the same time?

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MR. CONVEY—Yes; I sow the late variety, but I believe any variety could be used. I drill them in with a drill. I sow the White Russian oats. I prefer the common field peas to the green peas.

T. L. HACKER—I was going to say that by sowing the oats I have no difficulty in the crop going down. I use the small pea. How do you cut the peas?

MR. CONVEY—With a binder and bind them up.

J. H. WISE—In what proportion do you mix them to sow?

MR. CONVEY—A bushel and a half of peas and a bushel of oats.

GEO. MCKERROW—Do you ever use charcoal in feeding hogs, and in what does its value consist?

MR. CONVEY—I feed charcoal and ashes to hogs in winter time, by leaving it where the hogs can get access to it without having it exposed to the weather.

W. H. COLE—Do you always keep salt where the hogs can get it?

MR. CONVEY—I don't feed it; they get it in the milk from the dairy.

QUESTION—Do you depend on corn to finish off with?

MR. CONVEY—I depend on a balanced ration; I find a balanced ration will produce the greatest amount of daily gain.

J. H. WISE—Have you ever tried to feed rye to hogs?

MR. CONVEY—But a very little; it is an excellent food but should be ground.

QUESTION—What use do you make of your pea straw?

MR. CONVEY—It goes in the oat straw and the cattle eat it equally as well; in

fact it has more nutritive value than clover.

MR. JENNINGS—Have you ever fed ground barley?

MR. CONVEY—I have in connection with other feed.

R. B. BROOKS—In feeding my hogs last summer, having no corn, I fed shorts and part of the time bran; they were running on good clover pasture. Do you think it would be cheaper to buy corn?

MR. CONVEY—I think it would have been cheaper feed if they were running on clover.

QUESTION—How do you manage to thresh peas without splitting them?

MR. CONVEY—You don't need to run the cylinder close, and you won't split many of them; splitting them won't injure them for feeding.

JOHN MARCH—If they will take out the concave and put in a board the peas won't be split.

MR. CONVEY—You don't thresh oats in that way though?

SUPT. MORRISON—What do you think of the comparative value of a bushel of corn fed in June or July, with hogs on a good clover pasture, as compared with feeding a bushel of corn, with the temperature twenty degrees below zero, as farmers usually do?

MR. CONVEY—It is worth from three to five times as much.

GEO. MCKERROW—At what age and at about what weight do you prefer to turn off hogs for the most profit?

MR. CONVEY—About six months old, and at a weight of from 200 to 250 pounds.

## PROFITABLE PORK MAKING.

By E. M. SNOW, Waterloo, Wis.

### Shiftless Management.

Several years ago having occasion to travel somewhat, my attention was called to the manner in which the hog industry was managed by farmers generally. It seemed to consist in allowing the young animals of any and all breeds to shirk for themselves until they were 16 or 18 months old, when they were enclosed in a pen from one to two rods square with ground for a floor; their shelter, if any, was a few poles laid across the corner of the pen, with a forkful of straw or hay placed on them which the first wind caused to disappear, and it was very seldom if ever replaced. The rains that came softened the floor until the mud was from six to ten inches deep, upon which corn was poured without stint. The soft feed was lifted over the fence and poured down among them, hoping that some portion of it might possibly reach the trough below, and he was regarded as an important factor in removing the mortgage upon the farm, and notwithstanding such rough treatment, he fulfilled the expectations remarkably well.

The time was, when the cow was wintered around a straw stack, receiving an occasional feed of hay, and water after the same manner, if convenient to the keeper; but later she was placed in quarters where the wind and frost were strangers, and the water she drank was warm to a degree of assimilation, and with this treatment she soon became one of the leading industries of the land.

### Better Care, Better Results.

It occurred to me, that if the hog had been cared for as the cow had been, why should we not reasonably expect as much better results from him. Acting upon this idea, I proceeded to build a pen, consisting of an alley four feet wide with feeding room on one side ten feet wide, and pens 6x12 feet wide on the other side, with a space 10x12 for the purpose of preparing food, which should be placed in the troughs while the feeding room was empty, after which the door is opened and the pigs enter at once, and all have an equal chance as there is an abundance of room. The side pens are used for temporary purposes only, as the stock is expected to sleep outside the pens in sheds prepared for that purpose. The sides of the alley is composed of swinging partitions, for the purpose of depositing food in the troughs and entrance to the pens. When we desire to handle our pigs we turn them into the alley and by having a board little less than four feet long and about three feet wide, we are able to sort out and handle them as we desire. We would like to have a lane from the feeding pen, 11 feet wide and long enough to accommodate as many one-half acre fields of clover as we have brood sows, so that each litter of pigs may be by themselves for two or three weeks, or until they are strong enough to protect themselves from robbery by those that are older; after which time two or three litters may be turned together according to the

capacity of the feeding pen. My method of feeding is to place the food in the troughs and then open a twelve foot gate around far enough to close up the lane leaving an open walk from the clover field to the pen; after they are done eating they are returned to the place from whence they were taken, the gate is closed, the process repeated until all have been fed.

This method of handling is very satisfactory, enabling the keeper to feed each pig what he desires him to have.

#### Salt, Sulphur and Ashes.

I prepared a box about three feet each way, open on one side with an inclined board reaching from the top, to within three inches of the bottom, and the same distance from the backside with a cover on top, in which I keep a mixture of salt, sulphur and ashes. It is always dry and accessible to the hogs from the open side. But notwithstanding this precaution, I met with a strange experience. A few pigs seemed to be weak across the back as though they were strained, nearly losing the use of their hind parts, with a sunken appearance and loss of appetite as well. I selected two of the worst cases and put them in one of the small clover fields and prepared a powder of charcoal, sulphur, and salt, mixed with milk. The result was that they soon recovered from this attack, took their places in the herd and were all right. Whenever I discovered any of the above described symptoms, I mixed salt and ashes with the food, which I finally adopted as part of a necessary ration, after which time those symptoms disappeared entirely. Last year I raised and fed twenty high grade Polands which weighed 200 lbs. (alive) at six and one-half months old, two of which I continued to feed until they were eight months old, at which time

they weighed 260 lbs. each. Their main food was shorts for the first few months after which, oats were added and pumpkins also, through their season, but all that time I fed just corn enough to make them as fat as I desired and no more.

#### Clover, Corn and Pork.

Great care should be used that they they do not become too fat, for their growth. In 1884, I fed a bunch of fifty hogs which had been run on grass through the summer, until late in September, when I turned them into a field of clover, new seeding, about one foot high and nicely in blossom. The corn fed was fifteen ears each per day. The gain as to growth and fatness, was perfectly satisfactory, the meat was free from that oily softness that we sometimes find and seemed to be exactly what we wanted for home consumption. I have produced just as good results by cooking pumpkins to a pulp and thickening with corn meal, about one-half bushel of meal to one barrel of pumpkins, and would say here, that while we may give exact proportions of rations on general principles, the judgment of the master must determine for himself, from what he has in hand, what is best for his particular charge. If the hogs are increasing in size, without taking on a sufficient quantity of fat, the ration of corn is not sufficient and must be increased. On the other hand, if they take on fat too rapidly for their growth, the corn food must be diminished.

#### Cleanliness Necessary.

I know of a lot of pigs that were wintered in one corner of a barn basement which was warm; their nests were corn-stalks that were cleaned out of mangers, after being fed to stock, and this was nearly or quite the only lot of pigs that escaped the cholera scourge in that



neighborhood, thus showing how important it is that they should be kept dry, clean and warm. I have lost quite a large percentage of pigs, when I had the brood sows sleep on a plank floor through the winter, but since placing them in sheds, I have been fairly successful. I have never been able to satisfy myself why these things are so, but accept it as a fact, and govern myself accordingly. I have never had any trouble with mothers eating their young, except in one instance, she was enclosed in a small pen (6x10), in cold weather, fed with house slops and corn, and I could afterward see that something was lacking in the food she ate.

**Time of Farrowing.**

I would recommend the pigs to be dropped in May, while the mothers are on grass, at which time the weather is expected to be moderately warm and they are supplied with all the requirements of perfect health. The pigs should be fed for ten months, when they ought to weigh 300 pounds each and be ready for the March market which five out of twelve successive years the highest market price was paid and seven out of the said twelve years the highest market price was paid in September; but high feeding is not considered entirely safe in hot weather. The time was 1875 to and including 1886. I would breed from mature stock, retaining superior animals until their usefulness was ended, because I believe the pigs to be stronger and better able to resist disease.

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**Selection.**

At the age of four months I selected a sow for breeding purposes from the lot of twenty mentioned above and placed her with two registered sows, all receiving the same care from that time on until seven months of age, when the grade weighed 150 pounds, while the registered ones weighed 200 pounds each. So I should try to get the best stock possible. A sow that rears pigs with bursts should be excluded from the breeding pen. When the farmers can with certainty produce the kind of pork as described above, I believe that the home consumption will be largely increased, because the intrinsic value is there and I think that should be the object sought for by every feeder in the land.

In the absence of milk, as with them in Nebraska, they must use flax seed, soaked in warm water until it jellies; this should be mixed with the food in sufficient quantity to produce a result which experience alone will show to be desirable. (It is just as good for colts.)

If ground oats are any cheaper than shorts, give them a fair trial. But I would not grind the corn but keep it for to balance the other feed. Mix the shorts or ground oats with warm water to the consistency of deep setting cream and add the jelly, or oil-cake meal in small quantities for three or four months, at the same time give them a clover run.

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## DEERFOOT FARM PORK PRODUCTS.

By JAMES CHEESMAN, Southboro, Mass.

The starting of this farm was the purchase of a country home by Mr. Joseph Burnett. He is a native of Southboro and having been successful in business in Boston, desired to establish his summer home there, and accordingly purchased this farm. The farm was run as

### A City Man's Country Place,

until 1871, when Mr. Edward Burnett graduated from Harvard and enlarged the scope of the farm operations, bringing it into prominence as a business enterprise. He was so successful in this that the word Deerfoot, as a trade mark for butter and pork products, is known over nearly the whole country, and the demand for them is more than the farm as such can supply.

The Deerfoot business is divided into three distinct departments or heads. First, the farming proper; second, the creamery or dairy business; and third, the pork business. Each of these is in charge of a competent foreman and all under the control of the office.

### Size of Farm.

The farm comprises about 300 acres, a little less than one-half of which is under cultivation, raising hay and other fodder for the stock. The rest of the farm is rough, stony and in some places covered with undergrowth of sprouts. Some three or four acres per year are reclaimed and added to the arable portion of the farm.

The farm is situated at four corners of the town's highways, about a mile and a half west of Southboro station. On it are located the family residences of Mr.

Joseph Burnett, Hon. Edward Burnett, Mr. Robert Burnett and Mrs. Gardner, several cottages for the employes, besides the barns and other

### Farm Buildings.

The farm buildings are somewhat scattered as the business developed from small beginnings, and new buildings were added as was necessary. The barns are all serviceable and have nothing about them different from what any common barn may have.

The buildings are grouped together for ease of supervision and for the purpose of convenience in the use of power and system. The dairy is at the end nearest the foreground and the pork business at the other so that no unpleasant odors from the hogs can effect the butter. The boiler and steam engine is in the centre, with the office and laboratory over head.

### The Farm

is devoted to making milk and raising pigs. The neat stock includes about 80 head of Jerseys, Guernseys and their grades. The herd is led by two A. J. C. C. bulls, one sired by Eurotas Victor Hugo 15,689, and having considerable Eurotas blood in his veins. The other, Hillsboro, was sired by Lord Darlington 7,285; in addition to having a considerable amount of Darlington blood, he is also descended from the Duke of Argyle and Morjoram families. The farm is now milking 53 cows, the balance being young animals. Everything about the barns is the ideal of neatness; the stables are continually sprinkled with plaster

and other absorbents. Much hay is cut, and this is a prominent article of feed, with corn meal, gluten meal and linseed meal.

Ensilage is being used now for the first season, a new silo 32x20 feet having been constructed during the last summer.

The number of pigs kept on the place varies, but it is intended to raise about 300 per year at the least, and we hope by greater economy in the waste products of the dairy to increase the number. The pigs are fed largely on the skimmed milk and butter milk from the dairy, and are also used to help in reclaiming the rough land. They are pastured on sections enclosed with movable fences, so that their runs can be readily changed. They are serviceable in turning over the soil, while adding to its fertility.

**The Pork Business**

uses about 20 hogs per day. Such as are not raised at the farm are selected by its buyers from the best dairy districts in New England and shipped alive to Deerfoot farm for final feeding and butchering. The most prominent of the well known products of this department are the Deerfoot sausages, which are known the country over. But a large business is also done in fancy bacon, lard, and in small 15, 25 and 50 pound tubs of family pork. Pig's feet are put up in glass jars, and some of the sausages are put up in two-pound packages, and some of the sausage meat is also put in two-pound packages in parchment paper. This building is also equipped with machinery for doing work expeditiously, with rooms for butchering, cutting, making the sausages, filling and chilling, packing them, trying the lard, smoking the bacon, and everything else that is needed. Every-

thing is neat and clean about the premises. The pork products are so well known and so popular that they are shipped all over the country, to Montana, New Orleans and St. Louis, Chicago, Cleveland, Cincinnati, Boston, Philadelphia, Baltimore and other places.

When the hog troubles appeared a few years ago it was deemed prudent to reduce the number raised on the farm to within a hundred and to exercise extra care in our selections to avoid suspicion of disease.

Since then we have not fed so many on the place, but have induced a greater number of farmers to make pork for us within ten miles of the farm. Our object is to induce those we buy milk from to take back their own skim at 5 cents per can of 18 pounds, or 27½ cents per 100 pounds, and compound this with equal weights of bran and corn meal, using not less than ten pounds daily of the milk and a suitable quantity of the mixture of the bran and corn meal to suit the growing demands of pigs.

Generally we have tried to follow the teachings of Dr. Goessmann's experiments by choosing the highly nitrogenous feeds for their high manurial values.

Dr. Goessmann's food valuation of fodder articles per ton:

	Market cost.	Manurial value.	Net cost.	Feeding value.	Cost per lb. Nitrogen.
Fodder articles.					Cts.
Corn meal.....	20.00	7.50	12.50	21.73	3.30
Wheat bran.....	17.00	14.50	2.50	22.92	2.31
Wheat middlings.....	20.00	10.75	9.25	22.82	2.73
Gluten meal.....	24.00	17.00	7.00	34.49	2.11
Cotton-seed meal.....	26.00	19.75	6.25	36.77	2.41
Linseed meal O.P.....	27.00	21.75	5.25	37.99	2.50
"    N.P.....	25.00	24.00	1.00	37.91	1.85
Timothy.....	12.00	5.50	6.50	12.06	2.18
Corn stover.....	5.00	4.80	.20	14.30	4.95
Sugar beets.....	5.00	1.15	3.85	4.17	6.47
Mangolds.....	3.00	1.10	1.90	2.92	4.85
Skim milk.....	4.10	2.25	1.85	4.07	4.39

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The above estimation of value is based on 4 1-3 cents per pound for digestible fat, digestible nitrogenous matter, 4 1-3 cents per pound, and non-nitrogenous 9-10 cents per pound.

This year we shall use a little Cleveland linseed meal for pigs under 100 lbs. weight, after that we shall abandon linseed, leave out the bran when the pigs attain a weight of 150 pounds carrying them through to 200 to 210 lbs. On a mixture of skim milk and corn meal, and what they can pick up on their limited ranges on the rough land. We aim to produce lean meat by giving food of a close nutritive ratio, and free exercise on sheltered land. In summer we use movable pens rather than stationary buildings. In the fall we group the pigs together under the three barns where they have free range in lots of fifty to exercise on the long litter from the stable and the peat moss which we are now using in combination with plaster, as an absorbent. The gross cost of food and labor for one pound of pork with us at eastern prices of skim milk and grain figures from 5 to 5½ cents live weight. We estimate the profit of pork making on the value of the manurial residues of feed. This is one of the hardest lessons we have to teach the people who grow pork for us. They don't realize that corn meal is the most expensive thing we buy and that bran and linseed meal are the cheapest. If I tried in Wisconsin I should grow plenty of clover, barley and oat fodder and cut these up and mix them with corn ensilage, bran and skim-milk. Distance lends enchantment, and

I suppose a paper from Deerfoot farm is considered by some, a little more spicy than some good hard headed pig-men in Wisconsin would offer. I want to swap. The New England States want to borrow the governor and Uncle Hiram Smith to teach us how to breed a business cow, and Prof. Henry and Theodore Lewis how to make healthy, sensible, nice eating pork.

The lesson we all have to learn is more faith in the few acres near our barns, to concentrate capital in fewer cows and pigs. To grind out less muscle on chores, do more thinking, use the scales every day, carry our pencils and note books all the time, and to know what every quart of grain costs, the cost of every bit of clover, corn, milk and pork raised on the farm.

Hoard, Morrison and Smith cannot save us if we do not learn our individual duty and do it. With such manhood and educational facilities to the square mile as you have in Wisconsin every farmer ought to be an expert in cows and pork. Make more bone and muscle for the pigs and you will always get enough lard. Never keep pigs longer than six to eight months old. Lean pigs, cleanliness and good faith have made our business and the same qualifications keep it together.

#### The Dairy Department

uses all the milk made upon the farm, and also such of the milk of the adjoining farms as comes up to the Deerfoot standard. The milk of 1,000 cows is used daily. The farm runs a car from Southboro to Boston every day, on which is sent much milk as well as cream, butter and pork products.



# HORSE SESSION.

## PRESENT AND PROSPECTIVE CONDITIONS OF THE HORSE MARKET.

By JOHN M. TRUE, Baraboo, Wis.

### The Best Will Always Sell.

Few markets are uniformly good.

Periods of general depression pass over the country during which all commodities suffer to a certain extent in their market value.

At other times dullness of market is noticeable with some given product, while others of a similar character even, are not affected. In the last mentioned case irregularities of prices may be almost always traced to the undesirable character of the commodity, or an overproduction, or oftener perhaps to a combination of these causes, since overproduction usually depresses the price of the poor product, without seriously affecting that of the better.

The farmer's market seems to be more at the mercy of circumstances than any other, partially on account of the varied character and quality of what he produces, and also from a failure or inability to make any studied observation of the law of supply and demand. Booms sweep over our agricultural interests, and we thoughtlessly rush from one enterprise to another regardless of the well established fact that such movements must lead to a reaction that will be fatal to the interests of many a bungling or thoughtless zealot.

### The Horse Product.

For years no product of the farm has

sold more readily, and at more uniform prices than horses. All kinds have had a market value. Good horses have sold high, while poor ones have paid well enough to encourage the scrub and low-grade producer to continue his work.

Horse breeding has had its boom, and colts are found in nearly every farm yard.

Of the entire horse product now in the hands of the Wisconsin farmer I estimate forty per cent. to be ostensibly roadster breeding, of an actual or prospective weight of less than 1,100 lbs., and of no special merit in style of movement; thirty per cent. of light or low grade draft-breeding, weighing actually or prospectively less than 1,300 lbs., and of draft and semi-draft formation and movement twenty per cent of draft breeding weighing, or to weigh upward of 1,300 lbs. and ten per cent of roadster breeding and possessing meritorious qualities of style, speed or sufficient size to make desirable carriage horses.

### Good Horses Pay.

Horses are said to be low; indeed there is no sale for certain grades. It is safe to assume that 50 per cent. of our entire product represents this unsaleable class. I hear of no complaint of *no market, or low prices* from handlers of good roadster-bred carriage horses, or large, smooth, well-formed draft horses.

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I have been criticised in the past, for placing so much stress upon size as a special consideration for the roadster breeding farmer. I have never wished, nor do I now desire, to divorce this quality from style and finish; but do believe that with this combination, little importance need be attached to speed. It makes little difference in value whether the horses trot in three minutes or four minutes, while the difference in price between 1,100 pound and 1,200 pound horses of equal style and finish is quite appreciable.

Increased weight also seems to be required by the draft horse market; 1,500 pounds being considered light enough for the big horse. But the market no longer pays a premium for flat feet, puffy or curby hocks and heads the size of a salt barrel. Indeed, it is getting quite sharp in its discriminations against these features that have been quite common with draft horses—quality is as de-

#### The Horse That Sells.

sirable in a draft, as in a road horse.

With 50 per cent. of our product unsaleable, upon our hands, shall we still breed horses? No! and Yes! We should not breed in a way to add to the non-marketable product. If through penuriousness, ignorance, or prejudice, we still insist upon perpetuating the little mongrel or the low-grade nondescript, if we breed at all, give up the work. There is no present or prospective market for you. But if you wish to raise horses as a business, can see the value of a dollar when well invested, as well as when in your fingers; like a good horse and know him when you see him, and are willing to admit that buyers who will pay long prices, and represent markets, know as well as you what is the best horse to raise—such men as you sell all their

horses at satisfactory prices now, and always will find a good market.

#### Intelligent Breeding.

I see nothing in the character of the present horse market that seems suggestive of radical changes in the future. We are no more going to return to the horses of twenty-five years ago, than we are to other styles and methods of those days. The American people do not progress that way. The coming trotter must fly, above 2:30 cuts no figure now. Not many of us will raise phenomenal trotters. Good roadsters and coachers weighing 1,200 pounds and upwards will be among the best paying live stock products of the next ten years, and intelligent, wide-awake horse-farmers can raise them. We shall always want lots of good draft horses, and the best paying type will never be lighter or poorer than the market standard of today. The draft horse is the product of good breeding and feeding. His production is within the reach of all farmers who understand these requirements; and the income from good work here will represent as much clear profit as for any other line of farm work.

#### The Scrub Must Go.

Circumstances have conspired against the scrub, and he must go. Over-production has unmasked him, and without a buyer or friend he is plainly seen in his *undesirableness*. The farmer who raises horses for the market hereafter, will in common with his brother farmers who raise other products at a profit, find that he will succeed in proportion to the skill and intelligence he puts into his work. Competition will not soon be very sharp "up at the top," and the nearer he approaches that enviable position, the greater degree of success he may hope to attain.

## THE BREEDING OF DRAFT HORSES.

By ALEXANDER GALBRAITH, Janesville, Wis.

### An Important Industry.

Few departments of agricultural industry of this great country are more important than that of draft horse breeding, and none have been more uniformly profitable during recent years.

Croakers or prophets of evil, and also some of those interested in light horses, have sought to belittle the business, asserting that it was much overdone—that far too many heavy horses were being raised, and that a reaction was bound to set in.

Judging from the sayings of these wiseacres this reaction should now be long past due, and yet what do we find today? Why, the demand for first-class geldings or mares of suitable age, weighing from 1,400 pounds upwards, is still in excess of the supply, and the prices commanded by such horses have always been eminently satisfactory and profitable. Notwithstanding the general depression which prevails all over this continent, and the almost ruinous prices going for cattle, hogs and all kinds of grain and other farm products, it is a fact patent to all interested that good grade draft horses have maintained their value much better than anything else. In fact, they are about the only commodity on which the farmer is allowed to set his own price.

### Quality and Size.

The quality and size of the average draft horse in this country today compared with that of 10 to 15 years ago show a wonderful advancement—an advancement which may be considered phenomenal—and I think nobody will

dispute that this improvement in draft horses has been a source of benefit and profit to the whole country.

It is doubtless true that in certain sections of the country there may be too many draft stallions, and consequently the terms of service are so reduced as to make the business unprofitable to the stallioner, but after all this is an evil which ultimately rectifies itself. What is needed is a more thorough distribution and also better horses. There are yet many counties in some of the Middle and Western States, not excepting Wisconsin, where not a single pure bred draft stallion can be found, and others where the people are only beginning to recognize the necessity of raising heavy horses, and appreciate the benefits to be derived therefrom.

### Fewer Losses By Blemishes.

One great advantage which the draft horse breeder has over the breeder of road horses is that he has fewer sacrifices to make on account of blemishes or imperfections. If a road horse or carriage horse has a deformity however slight, or happens to throw out a small curb or spavin or even a splint or gets cut on the barbed wire—or as friend McKinney used to call it, "That barbarous wire"—it invariably detracts greatly from his selling value. Not so with the draft horse—very little allowance having to be made for a small blemish on him. This enables the draft horse breeder to get a better average price on his sales. I don't wish to speak disparagingly of light horses—they occupy a very prominent and important part in

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the horse breeding of America, but as an illustration of my argument I will suppose a farmer raises six trotting bred or roadster colts and the same number of draft colts annually. The first named, as everyone knows, require considerable more care and attention, and an extra expenditure of time and money in fitting them for the market. Out of the six colts raised he sells perhaps two of them for \$200 each, other two for \$150 each, and two, which in all probability are more or less blemished or inferior, bring \$100 each. This, I think, is a very liberal estimate, and leaves an average price of \$150 per head. I have not taken any account of the chance there always is of producing a fast trotter. While such chance always exists, and doubtless lends a fascination to the business, the experience of at least nine-tenths of breeders generally is disappointing, and it is scarcely worth while making any kind of reckoning where the chances are so extremely small.

#### A Better Average.

The six draft colts may reasonably be expected to bring an average of \$200 each, or \$50 per head more than the roadster colts, and if allowance is made for the early age at which they become marketable, the small expenditure necessary to fit them for the market (as they need very little breaking, and absolutely no training) and the greater immunity from blemishes of all kinds, I think that farmers and breeders generally will agree with me that there is a difference of at least \$50 to \$75 on each colt in favor of the draft horse. I do not mean to say that there is no profit in raising light horses. On the contrary I am satisfied that with the proper kind of mares, bred to good sized, well-rounded and well-bred trotting or coaching stallions the farmers can raise a class

of colts that will yield him an excellent return and find a ready market at all times at good paying prices. In order to do so successfully, however, a greater amount of scientific knowledge of the art of mating and familiarity with blood lines is necessary, and above all things the mares must be especially adapted to the purpose, being themselves well bred, of good size, form, action and disposition and thoroughly sound. Of course such mares are not too plentiful and always command especially good prices.

#### A Good Dam Necessary.

This question of the dam proves a stumbling block in the path of progress made by the average breeder of all kinds of stock, and it should be borne in mind that no animal of any great excellence has been the produce of a poor mother. Farmers should as far as they possibly can sell off their worst stock, but retain their best brood mares and try to increase the number of them as opportunity offers. In breeding his mares the farmer should always patronize the best stallion within his reach. A few dollars extra for a colt is money well invested when you get the best there is in the market, and remember that the board bill of a scrub is as high as that of the thoroughbred.

#### Pure-bred Stallions Pay.

The Farmers' Review of Chicago, after a very exhaustive investigation of the subject published last year, arrived at the fact that throughout the middle and western states the average price paid the producer of grade draft horses, that is, horses sired by imported or pure-bred stallions was \$167. The same report showed that the average price for horses got by grade and scrub sires was only \$87. These figures are indisputable and ought to teach farmers generally a wholesome lesson, although I rather think it



is not necessary to apply the argument to the farmers of Rock county. The day has long since gone by for profitable breeding from anything short of the best sires that can be got, in any department of live stock.

Although it is my purpose to leave the discussion of this subject to others, I may anticipate one or two questions which may probably be asked.

#### The Horse That Pays.

First—Is the high grade draft horse the ideal farmers' horse? Every farmer must reply from his own experience. Many doubtless consider him the best horse for general purposes in the world, while others might prefer a lighter and swifter moving horse for farm work, and for long distance traveling. I am of opinion that the ideal general purpose horse, or horse suited for all kinds of work, is something approaching an impossibility, and that time will show the folly of attempting to breed for such. Draft horses are not trotters nor buggy horses, and never can become such without spoiling their valuable draft properties, and so with road horses. To make them pull heavy loads simply unfits them for the special work for which they are adapted. So long as grade draft horses are suitable for farm work, command a ready sale at good, paying

prices, and the demand more than equals the supply, it is surely wise policy for farmers to raise them, no matter what their individual tastes may be.

#### The Best Will Always Pay.

Another important question which will naturally occur to men's minds is whether the present demand is likely to last, and what the prospects are for farmers selling to advantage the colts they are now raising. The best authorities agree that the number of horses used up and worn out on the streets of all the large cities is so enormous that, at the present rate of breeding, many years must elapse before the market can possibly become glutted with surplus stock, or that good draft horses will fail to bring a remunerative price. You will observe that I qualify that statement by saying good draft horses. There will always be a surplus of the poorer kinds on which there is no profit to the raiser nor credit to the handler of them, but if farmers will only stick to their best brood mares, or if they have no good ones try to get a few and breed them to the best draft stallion within their reach—if they do this consistently, and use ordinary judgment and care in this business, they can hardly fail to make a success of, and profit from, the breeding of draft horses.

## A WORD ABOUT COACH HORSES.

By A. O. FOX, Oregon, Wis.

### Horse Breeding.

The business of horse breeding in Wisconsin is in its formative period. Within ten years vast blocks of money have been invested in the business; until today the horses of our state are assessed for more money than all the cattle and sheep and hogs taken together.

The time has come when we no longer can afford to breed promiscuously; great deliberation must be had in the management of this vast property, if it is to mean a future continuous, financial success for the farmers of our state at large.

The problem of selection, is the one of all, which we must now study, and upon our comprehension of which, must depend our future success as breeders.

The bright sunshine of intelligent thought, must pour its grateful rays through the dense fog of our stable atmosphere. The day is gone forever, when the farmer can stoop to listen to the senseless harangue of the cross-roads "hoss-man," who, bloated with his own ignorance, pompously seek to extoll the qualities of his own stock, by maliciously ranning down the stock and character of his neighbor.

### The Breeder, Must Read and Study.

The farmer of today, who would be a breeder, must read and study, and know for himself the lines of breeding best adapted to his purpose, and to be able to discover at a glance, whether the horse is bred as he requires. He must be able to accept or reject upon his own judgment, and to know that the class of men who stay back in the old ruts and

ridicule his choice, are themselves away short of the standard. Like the old mare of Bobby Burn's "they are relicts of the past, they're old has beens, they're a be dil'd wie the spavie in their heads."

As a tribute to the memory of this abominable class of men, well may we join in the sentiment of Junius, in his celebrated letter to the Duke of Grafton, that "we owe it to the bounties of Providence that the deepest depravity of the heart is sometimes strangely united with great confusion of the intellect."

### Draft Horse vs. Trotter.

For the past twenty five years the American horse breeders have been bent upon the production of two extremes, the heavy weight draft horse and our most wonderful American horse product, the light weight, low-striding trotter. These both have their useful spheres, but in the mad and indiscriminate rush for their acquisition, there has been produced in the one extreme too many big, lifeless, flat-footed, soft-jointed bullocks, with legs full of coarse hair, of little utility and very short-lived; and in the other extreme we have too many short-necked, narrow-chested, nervous little trotters, whose ability to trot is only demonstrated after the expenditure of a snug little sum of money, and which, if they cannot trot, and trot fast, are of very little use to the farmer who had raised them, and must be kept at further expense, until they can be marketed as roadsters at about six years of age. I am well aware that I am on dangerous ground in thus expressing myself, but I

am certain that the majority of conservative breeders will endorse my statement, that the breeding of the typical trotting horse for profit, is a very hazardous business for the general farmer to embark in, *except he be unusually well posted in pedigrees and possessed of considerable spare capital, a cool head and unerring judgment.* (Bear in mind my exceptions.)

#### Coaching Horses.

Progressive breeders have begun to realize these two dilemmas and they are casting about for the material, with which to establish a class that shall combine to a great extent, the utility of both kinds, without some of their objectionable features; that will meet the popular demand for coaching horses, and that will at the same time perform their full share of farm labor from the time they are three or four years old, until sold off the farm.

In offering to the farmers anything digressing from the common draft horse, there is one important element which this horse must possess to a great degree in common with the draft horse, or he will not be acceptable, that is, early maturity. The farmer who lives in the great corn belt on lands worth from \$40 to \$75 per acre, cannot wait five or six years for his horse to reach a remunerative age, and pay taxes and interest on the investment. His horse must begin at three or four years of age to perform the labor of the farm; he must at that age have attained sufficient size and substance to meet the wants of the general public. He should at four years old stand 16 to 16½ hands high and weigh in plain flesh 1,250 to 1,350 pounds. He should have a smooth, well-matured body; strong, clean limbs, with plenty of bone; and not a sign of coarse hair about the limbs or feet. The feet must be of

the very best, for in this class of horses above all others, where fine knee and hock action is required, there must be a first-class set of feet to sustain it.

In producing this class of horses, where shall we find the best material? If it were not for the lack of the element of size and its early maturity, I should believe that we should find better results in careful selections among the largest families of the American standard trotting-bred horse than from any other source.

#### The American Trotting-Bred Horse.

We find among the American trotting-bred horses some with high class pedigree, that combine a strong standard inheritance with the further attributes of size, style and color with sufficient of the right sort of action; but upon inquiry about the individual we find his qualities not common to his family, and that he does not impart his size and style to his get.

There are a few instances where our best bred American trotting sires have been celebrated for their size and style of their get. Notably among these are Edwin Forrest 49, Mambrino Patchen 58, Harnson Chief 3841, and Indian Chief 832. The Kentucky Hylanders have also produced many fine carriage horses.

Undoubtedly among the get of these horses and their descendants are to be found as fine specimens of coachers as are attainable, but there are so few of them that if all were put together, they would not equip more than two or three breeding establishments, and they are not, therefore, as a class, within the reach of most of our farmers. It is worthy of notice that in looking at the breeding of these named horses, we find a very strong impregnation of thoroughbred blood, especially on their dam's sides. This coupled with the fact that

the best coachers produced in Europe, are strongly of thoroughbred origin, may be of value to us in making our selections.

#### The Dam.

The mares which we have within our reach to breed coachers from, are lacking more in size and bone than in any other quality. Trotting-bred mares can be found in nearly all sections with fair style and action, but they are too small and fine in the bone. It is fair to assume that in breeding for coachers the majority of breeders will use this class of mares because they are the most common and easily obtained, and as a rule the graded draft mare will not be found to possess the ability to reproduce sufficient style and action. Few can afford to import or buy the imported mares. When they can be found there are no better mares for coach horse breeding, than our largest trotting bred mares, but they are scarce and are now held in such high esteem, that they are quite as high priced as the best imported mares.

#### The Stallion.

In selecting our *sire*, therefore, for crossing upon these medium sized mares we must look sharply for plenty of size and an abundance of broad, clean bone. He must at 4 years old stand 16 to 16½ hands high, and weigh in plain flesh 1,300 to 1,450 pounds. His color must be clear and rich and without bad marks. His shoulders should slope gracefully back, and he should stand well up in the withers. He should carry a lengthy, well-arched neck surmounted by a cleanly-chiseled head free from meat. He should have a clear, full, expressive eye and the visage of a thoroughbred. His back should be of medium length, not too much inclined to arch, and

coupled strong in the loins to a long, smooth hip. His tail should come out well up and float gracefully behind when in motion. He should have a good depth of girth, and a well sprung barrel. His limbs and feet should be absolutely sound, not too long between the joints and not too straight in the hind legs, that he may have his feet well under him, and an easy, graceful hock action. His action should be high, bold and square, and with sufficient speed to roll off from eight to twelve miles an hour with ease and grace. His disposition should be spirited and intelligent.

#### The American Trotter.

If, in making this selection, we can find a predominance of these qualities, in a high-bred American trotter, with the *ability to reproduce* them, I believe we have the best to be had.

If, on the other hand, we are to look abroad, among the European breeds of coachers for our sire, we must keep clear of the thick-chopped, meaty-hocked, drafty sort, and look sharp for high quality with purity of action. Many of the imported horses offered us are very unevenly balanced in their action and are not level. They may lift themselves square in front, and appear well when approaching, but when once their hind end is turned there is noticed a lifeless swinging of the hind parts entirely out of keeping with their forward action; in others with hock action almost to the extent of stringhalts we see a stiff bending of the knee, and bad dishing in front. In many the tails set on too low in the rump, a very bad fault in a carriage horse.

#### The French Coacher.

Among the several breeds of imported coach horses offered us, I believe the French coacher to be the best adapted



to our needs. He matures very early into a large horse, and while possessing wonderful substance and bone, he still has preserved the high finish of his thoroughbred ancestors, and his action when in motion is the most perfect and most evenly balanced of any of the imported breeds.

The question as to whether the French coacher will reproduce himself on our mares, cannot yet be said to have been fully demonstrated; but it is rapidly reaching that point. Many who have been making this cross for the past several years are highly pleased, and careful observers who have been watching the results, are now beginning to put their money into it, in a manner which shows their convictions.

#### A Bone and Muscle Ration.

But whatever sire we use, I believe there is still another important element, the full recognition of which is essential to our success; namely, the

kind of feed with which to mature our colts, so as to assist in the development of a large active horse with clean, strong bone, and well muscled throughout. If we may hope to avoid the meaty, lifeless, soft-jointed, round boned sort; if we may expect to develop the bones and muscles of our horses to the greatest strength and soundness, we must see to it that our colt's food is of the bone and muscle-forming sort.

The recent experiment made in hog feeding by our Prof. Henry, of Wisconsin, by which he shows the wonderful effect of nitrogenous foods upon the strength and quality of the bones, and the amount of muscular tissues, is a timely admonition to the western farmers, that if we wish to grow valuable horses, it must be done with less corn, and more of such foods as will give a uniform and even development, that at four years old will produce a strong sound, whole horse.

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## CAN THE WISCONSIN FARMER PROFITABLY BREED ROADSTER HORSES?

By JOHN L. MITCHELL, President of State Agricultural Society.

If Mr. Morrison had consulted me about the soundness of a certain horse, my opinion would have had weight, because I deal daily with horse infirmities. A moot point in pedigree, also would have found me fairly well informed. But the economic question—"Can the Wisconsin farmer profitably breed roadsters?"—I am at a loss to answer with authority.

#### Recreation Exercise and Profit.

Horse raising and horse driving have

been for me a matter of recreation, exercise and health and not of pecuniary profit. I have never overhauled my horse accounts for fear that the balance would be on the wrong side and thereby mar the pleasures of the pursuit. Mr. Morrison's query, however, has led me to a little horse introspection. If not tedious I will give some figures. During the last three years I have sold for cash (no trades nor ballooned prices), 18

head of trotting bred animals, as follows: Four aged mares at total of \$2,700; 4 four-year-olds, at \$4,750; 1 three-year-old at \$1,750; 3 two-year-olds at \$1,350; 4 yearlings at \$740, and two weanlings at \$1,100, making, the all told, \$12,390, an average of \$688 per head. Eight of these animals were purchases which, on trial, I thought it advisable to dispose of. The remaining ten were of my own breeding. The average age of these last, at the time they were sold, was 1½ years and they brought an average of \$424 per head. With the exception of an aged mare and 3 four-year-olds they had never worn harness. They were sold on their pedigree and individual promise solely.

On their face such prices look profitable. On the expense side, I find that I paid \$850 in stud fees for these ten animals. I carry thirty head of horses, more or less. They cost me in board and wages for the men, in oats, hay and straw, shoeing, harness, in round numbers \$3,000, or \$100 per head per year. Then there is interest on a hundred acres of land used for pasturage; interest on money invested in stock and buildings. After figuring this all up I find that my colts at 1½ years stand me in \$300 apiece, leaving \$124 to the good. Something should be donated for death, disabling accidents and veterination in brood mares. Allowing for this, I still find myself ahead in the breeding venture, with all the fun, fresh air and the pleasures of hope thrown in.

#### Roadsters at a Profit.

With me, extravagant sums have been paid for brood stock, little attention has been paid to economy in management and no especial effort has been made to advance sales, or obtain high prices. Having this in view, I am convinced that the farmer of Wisconsin can raise

roadsters at a profit. But to do so, he must give the business close personal attention—neglect and preventable accidents soon ruin the business. Above all must he have a liking for the pursuit, a natural gift in that direction.

Wisconsin winters are longer than in more southernly states, where horses can be pastured to advantage. But to counter balance this we have cheaper feed and a more healthful air. The neighboring state of Michigan is situated very much as we are in the matter of climate and market. Should Mr. Morrison ask a Michigan farmer the question which he has put to me, he would be answered in the affirmative, without hesitation. The production of trotting horses is a great industry in Michigan—one that pays handsomely.

It is true, buyers do not flock to Wisconsin as they do to Kentucky, with over-fat purses in search of would-be world-beaters. Still, we have a steady remunerative market for sound, enduring, speedy roadsters. The supply is far from being up to the demand.

#### Richard Richards.

That a Wisconsin farmer can raise roadsters profitably has been demonstrated by the late Richard Richards, of Racine. He settled in that county, at an early day. He had little, or no capital. His horse beginning was small. His foundation of stock cost him hundreds where others expended thousands. But he was a genius in his way. Through the breeding of trotters he accumulated a snug fortune and achieved a national reputation. His methods are instructive. To mate with the common run of mares, he started with a horse called Bellfounder—a horse of size, finish and action, to Messenger and Ziomed. To breed to Bellfounder's daughters he went to Kentucky and

bought Swigert, by Alexander's Norman, dam by Mambrino Chief. Swigert proved to be a remarkably successful sire. He has been of great value to this state and the whole northwest. To put the finishing touch, Mr. Richards purchased an inbred Hambletonian, Alden Goldsmith. In blood lines, Mr. Richards did not follow the fashion—he kept a little ahead of it. He was prophetic. But he was never blinded by a pedigree. He insisted upon having a horse as well. Him he selected with unerring eyes.

**The Purse-Winner—A Will o' the Wisp.**

While I am confident that on the cheap and fertile lands of Wisconsin and in its salubrious climate, roadsters can be raised profitably, I do not advise the farmer to try his hand at producing the track trotter. He will waste his midnight oil in dog-earring the 2:30 list. The purse-winner is a will o' the wisp which he will capture only in his dreams. There is not one in a hundred of the standard-bred trotters that shows enough natural speed to warrant the costly experiment of track development, of those that do, not one in a hundred ever earns his oats in actual races. The prices paid for the Axtells and the Sunols are dazzling, the thousand of failures are lost in obscurity.

The Wisconsin farmer need not face the financial result of the breeding of fine horses, providing he applies himself faithfully to the business. The horse breeder's calling is a high one. Let him bring to it not only his intelligence, but his conscience. The handiwork of the

manufacturer perishes and leaves no trace behind. But the horse breeder builds for all time. Let him therefore, devote himself to the creation of a type of horses possessing beauty, action, soundness and good sense, so that to the remotest generation, they may carry their owners with pleasure and safety to the end of the road.

SUPT. MORRISON — The title of the next paper is, "Wasteful Management of Farms and Lazy Acres, the Cause of Hard Times in Farming."

This paper was prepared by Hon. Hiram Smith, who had hoped until recently to be present, but on account of illness is prevented.

More to Regent Smith than any other man are the farmers of Wisconsin indebted, not only for the Experiment Station and its efficient work, but also the Farmers' Institute. Months before an institute had been held, they were patiently outlined by him and with confidence in the intelligence and enterprise of our farmers, he felt that they would be successful, and from the richness and fullness of his experience he has always been willing to give the best he had to advance the agricultural interests of the state. Mr. H. C. Thom will read the paper.

H. C. THOM—It will probably never be my lot to again stand as the representative of a man who has a reputation such as Hiram Smith has earned in Wisconsin, and it does me much honor to even read a paper that he has prepared.

## WASTEFUL MANAGEMENT OF FARMS AND LAZY ACRES, THE CAUSE OF HARD TIMES IN FARMING.

By HON. HIRAM SMITH, Sheboygan Falls, Wis.

### Leaks and Wastes.

Mismanagement in dairy farming and unproductive acres, is the procuring cause of most of the wide-spread depression now so loudly complained of, by the great majority of dairymen in this and other localities. The annual waste of fodder on the large majority of farms is often equal to the amount utilized. Mr. Horace E. Stockbridge, director of the Experiment Station of the state of Indiana, says in Bulletin No. 29, that "careful inquiry and observation extending over the entire state, forces the inevitable conclusion that as much nutriment in the form of fodder is wasted every year as actually finds its way into the digestive systems of the farm animals of the state." Let us pause and consider for a moment the deep significance of this statement if it is true. It is very easy for the careless and unthinking farmer to dispose of the unwelcome charge, by saying I don't believe it is true, but the careful and observing dairyman has no question of its entire truth, many intelligent dairymen know from their own bitter experience that the statement is a very mild one.

### Criticise Thyself.

Many farmers are very ready to ask questions of others and this is all right, but real progress begins when we ask questions of ourselves, when a man begins to talk to himself in earnest, made more earnest, when total receipts from the farm, are less than the legitimate ex-

penses of the family, a man in this condition is not apt to have much nonsense in his questions, or answers. The man says to himself, I have eighty acres of land and I have never been able to keep more than fifteen cows, and these cows average about \$30 per head, total receipts \$450, and I have to pay one hired man eight months, his wages and board cost not less than \$150, leaving but \$300 to pay taxes, farm machinery, repairs and board and clothe the family. I tell you, that my wife and I work more hours and for less wages than any miners or operatives that ever struck for higher wages. Again this man says to himself, I have this farm, and have always worked at farming and don't know any other business, what shall I do? The capital I have invested in the farm don't bring me in anything. I don't even get good wages for my work, and nothing for the hard work of my wife, not even good clothes, no recreation and but little reading matter for the family, I know it is hard and the question for me is: Is this condition of things a positive necessity? I know that some farmers keep more cows than I do, they keep double the number on the same number of acres, and I have heard that some dairymen keep forty cows on eighty acres, but I don't believe that, but if I could only keep twenty-five cows, it would bring in \$400 more than I now get and that would want only one more milker, and my wife really needs a good hired girl,



and that would make all the milkers we would want.

#### Success and Courage.

The man begins to take courage, and says to himself \$300.00 a year more and only the expense of a hired girl, and we ought to have the girl any way, if we could afford it, now the main question is how can I manage to raise fodder for ten cows more? It is the fodder I want, because the skim milk or whey from twenty-five cows will make pork enough to buy the bran or oil meal I ought to have. Now I have read or heard somewhere, that this large fodder corn will produce fifteen, twenty, thirty and sometimes forty tons to the acre. Now I don't believe a word about thirty and forty tons to the acre, but perhaps I can raise twelve tons. It is said by many dairymen that a cow will eat about fifty pounds of green corn or ensilage per day, so I see by this that an acre of corn fodder if it only produces nine tons will winter two cows, and if it will produce thirteen and one-half tons per acre it will winter three cows. Now I have made up my mind in talking to myself that I will send off and get a sack of sweet corn, two and a half bushels, and that will plant ten acres. I will try it any way. The relation of this imaginary case may seem to some a trivial affair, but it is the true history of hundreds of progressive dairymen throughout the country, it is the most important step the man has ever taken in his farm life, and becomes a memory in after years, as the turning point from penury to prosperity.

#### On the Up-Grade.

Now mark his subsequent history if he is a resolute man. He planted the ten acres of fodder corn, and in anticipa-

tion of the possible success of his new departure, he raises ten heifer calves, the corn proves a large crop; and by the first of January he finds he can sell \$200.00 worth of hay and still have plenty of fodder; with the \$200.00 from the sale of hay, he buys five cows, so that he is milking twenty cows the first year after conversion to improved methods of farming. The second year his ten heifers are in milk and he is milking thirty head, and he plants twenty acres of corn, and plows up ten acres of his old pasture, and sows to winter rye, clover and millet for soiling, when pasture is short, thereby keeping up the flow of milk so that his thirty cows average a production of thirty-five dollars each, raising the total receipts of the farm to \$1,350.

#### A Brighter Picture.

This is a true history of hundreds of dairymen in the state, who have had the sense to change the old methods of pasture grass for summer, and mainly hay for winter. What is the conclusion of the whole matter? It is this, in place of nothing as net receipts under the old method, he now has \$350.00 at least, his land is growing more and more productive, his cows are grading up to larger production, he has raised his wife from a mere drudge, to her rightful prerogative, a well dressed, good looking, agreeable companion, he has kept one more boy and girl on the farm, he is more self reliant, more independent, a bigger and better man. Is there a man present that ever knew a man that raised good fodder crops, carefully preserved them and fed them to his own stock without waste, that was a poor man? One thing the timid or inexperienced dairyman should not forget. That if the skim milk or whey from fifteen cows, will raise calves or pork enough to buy the bran and oil meal for fifteen cows, then any increased number of cows, thirty, fifty or one hundred will do the same thing, cultivating and enriching lazy acres, and the cultivation preservation and final utilization of the fodder crops, is the keynote to successful farming.

## BEEF SESSION.

SUPT. MORRISON—This is probably the last opportunity I shall have this winter of saying a word in justification of the Farmers' Institutes. I find that there are many farmers scattered through every county who seem to be prejudiced against the Institutes. Why, bless your hearts; it is the development of your special vocation. Every farmer in the state should be proud of this awakening, and if it does not come up to their ideas of Institute work, if it does not deal with the practical questions that confront them every day upon the farm, they are the very ones that ought to take hold and make it what it should be. It seems to me a man has not got to have much forecast to look into the future and see that unless a work of this kind is fostered and encouraged, the farmer is going to be nothing but a laborer and in time nothing but a serf and peasant. If the farmers of Wisconsin do not themselves wish to elevate their business and vocation, the business men and professional men certainly will not help them to do so. I have been upon a farm nearly all the days of my life, and all the hope and pride I have is in the farm, and I would like to see the farmers of the state of Wisconsin think so much of their business and become so well posted in it that they would be proud of it, proud to say that they are farmers, and throw into it all the efforts, all the study, all the attention possible, and then it is going to rise right along with them.

I want you to remember there is no

politics in a farmers' institute, any more than in a Sabbath school. They are intended to train the farmers of the state in such a way that they will be able to stand upon their feet and express their views in reference to farming matters, and just the moment they become men endowed with thought they become God-like, and then they will avail themselves of the privileges and rights that belong to them. Consequently I don't want the farmers of the state to throw stones at the work, but take hold of it, and make it what it should be, and when we come to have a thousand institutes scattered over Wisconsin, and perhaps a dozen or more in this county, and the farmers come together and pool their experience, then farming will become a profession and we will be proud that we are farmers.

The first topic that we will introduce is not on the programme, but will be presented by Mr. J. M. Smith, President of the State Horticultural Society. He is going to tell you how he produced 1,736 bushels of potatoes on four acres of ground.

J. M. SMITH—Before I read my paper I wish to say a word in endorsement of what our friend Morrison has said. We all of us know what he is and know the work that he has been doing, and sometimes when I read in some of my agricultural papers how the farmers are oppressed it makes me tired; it makes me sick and out of patience. Whose fault but our own is it that we are dumb. We don't understand our business. We

don't do what we might do; we don't do what we ought to do; we don't do what we can do; and these institutes are for the purpose of making us helpful to one another, and the man who writes or talks against them, it seems to me, is hurting himself a great deal more than he is hurting anybody else. If we only work together we can make our lands worth a great deal more by learning the value of our land. There is no man knows the value

of his own land. I don't believe there is an owner of a ten-acre piece of land in Wisconsin that knows the actual value or worth or possibilities of his land, the worth that can be brought out of those acres for himself, and for his family and for his friends. And that is what the institutes are for, to teach us to work them better and to make more out of them for ourselves.

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## POTATO EXPERIENCE.

By J. M. SMITH, Pres. of Wis. State Horticultural Society.

**How He Produced 1,736 Bushels From Four Acres at a Profit of \$355.77.**

For a good many years past my crops of potatoes have, as a rule, been very good. For a number of years I have been very anxious to test the different kinds of potato fertilizers that have been advertised at the east, and see how they compared with those I have used for these many years on my own place. Last spring, when the American Agriculturist offered its own and the manufacturers' premiums for the best acre of potatoes, I concluded to make the long desired trial and watch the results. Selecting four acres of land suitable for the purpose, for convenience's sake, I designated them plats No. 1, No. 2, No. 3 and No. 4. They lay side by side. Soil is as nearly uniform a nature as can be found, and is a dark, sandy loam, with yellow, sandy subsoil. It was originally a fairly good soil and has been manured heavily every year for a number of years past. It has also had numerous crops taken from it. Each plat was measured off and staked

and marked by our county surveyor. The four plats were all treated exactly alike, with the exception of the fertilizers.

### Systematic Work.

A strict and careful account was kept on the different dates at which the work was done, and of the expenses of the work. They are as follows: April 23—the land was in first-rate condition to work, and we commenced plowing it about eight inches deep, and finished April 26. The land was all thoroughly surface-drained and most of it thoroughly under-drained. Commenced harrowing April 23 and finished April 29. After the land was plowed, and before any harrowing was done it was manured as follows: Plat No. 1 had twenty loads of composted manure spread upon it. The loads contained about half a cord each. Plat No. 2 had eighty bushels, heaping measure, of unleached wood ashes. No. 3 had 1,500 pounds of the Bowker perfect potato fertilizer spread upon it.

Plat No. 4 had 1,500 pounds of the Mapes potato fertilizer. All was thoroughly harrowed in.

#### The Kind to Plant.

Now came the very important question of what variety should be planted. In competing for a premium, will it be best to select some of those tremendous growers and yielders, but which are not in reality merchantable, some of them in fact of no value except for feed to stock, and not much there, or in preference some good and salable variety, and try to obtain a large yield of fine and merchantable potatoes? I chose the latter course, and planted the entire four acres with the Early Ohio. The land was marked off in rows thirty inches apart, and the potatoes were planted in drills, one piece in a place, about twelve inches apart. The seed had been cut to from one to two eyes, except at the seed ends, where there were sometimes three or four eyes upon a piece. The seed was of my own growing. I have for some ten to twelve years been selecting the finest specimens of this variety for planting, with excellent results, and did not vary my practice in this case.

#### Amount of Seed.

Commenced planting May 1 and finished May 4. The potatoes were weighed after being cut, and the average was 10 bushels 1 pound per acre. About the same amount of seed was used upon each acre, and was planted about three inches deep. May 27 the potatoes began to show sprouts through the ground, and they were well harrowed. June 15 the potatoes were cultivated and hoed. June 25 they were cultivated and hoed. In both cases the hoeing consisted in merely destroying the weeds in the rows, that could not be killed with the cultivator. The above is all the culti-

vation they received. It was intended to go through them once more, but very soon after the second cultivation a shower came, accompanied by a severe wind, which spread the tops over the ground so completely that I feared doing more harm than good by any further cultivation, and they received no more.

#### Level Cultivation.

The last time they were cultivated the shovel was put on the cultivator, and a very slight furrow, possibly two inches deep, was made between the rows. Except that, there was no hilling done, and in this case no earth was thrown against the plants, and only a very little thrown towards them. June 25 poisoned the Colorado beetles with Paris green and water, using but a teaspoonful of the poison to one ten-quart pail full of water. July 5 to 12 poisoned them again. July 25 found a few more beetles and poisoned them. The above concludes the labor of growing the crop. We commenced digging the potatoes Sept. 9 and finished Sept. 16.

#### Cost of Crop.

Plowing the four acres.....	\$7 00
Harrowing .....	4 00
Forty bushels Early Ohio potatoes.....	20 00
Cutting the same.....	6 50
Planting.....	10 00
Paid surveyor.....	1 00
Cultivating and hoeing.....	13 25
Opening drains after rain.....	2 00
Paris green.....	5 00
Putting on the same.....	9 87
Digging, picking up, heaping and covering up the potatoes.....	60 00
Total.....	\$138 92

This includes the cost of the crop with the exception of the manures, and amounts to \$34.73 per acre. Now let us add the cost of the fertilizers:

#### Cost of Fertilizers.

Plat No. 1, 20 loads of compost manure at \$1.25 per load.....	\$25 00
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Cost of cultivation.....	34 73
Total cost of the acre.....	\$59 73
Plat No. 2, 80 bushels of unbleached ashes.	\$7 00
Cost of cultivation.....	34 73
Total .....	\$41 73
Plat No. 3, fertilized with 1,500 pounds of Bowker potato fertilizer.....	\$30 00
Cost of cultivation.....	34 73
Total .....	\$64 73
Plat No. 4, received 1,500 pounds of the Mapes's potato fertilizer.....	\$30 00
Cost of cultivation.....	31 73
Total.....	\$61 73

Cost of the crop as they lay in covered heaps..... \$230 92

You will probably think this a pretty heavy expense to incur in growing potatoes, viz., an average of \$57.73 per acre, but we will now see about the receipts:

**Receipts of Crop.**

Plat No. 1 yielded 384 bushels of merchantable potatoes, worth 35 cents per bushel, and 21 bushels small ones, worth 10 cents per bushel.....	\$136 59
Total cost.....	59 73
Leaving a balance of .....	\$76 86
Plat No. 2 yielded 434 bushels merchantable and 21 bushels small potatoes, total, 455 bushels (same price).....	\$154 00
Deduct cost.....	41 73
Balance .....	\$112 27
Plat No. 3 yielded 432 bushels merchantable and 22 bushels small ones, total 454 bushels (same price).....	\$153 40
Deduct cost.....	64 73
Balance .....	\$88 67
Plat No. 4 yielded 402 bushels merchantable potatoes and 20 small ones, total 422 bushels (same price).....	\$142 70
Deduct cost.....	64 73
Balance .....	\$ 77 97
Balance on plat No. 3 .....	88 67
Balance on plat No. 2 .....	112 27
Balance on plat No. 1 .....	76 86
Balance over all expenses.....	\$355 77
Total yield, 1,736 bushels.	

I have for the sake of brevity thrown out the fractions of bushels, but the aggregate varies only ten pounds from the exact weight, as weighed out and sworn to by upright and disinterested men, who had charge of digging, picking up and weighing the entire crop. The price given is a little less than that actually received, and all are sold except 200 bushels that I had saved for seed. They were large and smooth, even in size, and in every way desirable for the market, and there was no trouble in getting a few cents per bushel more for them than the regular market price.

**The Best Will Pay.**

Now what are the lessons to be learned from the above statement? The average yield of potatoes in the Northwestern states does not exceed 100 bushels per acre, and in the Southern states is much less than that; but it will be readily seen that if I had received only 100 bushels per acre I should have run heavily in debt. Two hundred bushels per acre would have paid expenses, interest on land and taxes; though it would have left very little, if anything, for profit. But with over 400 bushels of beautiful merchantable potatoes per acre that would, and did bring more than the market price, the balance upon the right side is certainly a nice one. The season was hardly an ordinary one. It was very wet for a time, the latter part of May and early in June, and after that it was very dry. Some of the potatoes were seriously injured by the dry weather. Those that were fertilized with ashes stood the dry weather best, and as it has been seen, yielded a little the most of any, and gave by far the largest profit of any of the fertilizers used.

**Save the Fertilizers.**

At least, one of the lessons should be to

save every bushel of ashes that can be made, and then buy all that are to be had at a reasonable price. Some of your readers may say: "Our land is not rich enough for such crops, and we cannot make it so without bankrupting ourselves." Now, fellow cultivators, please listen for a moment. Five years ago last spring I purchased a large part of the land upon which this crop of potatoes was grown. It was new land, and covered with stumps and brush.

#### Thorough Preparation.

We dug out both stumps and brush so completely that one good team of horses plowed the entire piece without once striking a root or stump that held them up. We planted the piece with potatoes. The season was a fair one, but we harvested less than 100 bushels of merchantable potatoes per acre. Five years later we harvested over 400 bushels per acre of much better ones. There are millions of acres of land in these Northwestern states that are capable of growing just as large crops as here reported. They will not do it next season, because the soil is not at present sufficiently fertilized, neither is it in first-rate condition, but, my friends, you can begin to put it in better condition next season, and keep on improving it year after year until it will yield as large crops as have been reported either here or elsewhere. In short, to me it is only a repetition of the old, old story.

#### Poor Crops Will Not Pay.

Moderate and indifferent crops do not pay and cannot be made to pay. They have not paid for a number of years past and I can see no prospect of their paying any better in years to come. Very large crops have paid in the past. They will pay yet. They promise to pay

in the future. Then let us all, instead of constantly trying to increase our number of acres increase the yields per acre, and, by so doing, I firmly believe we shall make more money, have more comfortable homes and be of more service both to our neighbors and to our country.

#### DISCUSSION.

SUPT. MORRISON—How was it possible for you to receive that price for potatoes, when potato growers at Waupaca were receiving only 20 cents for potatoes?

MR. SMITH—I thought it possible that I might sell them for seed potatoes, and having a large acquaintance as I did all over the country, I wrote to a number of seed men throughout the United States, and among others to Peter Henderson; a gentleman who saw my letter to Peter Henderson and saw the offer I made to him, wrote to me as soon as he saw the letter and said to me, I will take a car load at the price you offered to Mr. Henderson, and I sent him a carload, and a carload to a commission firm in New York city; I told them the potatoes were perfect, that they couldn't find any potatoes but what were just what I represented them to be, perfectly sound, pure and good in every way, and they brought me considerably over 35 cents; they brought me seven cents above the market price simply because they were extra nice.

SUPT. MORRISON—The point I wish to make for the report is that it is one thing to raise a big crop and another thing to market it.

J. C. MARTIN—Do you regard that as a reliable market that you put those potatoes on, or is it a sort of special market? Is it on account of your reputation as a horticulturist or on account of

merit in your goods that you can secure these good prices?

MR. SMITH—My reputation would amount to very little if I sent a poor article on the market. I study up the markets of the country and if there is a deficiency in any part of the country I find it out; I find out the rates of freight; I find out some good reliable dealers there in that line; if I don't know them I find out who they are; and whether they are in Kansas or in New York or New Orleans or somewhere else, and I don't know why farmers generally can't do the same thing.

J. C. MARTIN—You dodge the middle man?

MR. SMITH.—Yes, I get just as near to the consumer as I can.

WELDON VAN KIRK—How do you get the reliable dealer?

MR. SMITH—One way is to go to Bradstreet's, and if I don't know any other way I go to the reports and find out some man dealing in such or such a business, and write to them, but generally I know somebody, somewhere in that neighborhood that I can write to and say, "Hunt up some good reliable man and let me know about them," but if I don't know of any one there, I go to Bradstreet's.

C. R. BEACH—Do you use leached ashes or unleached.

MR. SMITH—Unleached.

QUESTION—The gentleman stated in his paper that a rain storm came prior to the time that he intended to cultivate the potatoes last, so that he could not cultivate them, on account of spreading the tops. I would like to ask if you think the cultivation, if you had got it performed before the storm, would have done those potatoes any harm, or would have done them good in the aggregate of the crop?

MR. SMITH—I can't answer that; I intended to have gone over them for the sake of stirring up the ground a little more and keeping it a little looser; I don't know whether it would have added to the crop or not.

QUESTION—I would like to ask the variety of the crop?

MR. SMITH—Early Ohio.

THOS. CONVEY—What importance do you attach to the use of good seed?

MR. SMITH—A great deal of importance.

JAMES JACKSON—Do you bank your potatoes?

MR. SMITH—No, sir; they were not hilled.

JAMES JACKSON—Do you believe in open cultivation, or would you have hilled those potatoes, provided the weather had been proper?

MR. SMITH—I would not have hilled them.

JAMES JACKSON—I have found that the potatoes I hilled were far superior to the ones I didn't hill. Of course I used none of the fertilizers; only the barn-yard manure.

MR. SMITH—How deep do you plant them?

JAMES JACKSON—I believe about three inches under the surface.

MR. SMITH—How deep was the land plowed?

JAMES JACKSON—Probably eight inches deep.

MR. SMITH—What kind of soil is it?

JAMES JACKSON—Clay sub-soil.

MR. SMITH—I find that the largest crop that I have ever known of was grown by flat cultivation. This was not quite flat; we put on the shovel the last time through them and made the furrow two or three inches deep, and threw the earth toward the potatoes, but no earth went to the tops, so it left the ground a

little sloping toward the potatoes and a heavy rain would have run in toward them.

A. O. HINMAN—How far apart were the rows?

MR. SMITH—They were thirty inches apart and the pieces about twelve inches apart in the row.

C. I. BRIGHAM—Might not hilling be of advantage in a wet season?

MR. SMITH—I think it would in a dry season, particularly if not thoroughly drained; my land was thoroughly drained.

JAMES JACKSON—Isn't hilling of advantage in a dry season; doesn't it help to hold the moisture in?

MR. SMITH—No, I don't think so.

JAMES JACKSON—Doesn't the constant cultivating of the soil in a dry season tend to hold the moisture more than letting the soil lie still?

MR. SMITH—Yes, it does a great deal more; you can almost get clear of any ordinary drouth by constant cultivation.

JAMES JACKSON—In those potatoes of ours, those that we didn't hoe, there were some weeds that came among them, more than in the potatoes hoed by hand; now was that the cultivation that made the extra crop, the extra hoeing, or was it the weeds that made the poor potatoes?

MR. SMITH—Very likely both; I don't believe in weeds?

H. P. RUNDLE—Are you troubled with potato bugs, and if so what is your remedy?

MR. SMITH—Yes, we are troubled with potato bugs; we go over them with Paris green and water; put in about half a tablespoonful of Paris green to a pailful of water and put it in a sprinkling pot and just sprinkle them over; we can destroy them very readily in that way.

H. ROBBINS—Would you use land plaster if you couldn't get the ashes?

MR. SMITH—I have not used plaster on my land for many years.

A. O. FOX—I would like to ask if you have ever found that Paris green sometimes injures the plants?

MR. SMITH—It will injure and destroy any plant if you make the water too strong of it; I made my first use of it a good many years ago, and I killed everything I put it on to; potatoes will bear it stronger than most any other plant that I have ever used it upon.

J. M. TRUE—I am anxious to know, Mr. Smith, whether you think that wood ashes would be found equally beneficial upon all kinds of soil? For instance upon the black loam soil like the one described by Mr. Jackson?

MR. SMITH—I don't know about that; with me it is a remarkable fertilizer; we consider it better with potatoes than any compost heap manure, which we consider the best manure. Besides, nothing that I have ever used or seen used is equal to ashes as a protection in time of drouth.

J. M. TRUE—And isn't it a fact that moisture is especially necessary?

MR. SMITH—Yes, sir.

C. P. GOODRICH—I wish to get some information about the time to dig potatoes. Now, these early potatoes planted early will ripen early, the last of August or first of September, now if you want to keep those potatoes over, what time would you dig them, as soon as they ripen or leave them in the ground?

MR. SMITH—I would dig them as soon as they were thoroughly ripe.

C. P. GOODRICH—How would you take care of them in the warm weather?

MR. SMITH—Put them in heaps of anywhere from 25 to 30 or 40 bushels on top of the ground, and cover them over



with a little straw, and then a couple of inches of earth, just enough to keep the rain out, and leave an opening in the top to let the moist air out, or for ventilation, leave them there until the ground begins to freeze in the late fall, and then put them in the cellar, and in that manner I have never failed to keep them nicely.

R. D. SEELEY—Do you reject the small potatoes in preparing for market?

MR. SMITH—Yes, sir; throw out the small potatoes.

R. D. SEELEY—Do you approve of planting small potatoes.

MR. SMITH—No, sir.

R. D. SEELEY—What disposition do you make of your small potatoes?

MR. SMITH—Boil them up and feed to the hogs mixed with other things.

R. D. SEELEY—Are you satisfied that the small potatoes don't produce as large potatoes when used as seed?

MR. SMITH—I think you wouldn't notice the effect in a year but the inevitable effect would be to ultimately ruin the crop.

JAMES JACKSON—In answer to Mr. True's question as to the ashes as a fertilizer on our soil I would state that I have been hauling ashes for a number of years on to this piece of land where we had these potatoes. We had about a fourth of an acre of potatoes and we raised probably about 80 or 90 bushels, which I considered quite a crop, from a fourth of an acre, and I attributed the success to the use of the ashes as a fertilizer largely, of course I used some stable manure besides. In regard to potato bugs I would state that we have a zinc white establishment at Mineral Point close to our place, and I got some of the zinc white to kill the potato beetle, and it killed them effectually,

and I believe it was a very good fertilizer for the potato also.

J. S. JONES—What do you mean, Mr. Smith, by the ground being under-drained?

MR. SMITH—It was under-drained with tile.

J. D. JONES—I would like to know how you would apply commercial fertilizers to potatoes?

MR. SMITH—By putting them on the top of the ground after plowing and harrow them in; all fertilizers are put on in the same manner and harrowed in after plowing.

GEO. MCKERROW—I would like to ask Mr. Smith if he thinks it advisable to plant whole seed, and do you get better results from it?

MR. SMITH—The experiments at our state station and in New York have shown a slight increase after planting whole seed, but it is doubtful whether it is enough to justify us in planting whole seed in potatoes like the Early Ohio, or any of those where you can get large pieces having a single eye.

I have practiced for a number of years cutting potatoes in a certain way; if you take a potato and cut it into slices and hold it up to the light, if it is a good healthy potato you will see something apparently like roots running from the eye down toward the stem end. Now our scientific men tell us that they are the feeders of the sprout when it first starts. I have taken that for granted and have cut them toward the stem end. If the eyes are close together we cut two eyes on a piece, and toward the stem end there are often three or four eyes on a piece. That is the way we cut our potatoes and we have been uniformly successful. I don't think we have had a crop of potatoes in our home garden for a good many years, but what

would have run, if allowed to ripen, and where they have been allowed to ripen we feel sure of three hundred bushels to the acre, and we should hardly be satisfied if they didn't go as high as that.

J. M. TRUE—Is it advisable to put potatoes in a cellar where there is no light, during the latter part of August or the first of September.

MR. SMITH—I should prefer to pit them outside, from the fact that they are more exposed to the air in the cellar, and the quality of the potatoes might be affected in the cellar.

MR. FRANCE—Is there any danger of getting too much ashes on the land?

MR. SMITH—It is possible to get too much ashes on, but I think there is not much danger of it. That reminds me of one of my neighbors who was in my garden when I was putting on ashes. He said, Smith, do you like ashes for a manure? I said, of course I do or I wouldn't spend so much time and money for them. He said, I put them on my garden two inches thick on top and nothing has ever grown there since. I told him there wouldn't probably anything grow there for some years to come.

SUPT. MORRISON—When you store your potatoes eventually in the cellar do you have them covered over or do you exclude the light?

MR. SMITH—My cellar is a very dark one; if it was a light one I should have the potatoes covered over.

G. C. HENDY—I would like to put an acre of potatoes in this spring in sod, yet unbroken; how shall I proceed with it with the hope of getting a good crop? It is timothy mostly, and possibly some blue grass.

MR. SMITH—I never succeeded in getting a first class crop of potatoes from

timothy sod; it doesn't decay quickly enough; I have tried it two or three times but have never made it what I would call success.

G. C. HENDY—Can you hope for success in raising a crop of potatoes after corn?

MR. SMITH—Yes, sir; I do it frequently.

C. P. GOODRICH—What do you think of the practice that some follow of leaving the potatoes in the ground and not digging them until they are afraid it will freeze up?

MR. SMITH—I think it is a poor practice.

R. D. SEELEY—In your flat culture do you find any trouble with the sun burning the potatoes, which we sometimes have with us?

MR. SMITH—Our ground is as mellow as a bed of ashes for nine or ten inches deep, and very few potatoes stick out and get sun-burnt, occasionally one; on a heavy clay soil I don't know but I would hill them some.

W. H. COLE—After you have got a piece of ground in good condition for potatoes, what success do you have in raising them year after year on the same ground?

MR. SMITH—I don't raise them year after year upon the same ground; I change the ground but not the seed.

R. D. SEELEY—I would like to ask the gentleman how he prepares the ground, and how he covers them, what implement he uses?

MR. SMITH—The ground is harrowed and made just as smooth as for a flower bed; we then have a marker that is made just like the old fashioned wooden hay-rake about twelve feet long, with something put on to draw it by, and the teeth reach back nine or ten inches; the head is full of holes and the pins are

loose in the holes, and they can be put in and set for six to twelve inches or three feet or anything we like, and we put this thing on the ground and mark the rows thirty inches apart. Then in planting we give a man a hoe and a boy a basket of potatoes, and they go and commence at the end of the row; the man strikes his hoe in and draws back the dirt; the boy drops in a piece of potato; the man steps forward about twelve inches and draw back the dirt and throws it into the hole made before; so every stroke of the hoe makes a place for a potato and covers one, and in this way the planting can be done very fast. The four acres cost me \$10 for marking it off, planting the seed, etc.

GEO. MCKERROW—What crop would you prefer to follow with potatoes for the best result?

MR. SMITH—Well, a crop of potatoes leaves the land in splendid condition for almost any crop; if I was growing wheat I should try wheat.

GEO. MCKERROW—What crop would you have precede your potato crop?

MR. SMITH—Well, we are not particular about that, we follow corn very frequently.

SUPT. MORRISON—How about clover sod?

MR. SMITH—I should not hesitate to put potatoes on to it.

C. P. GOODRICH—How do you dig your potatoes?

MR. SMITH—We dig them with a six-tined manure fork, just go in and throw them out; two men will throw them out

as fast as three pickers can pick them up.

SUPT. MORRISON—We have held institutes in some of the counties this winter, such as Waupaca and Waushara and Chippewa counties, where they are raising a great many potatoes. Up in Waupaca county I found men who raise forty, fifty and sixty acres of potatoes. There they use machinery largely, for the planting and digging of potatoes. We found one man in Chippewa county who said it cost him just seven cents and a few mills a bushel to raise his potatoes. He had got the thing figured down so close that it cost him less than eight cents to raise a bushel of potatoes. He raised something like ten thousand bushels on forty acres, but off from his ten thousand bushels he didn't make as much as Mr. Smith did from his four acres of potatoes. He said he would give any man \$200 to take the crop off from his hands and pay the bills. That is a notable illustration where a man went on haphazard and raised forty acres of potatoes and didn't know where he was going to put them. Those potatoes were picked up, large and small ones all together, and the first car that went to Chicago were unmarketable. The all-round farmer must produce a large crop, offer it in the best condition, and know where to send it.

MR. SMITH—That car of potatoes where I used the ashes cost me only about eight cents per bushel.

## BREEDING AND FEEDING FOR BEEF.

By PETER WAKEM, Manager of W. H. Jacobs' Premium Herd of Short-horns, Madison, Wis.

### Selection of Sires.

One of the most essential points in the breeding for a beef animal is in the selection of sires to be used in your herd. I sometimes think it is of more vital importance to the successful breeder and feeder than good feeding itself. It is impossible to feed a steer successfully or profitably if sired by a scrub sire. It is just as necessary to have good breeding in a steer to make him feed profitably as it is to have breeding in a thoroughbred horse to make him run in front or to stay the distance required of him to win his race, or in a trotter to make him trot to the front. It is an established fact that in all domesticated animals, the longer you can get them bred in a line tracing directly through animals that have been of more than average merit as producers of the special product which they have been bred for, the more pronounced they will be in producing offspring, having their good qualities if properly mated.

These being facts you must be very particular in your selection of a sire. Do not use a grade—not even if he is fifteen-sixteenths pure blood. While he may be a good individual, the fraction of scrub in him is very liable to show itself in his produce. Select pure bred sires of known lineage, known to have come down through families that were great beef producers. There are plenty of them to be found, *especially* amongst the beef breeds, either Shorthorns, Polled Angus or Herefords or perhaps some of the other breeds, who lay claim to be great beef producers, but do not appear to be very successful in proving it.

### In Making Your Section

You should pay great attention to the handling of the animal. You must get the mellow, soft touch. Do not get too thin a hide as they are apt to be tender and not stand our winters well. Nor must you get too thick a hide, as I have never seen one that was a good feeder. Get a medium one, with a good coat of thick, mossy hair, that when you take hold of it it feels as soft as velvet. Get a sire with a good strong head on him, as they are sure to be the most impressive breeders, with a good heavy jaw showing the ability to crush an ear of corn. Get him with a good broad back, full over the crops and over the loins, as that is where the more valuable and high priced meats are. Thick through the heart, wide between the fore legs and standing square on them, showing plenty of constitution, short on his legs, as you never have seen a long legged animal of any kind or breed that would put his feed to good account; well let down in his flank, showing his ability to carry a good dinner. Get one well filled up in the neck veins, and well let down in the twist with a middling straight hind leg, so that if he is fed to a great weight, he will not be so apt to *break down* on his legs, with a good, mild disposition, and you have my word for it, that you will have a sire that will get good calves if properly mated, that will put on flesh rapidly and mature at an early age if properly fed and cared for. Never mind what color he is as it is not the color of an animal that tells you how much good meat you can put under his hide at the



least possible expense. In purchasing do not purchase some over-fed brute that has not been given exercise or properly fed. Nor above everything else do not buy some half starved animal that perhaps has not had any more exercise than the well-fed one, and in all probability has eaten more feed, but through the ignorance and indifference of his owner or feeder, has never either been fed regularly or fed a properly balanced ration, and expect him to prove as good a sire as one that has been properly taken care of.

#### Care of Sire.

After you have secured and tried a sire feed him well; feed and water him regularly; give him plenty of exercise. Never forget that he is half your herd, as every calf you get should look more like the sire than the dam. Especially would this be the case if your females were grades. Having secured a sire that pleases you, keep the best lot of cows you can afford. If you start with scrub cows, get away from there just as fast as you can. Grade up, keep none but the best of your heifer calves for breeding purposes. Better feed a less number and better ones. There is very little excuse for any man who is making a business of breeding and feeding for beef alone, breeding any scrub cows. You can get pure bred cows, especially amongst the Shorthorns, with what is termed among some of the advanced breeders, as having unfashionable pedigrees and the Herefords so cheap that the wide-awake breeder and feeder of steers cannot afford to fool away his time feeding a steer that does not give a good account of the feed given him.

#### Time of Breeding.

Having selected a sire and cows the next important point to consider would

be the time of year to commence breeding. Much would depend on your buildings and stable accommodation, and the number of cows you have. If only a few cows and your stabling is good, you cannot be far wrong in breeding any time of the year; but if you have a large number of cows and your stabling suited to your wants, I would breed to have calves dropped in the fall. We have at present something over one hundred cows. I like our calves to come in September, October or November and have them come as near the same age as possible, as the more even you get them as to age and size the better they will feed together and the better they will sell when you get to market with them. My reasons for having them come in the fall are, we can take better care of them in winter than in summer. You can secure good help cheaper. You have your cows tied up and if anything goes wrong with them you have them where you can take care of them. If I wished to be successful in raising and feeding prime young beef, good enough to top Chicago market when from 24 to 30 months old, I would let the calves suck and let them have a cow each. I would not attempt putting two calves on one cow unless in cases of an accident with the dam, or perhaps you might want her to supply your home with milk and butter. I would much prefer raising one good steer calf to raising two poor ones. I would let calves suck three times a day, dividing the twenty-four hours as to time as nearly equal as convenient. Castrate when two weeks old, and when a month old start and give them a little ground feed with some sliced roots, a good ration for calves is 2-3d crushed oats and 1-3d corn meal and wheat bran, with what roots and hay they will eat. You must be very care-

ful in keeping a cow's udder well milked out. They must be inspected and milked out after each time the calf sucks, or at least twice each day. Because if your cow should happen to lie down and get a teat dirty, the calf will not take hold of it, unless washed clean. Keep calves away from cows except when sucking, and always have plenty of clean water where calves can get a plentiful supply, as they will drink a little quite often. Have your calves kept in a yard where they can get plenty of exercise in fine weather. Keep your stalls or basements well bedded with straw, well lighted, with plenty of ventilation and not too crowded, rather have them divided in small numbers.

#### Care of the Calf.

I am often asked why I let the calves suck and would it not be better to milk the cow and feed the calf, my answer is, no, it would not. A man can let out one hundred calves and let them suck easier and quicker than he can milk two cows, especially if one of them does not care much about being milked, and another reason is, you cannot raise as good a calf by feeding it the milk as you can by letting it take it in the natural way. Not so many chances of the calf taking too little or too much if it helps itself. And a better reason than either is I am feeding to get beef that will bring the top price of the market while the man who tries to raise calves on skimmed milk, and wind is feeding for the bottom price and the two prices are a considerable distance apart one not quite so profitable as the other.

#### Fall Calves.

Another point in favor of fall calves is, you have your calves weaned, and your cows dried off if you did not see fit to keep on milking them, when they could easily be kept apart and turned to grass.

And you also have had your cows in the yards when you could attend to their breeding, and not have to chase all over the pasture after an excited cow, as is often the case when you want her. You would have your cow dry and in calf when turned out, and she would have a good opportunity to recuperate and be in good flesh before calving time, and all through the months when flies are so annoying. Your cows would have nothing to do but stand around under the shade of a tree, or in the water up to their knees, chew their cud and fight the flies, gaining strength to produce another lusty calf while you could set out on the porch and fan yourself in your easy chair, or go to town and talk politics if you could find nothing better to do on the farm. Wean your calves when about six months of age when you would find it quite necessary to give your cows considerable attention in getting them dry, much depends on whether you wish to develop their milking qualities to any great extent, we sometimes milk them until well along to having another calf.

#### Keep the Calf Growing.

Well, having weaned the calves you never should allow it to lose any of its calf fat, always keep your steer a growing. I believe it pays to feed a grain ration from the time your calf is a month old until he is shipped to market, whether on grass or not, I do not mean to keep them on full feed. But keep them growing fast, as all steers should be marketed when from twenty-four to thirty months of age and should weigh at twenty-four months in the vicinity of 1,500. I believe the most profitable time to finish your cattle for market is summer as they, if properly fed will put on flesh rapidly while on grass. And if you have been

using the right kind of a sire, one that has the qualities necessary to insure you an early maturing steer, you will have them ripe enough to top the market when two years old. The time has gone past when the breeder and feeder with brains keeps his steers until they are three or four years old. The time was, and not long ago either, when prizes were given for four and five year old steers at Chicago fat stock show. The board having control over that great show have given notice to all intending exhibitors that this will be the last year they will give any prizes for three-year-old steers, showing that they are not going to encourage the feeding of any cattle that do not mature early.

#### Better Prices in the Future.

The markets for selling cattle have been somewhat depressed for some years past, but it looks now as if we had reached the turning point, and that those who have been steadily breeding and importing their herds, using none but the best sires to be produced, feeding judiciously, would reap a reward that would be quite satisfactory to them, as much so, perhaps, as any other stock kept on the farm or any other line of farming. There has been an immense number of cattle exported in the last year, and the feeder of good steers has made money, and there would still be a better price paid for steers if we raised better ones. The English people are much more a beef-eating people than we are, and they will pay a good price for the best beef. While in England a few years ago I saw American and Canadian beef hanging in the markets, both in Liverpool, Bristol and London, along with beef bred and fed in England, marked from a penny to three pence per pound cheaper than the English

beef. And it is still done in all the markets over there where our beef is handled. Now, this would not be so if we kept a better class of cattle and fed and matured them as we should. I have heard it claimed our cattle lost flesh going across the water. This is not so, as they put on flesh every day they are aboard ship if they encounter no storm or very rough weather. A few men have nearly controlled the export trade of the past. A friend of mine, who exports from 75 to 100 cars a month, went to Boston a few weeks ago to make a contract for space to ship cattle, and was informed by two different steamship companies that when the contract he had ran out, they could not ship any more cattle for him for six months, as all the available space on all their steamers was under contract for that length of time to two men from Chicago. Exporters have made large sums of money in the last year, but the time is not far off when that great trade will not be controlled by so few men.

#### English Capital.

There is too much English capital looking for an investment in this country to allow it. I always feel ashamed when at the stock yards at Chicago, and see the class of steers unloaded from railroads coming from Wisconsin. It always looks to me as if we were feeding for the bottom price instead of the top one. Now, to the farmer who is located especially quite a distance from town, I believe if he understands his business and uses his brains and gives it his attention, there is more money to be made in breeding and feeding cattle for beef than can be done by handling them for any other product. You can keep up the fertility of your farm and do it with less labor and with more real pleasure

than by any other style of farming I know of.

#### DISCUSSION.

GEO. MCKERROW—I would like to ask if Mr. Wakem approves of grinding feed for steers.

MR. WAKEM—The profits of grinding it would depend upon whether you have got hogs following or not; if you have got hogs following I don't believe it pays to grind the feed, especially where you have to hire your help.

THOS. CONVEY—Does it pay to cut and feed shock corn to steers?

MR. WAKEM—We think it does.

THOS. CONVEY—Does it pay to shell it or husk it?

MR. WAKEM—A great deal would depend on the age of the steers; if a year old I think it would pay to husk it.

THOS. CONVEY—Does it pay to cut it up with a feed cutter?

MR. WAKEM—Three years ago we were feeding 20 to 30 cattle, and we had to hire all our help, and we cut all our corn for both our cows and for steer feeding. I came to the conclusion then that it didn't pay on account of the amount of help it took to run it through the feed cutter. We have not followed it since. One reason for not doing so is perhaps because feed has been cheap, hay has been so cheap with us.

THOS. CONVEY—Does it pay to feed bran and shorts with corn in fattening steers?

MR. WAKEM—I have very little confidence in feeding shorts. I have always fed a great deal of bran, perhaps more than anybody in the state. I think that bran is one of our most valuable feeds in regulating grain.

JAMES JACKSON—How are you going to make money in making beef on thirty-cent corn, and selling the beef in Chi-

cago for five cents a pound. How many pounds of corn will it take to make a pound of beef, or how many pounds of corn do you feed a good healthy steer every 24 hours?

MR. WAKEM—I don't know, the cheaper corn is the more profit there would be in feeding it to steers that sell for five cents; but there are very few of our Wisconsin steers that bring five cents a pound, more bring two and a half, because they are a class of steers bred from scrub sires, half starved until they are 18 months old, and then fed whole corn and turned off before they are half fat. As to how many pounds of beef you get from a certain quantity of corn, that comes under the subject matter of the paper following mine, and I do not wish to trespass upon that subject.

C. R. BEACH—What is the value of ensilage for beef production?

MR. WAKEM—I have had no experience with ensilage. Instead of feeding ensilage, we are feeding rutabagas to our young stock and cows, and with as much satisfaction as anything on the farm.

J. M. TRUE—As I understand your paper, you recognize the importance of the constant growth of the young animal. Now, what grain feed would you feed a calf while it is having milk from the dam at the same time?

MR. WAKEM—I give a ration of two-thirds oats and one-third corn meal and bran with roots, and what hay they would want. This is for young calves until about the time they are weaned. I think the best calves I ever raised were fed on shelled corn and oats and a little bran. I suppose that roots take the place in a great measure of ensilage.

C. P. GOODRICH—I understood you to say that it didn't pay to milk a Short-horn cow; was I right?



MR. WAKEM—You understood something that I didn't say.

C. P. GOODRICH—I will ask you the question, if you do think it does?

MR. WAKEM—Some of them do. I have seen Short-horn cows that give more milk than any Jersey that ever stood on earth. Two years ago we had a three-year-old heifer, and she was considered a beef animal, and before she was three years old she weighed 1,900 lbs. and shortly after having her calf we milked from her twice a day twelve quarts besides what she gave to her calf. The cow was shortly after sold to go to South America.

C. P. GOODRICH—I have a statement of one that I had that gave sixty pounds of milk a day, a Shorthorn cow, and I never made a cent of profit out of it. Have you made a practice of turning off yearling beef, twelve to fourteen months old?

MR. WAKEM—No, not as a general practice. The time of turning off beef depends largely on whether you have raised your steer from calves, or whether you have bought them from parties who have not taken proper care of them, and perhaps have had no breeding that would insure you early maturity; in that case I do not believe it would pay to turn them off young.

C. P. GOODRICH—I want to tell you a little incident that I learned from a Short-horn breeder in Iowa, Mr. Wylie, of Castania. I saw him I think in 1884 and he told me what he did the year before. He turned off a carload of yearlings, probably fourteen or fifteen months old; he had crowded them, as is his practice, all their lives, made them grow as fast as he could. This was an experiment; he had never sold under two years before; he sent a carload and got \$7.50 a hundred; they averaged ten

hundred, and he got an average of \$75 apiece for them. He said he made more money on those than he had on any others, and intended to practice fattening in that way in the future.

C. R. BEACH—What pasture grass do you prefer for summer grazing of steers?

MR. WAKEM—I would rather have blue grass than any other grass that I know of for fattening steers on.

G. C. HENDY—I rather infer from the paper that he allows the calves to go to the cows, or the cows to the calves and take their milk twice a day; now I would like to know what convenient arrangement he has for following out that plan?

MR. WAKEM—Until the calves are two or three weeks old they are kept with their mothers. After that the cows are tied in a large stable holding seventy or eighty stanchions, and the calves are kept in box stalls by themselves, a certain number in each stall. They are all turned out together, and after going once or twice they will soon find where their mothers are, and will go there themselves; their mothers are tied in the same place every day, and we have no trouble in getting them to go there. Sometimes there will be a calf or two that doesn't get enough milk from one cow and will steal around a little, but not often. As soon as they are done sucking they are allowed to run in a yard where they will have water, and kept there until they go into the stalls again.

MR. DENNIS—Do you think the cow will pay with the raising of the calf alone?

MR. WAKEM—If we didn't think it paid we wouldn't keep the cows; we would go out of the business.

J. H. WISE—I would like to know what he calls an unfashionable pedigree?

MR. WAKEM—I suppose that most everybody has heard that there is an unfashionable cross in Short-horn cattle. In 1817 a gentleman by the name of Sanders went to England and imported some cows and a bull or two. The people that he bought them from had not kept a proper record of them. They were registered by Mr. Allen at Buffalo in the herd books in this country, but as Short-horn cattle became more numerous those tracing back to this importation have been called by a certain class of people unfashionable. There was also one bull, Red Rose by Earnestie, that was used by Mr. Bedford that did not have a record in the old country, though he had one in this country. I know a man in Wisconsin, some of whose cattle come of cattle bred by Henry Clay, of Kentucky, and he said that his word was sufficient without a pedigree; that was the way with the English breeders, their word was all that was necessary, but people are paying a great deal more attention to pedigree now than formerly.

J. M. TRUE—These unfashionable lines are called Seventeens, are they not?

MR. WAKEM—Yes, and others are called the Earnestie cross; some of the best animals today trace to those animals.

R. D. SEELEY—Are they not good beef producers?

MR. WAKEM—They are some of the best producers known. They have perhaps been followed a little further for show cattle; some of the best cattle I have seen are straight Seventeens.

JAMES JACKSON—Are not the Seventeens generally good dairy cows?

MR. WAKEM—So much depends on the manner in which Short-horn cattle have been handled that while some are very good dairy animals, others are not

so good; the development lies entirely with the man handling them.

R. D. SEELEY—Have you had any experience in feeding green corn in fattening cattle; the best results I have experienced I obtained while feeding green corn.

MR. WAKEM—I have not had much experience in that.

R. D. SEELEY—This year my pasture became short and I didn't like to sell my cattle, as they were hardly fat enough, and I started cutting corn and feeding it, and I noticed they began to gain immediately, and on that feed I think I had the best results I ever had with fattening cattle in a dry time. They brought four cents on the market.

JAMES JACKSON—I would ask Mr. Seeley how long he fed these cattle green corn?

R. D. SEELEY—I fed them six weeks and they averaged when I sold them 1,500; they had been wintered the previous winter on hay without any grain ration at all, and were turned out into the pasture until the drouth came on and the pasture became short, and I then started in and fed them for six weeks on this corn, and they did remarkably well; of course the last of the feeding I snapped the corn as the fodder was getting a little too ripe.

J. M. TRUE—The age of the steers, Mr. Seeley?

R. D. SEELEY—They were three years old last spring.

JAMES JACKSON—Was this four cents the market price or at home?

R. D. SEELEY—They brought four cents in Chicago and it was a good price at the time.

JAMES JACKSON—What month did you market them in?

R. D. SEELEY—They were marketed some time in October, I don't remember the exact date.

**JAMES JACKSON**—I finish my steers on grass; that is as far as I take them, and then I take them to market. My experience has been since I have quit feeding corn that I come out on deck a little every time; but when I fed corn I always get a little behind.

**MR. WAKEM**—I suppose the persons who bought your cattle took them to southern Illinois and fattened them on corn and brought them back and got a bigger price.

**JAMES JACKSON**—The gentleman is mistaken as to these cattle being shipped into southern Illinois and fattened they were shipped east for the eastern market and I got four cents a pound for them. They were not fed grain but were kept on the pasture. I work it so that I am never short of pasture. They weighed just twelve hundred pounds and were all three-year-old steers; they topped the market for grass fed cattle, and the man that bought them bought them for corn-fed cattle.

**MR. WAKEM**—It is very seldom you strike such a man there.

**JAMES JACKSON**—I would like to know if Mr. Seeley can give any definite proof that he got what his corn was worth a bushel by feeding it to those cattle?

**R. D. SEELEY**—I judged by my eye and I would just as soon trust it as a scale. I could tell every day that they were gaining, could see that their hair was getting glossy and nice.

**MR. JONES**—I think weighing cattle is no criterion anyway; you might make them thirsty and then have them drink and make them gain ten pounds a day.

**JAMES JACKSON**—I would state in regard to making these cattle better, making them five cent cattle, that the day I was in Chicago with these cattle, in 1889, the first five cent cattle crossed the scales, and it was considered a boom in

the market, and there was considerable talk among stockmen about these cattle. I struck the boy that sold them—they were Illinois cattle and of course I was interested in how he had made them, how he had bought them and what they had cost him. I asked this boy to give me the figures on those steers, and what his profit had been. "Profit!" he said, "Good land! if I had fed a thousand like I have fed them, it would have taken a national bank to have paid my debt." He was in Illinois and fed 25 cent corn; I am in Wisconsin and must feed 30 cent corn. The Illinois climate is a better climate for fattening stock than Wisconsin, and if he couldn't make a profit with as good a lot of animals as he had, I claim that I have no business trying to feed or select stock against him.

**JOHN H. WISE**—We made an experiment by weighing both steers and feed on a Fairbanks scales, which lasted from Jan. 12th to March 3d, or 50 days; during this period the 17 steers ate 20,638 pounds of grain, about one-third oats, and two-thirds shelled corn, this grain with a little hay made a gain of 2,210 pounds, figuring the grain at half a cent per pound it cost us a trifle less than 4½ cents per pound of gain, or per pound of beef.

I figure that the droppings the hogs get will easily pay for the hay, and the manure for the work.

**C. R. BEACH**—How much did the steers weigh?

**MR. WISE**—About 1,350 when we commenced.

**JAMES JACKSON**—What was the corn worth a bushel that you fed those steers?

**MR. WISE**—Well, we bought a good deal of the corn for 23½ cents a bushel.

**JAMES JACKSON**—Did you have the

corn hauled to you or did you haul it yourself?

MR. WISE—We hauled it from the cars, a distance of about a mile or so.

JAMES JACKSON—How many pounds of corn do you say you fed each steer a day?

MR. WISE—I didn't say how much we fed a day, it is only a test in the total. The test lasted from January 12th to March 3d, or fifty days, and during this period the 17 steers ate 20,638 pounds of corn, which with the hay fed, gave a gain of 2,210 pounds.

JAMES JACKSON—What was the cost of the corn?

MR. WISE—I figured it at half a cent a pound.

JAMES JACKSON—What was the beef worth that you put on to those cattle?

MR. WISE—I got four cents a pound for them.

J. C. MARTIN—We have tried a little experiment at our place, though I never expected to repeat it in public. I have some young boys and in order to encourage them I made them the following offer. I had bought some cattle at a sale for two cents a pound, and I gave the boys two each on the condition that they should pay me one dollar a hundred for ground feed. They were to weigh the cattle once a week. The boys kept an accurate record in which they set down the temperature, the average gain per week, the amount of food they bought, using their own judgment as to the ration they fed. I cautioned them to feed carefully and to see that what they fed was eaten up clean. They fed the grain at that price, one dollar a hundred. I sold the cattle at three cents and a half a pound. The boys made a profit of nearly twenty-nine dollar after paying me the price of the cattle when bought and a dollar a hundred for the feed.

H. ROBBINS—Let me give you an account of an experiment of mine. I had three steers which I weighed on October 7th; one weighed 1,190 pounds; one weighed 1,290 pounds and one weighed 1,335 pounds. They were weighed again on November 12th, after feeding them for thirty-five days, and then weighed respectively 1,340 pounds, 1,390 pounds and 1,480 pounds, which gave an average gain of four pounds per day for every steer. My boy carried on a similar experiment at the same time and his steers made a gain of five pounds a day for thirty-six days, but it cost him a little more a pound to do it.

SUPT. MORRISON—I will call on Mr. True to summarize what has been said in reference to this topic.

J. M. TRUE—I feel that this is an important subject, and it would not be dealing justly with it if it was dismissed in the present condition of this discussion. While for the past few years the production of beef in the state of Wisconsin has been up-hill business, I think that we begin to see light ahead at the present time and to recognize the fact that within the coming few years, if our beef cattle are well bred and well fed, we may expect as good results from this enterprise as from any other. But it does seem to me that there is danger in the manner in which this discussion has been carried on of losing sight of the vital principles than must maintain themselves as the under current in the production of good work. Wherever, in this state or elsewhere, beef is to be produced in the future at a profit, these cardinal principles must be observed. The steer must be well bred and he must be well fed from the time of his birth until he is put upon the market. The idea that any animal, horse, or cow or steer, is to be kept upon a Wisconsin



farm for a portion of its life, and allowed to stand still or to go backwards, is a thing of the past. If there is to be any profit made in the future in this business it is to be by keeping the animal growing continuously, and I hope we will not lose sight of this fact in connection with this industry, where, equally with any other, these facts are important.

SUPT. MORRISON—There is a gentleman in Clark county by the name of Burpee who buys up cattle all over the county and sends them to the Chicago market. He said that two years ago he took down two carloads for which he had paid one and a half and one and three quarters and as high as two cents a pound in Clark county. They were sold at the stock yards and he noticed that the gentleman that bought the steers was an old feeder, and he made out to get acquainted with him and learned that he was from southern Iowa. This gentleman took those steers out into Iowa. Mr. Burpee gave at the Neillsville Institute his con-

versation with the Iowa gentleman. He said: How long do you expect to feed these steers? He said he would feed them until about the latter part of May and he would then bring them back to Chicago. He had to buy his grain and he didn't own an acre of land; he had to buy everything that was fed and he would sell those steers at four and a half and five cents a pound. Now you can see where he was going to make his money; he was going to make about two and a half and in some cases three cents on not only the original weight, but he was going to put enough on to the steers to pay for feeding them. Mr. Burpee said that opened his eyes. He came home and commenced feeding and marketing his steers the same as the old Iowa feeder, and he was making a success in producing beef. Such suggestions as these thrown out in the institutes give us some idea of what we can do in the production of beef, in the way of making money in the business.

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## CAN BEEF BE PRODUCED IN WISCONSIN AT A PROFIT?

By H. C. THOM, Dairy and Food Commissioner.

### One Could Say No.

And be seated with objections from few, if any, feeders, while the phiz of the dairyman would beam with complacency. Feeders can ill afford to let affairs, which so interest them go by default because there is no man brave enough (barring Senator Vest), to champion an industry to which civilization owes so much. An indus-

try which touches every man who has reared a male calf or lugged a soup bone from market. An industry which extends throughout every state and territory and effects every man's household, unless it is sanctified throughout the whole year to Lent. Flesh always has a market. Some one is bound to furnish it to our millions. Feeders have sworn a mighty swear that they could

not afford to continue the business. Many have given up in despair. They are going to try the cow. They don't know how she is made, let alone how to milk her. Herdsmen of the west have quit their calling; some of them are robbing stage coaches. It may pay a little better but it takes more courage to hold up a driver than it does to tie up a steer. We are a little down in the mouth in this section. A catch calf that runs with its mother the first year and the next two with grass, straw and water don't kindle the Chicago stock yards with enthusiasm.

#### The Scrub Has Been Looking

For its place for many years. At last 'tis found, thank God'; 'tis at the bottom of the market report.

#### Those Breeders and Feeders

Who think, begin to see how railroads affect their trade. The circle of competition has been enlarging very rapidly for a number of years. Chicago, the center, with a circumference 200 miles away meant the only competition. Kansas City dressed beef is now laid down on our market before it gets quite cold. In talking with a conductor on the Burlington road some few weeks since he stated that the week before he ran from St. Paul to Chicago ahead of an express with a train load of cattle. It costs but little more to ship beef from Kansas City than it does from Madison. Do you wonder that the business does not pay if we make poorer cattle here than in Kansas? Our only protection in the past has been that but few were in the business and that it cost so much and took so long to bring cattle from distant points.

These safety guards have all been knocked down. There is one salvation

for us and only one; that is skill. Skill in breeding; skill in feeding. Any leather head can have a calf or buy one. It's directly in his line of business. He can keep him alive if the weather is propitious or he carefully reads Sergeant Rhodes' reports to know which way the wind blows. A machinest commands better wages than the ditch digger and works no harder with his hands. There is not half the competition in brains that there is in brawn. Wood must be hewn but less money secures that result than it does to fashion the mind in the school room or souls from the pulpit.

#### Good Stock and Economical Feeding.

The trouble with the cattle business at present is not so much the low prices they bring as it is the kind of cattle that are thrown on the market. Good stock is bringing better than \$5 per hundred to-day, while most cattle are changing hands at from \$1.75 to \$2.50. Beef can be made on Wisconsin farms at \$4 per hundred at a fair profit. Lower prices than \$3.25 are ruinous to most feeders. As near as I can estimate beef can be produced at about \$3 per hundred. That this can be done can be figured as absolutely as that butter can be produced at 13½ cents per pound, or that calico can be manufactured for 3¼ cents per yard. Three conditions are essential in order that meat can be produced at this figure. First, good stock; second, economical feeding and handling; third, early maturity. In some respects cattle are like men. The lean and hungry ones, although great consumers, are rarely fat ones. Your attention is respectfully called to the president of this association. It makes some men tired to carry around what they eat; others of closer build and more quiet consciences are content with what they get

and ruminates over the cud of the eternal fitness of things and grows fat. The racer is the result of long years of careful breeding. The bullock, although of greater bulk, represents just as much skill as the courser. There is a strong sentiment in many minds against inbreeding. In a broad sense the tide may set the right way, many of us undoubtedly need training to know just what to do. It might be well to say here, however, that the Short-horn breed was best developed and perfected in the hands of a man who brought this about by the severest practice of inbreeding. The animals grew under his careful eye in grace and beauty. Desirable points were strengthened and developed; weak ones were eliminated and destroyed.

An abiding faith that skill would win brought about the grandest results, made the name of the man immortal, and left a race of cattle that lovers of graceful lines and colors will fall down and worship, for verily they were golden calves whose mothers would sniff at the sacred cow. The feeding and handling can be best brought out in the discussion perhaps, because I can then call to my aid men of greater age and experience. My experience has given me radical ideas on these matters; they may not be progressive, surely they are honest.

#### Early Maturity.

The question of maturity next demands attention. Three and four year old cattle are unprofitable. Thirty months is an extreme age to turn off. The first 600 pounds is cheapest. I know of a five-year-old steer that was kept 365 days eating as many pounds of grain and hay as when four years old and gained never a pound. Feeding ex-

periments at our Wisconsin station gives ample data to clinch the statement that the quicker the maturity the greater the profit. That feeders complain is not to be wondered at. The stock yards evidence criminal bungling. Matched clear flooring is worth more than cull lumber. A poor ax helve finds a customer only in a plug chopper who splits kindling wood for his wife at the back door and does that little under protest. Yet Mr. Jones, of Dane county, sends a steer to Chicago that makes the average Texan stare, and kick because he does not get top market. The steer is not to blame, O, no! "Jones made him and he pays the freight." Jones would not expect a big price for poor eggs but he does for poor meat. Experience is not quite so strong in the latter business. When he "goes broke" Jones will wake up.

#### Animal Husbandry--Fertility.

It is all folly to talk of going out of the stock business. It is the true foundation of rotation. Without stock, farms would rapidly deplete in fertility. Wisconsin farmers have had a bitter experience and won't be caught again. It takes as much time and costs as much money to restore a lost fertility as it does to clear and break the original homestead. I would suggest that the general market might be improved if more attention could be given by our foreign consulates to this great industry. With much regret I am constrained to say that few of them know or care how much could be done in this direction. Nothing but flimsy excuses stand in the way of heavy exportation. Many of the so-called rulings are in direct violation of existing treaties.

The thousands who are in the business of beef production, the millions of money invested, should demand recog-

dition and a channel paved to good foreign markets. That herdsmen may not become discouraged, I beg to call attention to the fact that we are growing faster in our demands than we are in skill in breeding and feeding. It is but a few short years since steers were changing hands at \$12 per head when two years old. Just such cattle as we think ought to bring \$5 per hundred. What right have we to ask this? This right. That we wish to ride in a carriage. A wagon used to answer. Wheat, so we say, can't be raised for 75 cents a bushel. My father used to raise it for 25 cents and haul it to Milwaukee with a team and kept up a cheerful whistle and raised a lusty boy with a good appetite. Ah, yes, luxuries of those days are necessities now. We are fighting the battle of life against greater odds. Our wants are growing faster than means for supplying them and we kick the Big Four, the steer, the market, and scold our wife because things are awry.

**The Eye of the Master Makes the Animal.**

A good animal well matured and fin-

ished with a sleek coat, with a good distribution of muscle and fat will bring more money, more content and smooth more wrinkles and keep back more gray hairs than all the petulant fault finding that ever rose to heaven. "The eye of the master makes the animal." Keep the old saying in mind. Bind your fortune to the Short-horn. They have had a glorious past, they are steady in the present, and the future is full to repletion of bright promise. "'Tis a popular fallacy that because a thoroughbred costs a large sum that he will thrive and fatten on ragweed and water. Profit comes to no man by shirking responsibility and labor. Give the animal care, treat him kindly, and shelter him and feed him, then will he grow under the master's eyes and conform to the measure of an ideal. Out of all this labor and love will spring a result that will be a credit and an honor to all these years of line breeding, to the men who have fashioned the Short-horn, by a long term of study, to be a thing of beauty and profit forever.

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## FUTURE PROSPECTS AS TO THE PRICE OF BEEF.

By MR. GEORGE WHICHER.

### The Beef Question.

It is said that beef cattle are higher by 80 cents per hundred than one year ago—and many predict \$1 a hundred higher in the next 12 months. This would be something of a boom in the general market for cattle in two years, and as I sincerely believe the day of

booms are past I fail to see it in exactly that light. Let us examine the question and see what conclusions we can deduce from the experience of the past. It is true we of the great central northwest, have been reduced to a minimum of prices below the cost of production, owing, I think, in a great measure, to



over-production and free grass on the western ranges, I claim has been the main cause of this over-production and low prices. I, of course, ignore the cry of monopoly of Big Four, and only wish there were more of them to get away with the surplus—for surplus it is, view it in any light we please—too many cattle for the demand.

#### The Cause.

In the last ten or twelve years, as the extensive system of transcontinental railways opened up the mountains and southwestern ranges, even to the Pacific coast, the then existing high prices stimulated over-production on the ranges. Cattle companies were formed, which with free pasturage created an over-supply, and as we of the productive lands of the interior basin of the central northwestern states kept right on producing, and we know we have to keep up our lands to the requisite tilth of production—it has created an excess of beef cattle and a consequent low price. Eight years ago this winter I was in Texas and attended many cattle conventions as a newspaper correspondent. The cattle boom then was near the crest of the wave and many ranchmen were selling their cattle ranches, herds and brands, because, said they, these prices cannot continue, and yet the boom went on for two years thereafter, and some of these conservative cow men, as they call them in the southwest, re-invested in their well sold plants at a higher price to afterward lose all. I saw cattle in the Kansas City stock yards in April, 1882, selling from \$6.85 per hundred to \$7.25, that in Chicago to-day would not bring over from \$4 to \$4.75, but a little over one-half. I saw corn selling in eastern Nebraska—Cass and Lancaster counties, at 60 cents to feed-

ers—that in the same localities to-day, won't bring over 17 or 18 to feeders of the same grade of cattle.

#### Sheep Husbandry Booming.

Sheep men at the stock conventions were hardly recognized, while today a carload of fat wethers or lambs are worth more than a car of cattle. Wool appears to be no criterion of the value of sheep, but it is the demand for mutton. The lambs with the little wool on them that would hardly amount to twenty-five cents a head, are selling in Chicago markets today for \$6.85 to \$7 per hundred.

Really, if the sheep produced no wool at all, we would save very near the present price for mutton purposes. And right here is a point before we pass, I desire to call your attention to. That there is an independent demand for the various lines of meats, that a plenty or over-supply or cheapness of others cannot control. Some one might say if beef and mutton were both cheap, a mutton will never see six or seven cents again; cheap pork or beef will take its place. And we might say now: why do they pay \$6 and \$6.50 live weight for fat wethers, 7 cents for fat lambs live weight? Why don't they supply their place with those splendid 4 and 4½ cent paraded steers. Our answer is, there would be a demand for a certain amount of mutton if the price went up to 10 cents a pound live weight. And the same rule applies to beef or hog product. I mean, of course, for fresh or block meats. Cured product is always more even in price. Yet we could not think of making any of those high priced products a speciality, if we did we would get left. The men making money in booms of any product on the market that comes up suddenly, are those who

invested when the price was way down, and when they touch fancy prices they clean up the last head of stuff on hand. The men who fish for clams at high water generally go out with the tide.

#### Don't Give Up.

Now, as to this cattle problem, should we of upper Mississippi and Missouri valley, say we can't raise cattle at this price, and go out of the business, it would be a virtual surrender of the business to the range and Texas producers, we can't afford to do it. Let us keep hammering away, it hurts, but it is a battle with the range and Texas producer.

We are in the condition of *Æsop's* fable of the fox in the brambles. It is true, said the fox, that the brambles hurt my poor tender hide, but then I'm wearing out the hounds who are seeking my life. Yes, keep on a while longer, my friends, it is tough, it is hard, but with our cheap beef we are bankrupting cattle trusts on the ranges and in the southwest. They went in on a big thing, free grass, cheap fence. Let us make our pastures big enough, said they, that a pound of barb wire will fence an acre. Four or five cents an acre for pasturage, why those prairie grangers can *never* compete with us. But their calculations didn't fill out.

The dynasty of these cattle kings were short lived ones. They could ship a few loads occasionally to keep up appearances, but the day of judgment must come eventually.

As Dean Swift expresses it in the *South Sea Bubble*:

"So fishes rising from the waves  
Can soar with moistened wings on high,  
The moisture dried, they sink again,  
And dip their fins again to fly."

Yes, we sympathize with you western fellows that wanted to inclose the whole earth with barb wire.

The Swan Brothers first began and they soon had plenty of company. Like we have seen pictures of herds of buffaloes driven to a precipice by Indians, the first goes under and the herd follow to snow him under; so, in conclusion, I will say I wan't to see no boom at present in cattle—I don't believe there will be—but just a sufficient stiffening of prices that we may wean the rank fellows out a little easier.

We particularly felicitate you on your cheap fencing and fine grass; but behold, we will mock at your calamities, we will bewail you when your fear cometh and keep right on raising cattle cheaper than you can; so don't be disappointed, but keep right on pegging and hammering away, we'll fetch them after awhile.

# SHEEP SESSION.

## CAN THE MERINO BE PROFITABLY MAINTAINED ON WISCONSIN FARMS?

By W. H. COLE, Waterloo, Wis.

In a state situated as Wisconsin is our present and future prosperity depends largely upon our animal industries. The average farmer living isolated from cities, or villages, who depends upon grain raising to the exclusion of animal husbandry, will sooner or later, come to grief. And in a state like this, with so great a variety of climate and soil, and with a people of such a diversity of tastes and surroundings, there is room for all, without danger of jostling or crowding each other. And the pell-mell rushing from one industry to another, that has characterized us as a people, simply because it is paying better at the present time, is unwise.

### "Make up Your Mind and Then go Ahead."

Experience has taught us, that by the time we get established in our new undertaking, the one we have just left is paying better. And we have been to an expense (and often a large one) in changing. Besides a knowledge of a business is capital in stock, and the man who knows the wants of an animal and has the conveniences for supplying them, can often come out successful, through a term of low prices by cheapening production; while one unacquainted with the business will fail. So I would advise one who has a knowledge of the dairy business and conveniences for it, to push

it with energy and perseverance. While he who has a good market near his home, and has conveniences for it, can make money raising early lambs from the mutton breeds, if he puts a proper amount of brains into his business.

### Sheep—Fertility—Wealth.

But for one who wishes to keep sheep in large numbers, or the common farmer who wishes to keep a good flock of sheep to work his straw and roughage into a condition to keep up the fertility of his farm, I believe there has no animal paid better for the past twenty-five years than the Merino sheep. In speaking of their working down roughage, I do not wish to be understood as confining them exclusively to such feed. The flock-master that does not keep his flock in a good thrifty condition, does not reap the profit from them which he otherwise might.

And the one who breeds for heaviest fleece on the the smallest carcass is not up to the times. I have always made size a specialty; and for the last ten or fifteen years, I would accept for breeding purposes none but a large, broad-backed sheep, with a long staple of wool. Such sheep as these pay well, both in mutton and wool; and that such sheep when ripe, do not go begging in markets is attested by the fact that I have sold three

carloads within the last ten years pronounced by Chicago salesmen as good as the best. I feed from one to three carloads each year. And on one occasion they sold fifty cents higher than anything else on the market that day. And this year, while in the central part of the state attending an institute, I got a telegram from our home buyer that he would give me five dollars a hundred for my sheep. So elated was I with the prospect of selling something these dull times without running after the buyer, I sent back word that he might have them.

The question as to whether Merino sheep can be profitably maintained on Wisconsin farms is answered by the fact that there are hundreds of farms scattered through this state devoted to grain raising that keep but little stock, that could raise more grain than they are now raising, and keep one hundred Merino sheep in good condition on each eighty acres.

#### Paths of Gold.

This is no idle speculation. I have given this problem practical tests nine years ago this spring. I bought an eighty-acre farm which had produced but few paying crops for a number of years previous. The first year that I worked it it did not pay expenses, as I was obliged to work it in the condition it then was. In the fall I ran a fence through the center, turned one-half into pasture, emptied my sheep stables on the other half and continued to crop it, and have had bountiful crops ever since. Four years ago this spring I bought a 160-acre farm that had but little stock kept on it from the time it was entered from the government until I got it. I treated it as I did the first one as nearly as possible and with like results. I know from experience and observation

that when you put it into practice there are no animals better calculated to survive and sustain the fertility of a farm than a flock of well-kept sheep.

We hear people say: "That man is lucky; he always manages to have good crops, or he always has butter to sell when it is high, a fat flock of sheep to drive off when they bring a good price." All things being equal, the farmer is lucky that has a fertile farm, and is generous enough to keep a sufficient number of thrifty animals to retain its fertility. In other words, that farmer is lucky who is not continually trying to get something for nothing.

#### Care of the Flock.

One word as to the mode of caring for sheep. Do not turn your sheep into a pasture and keep them there until snow flies; but sow a couple of quarts of clover seed with each acre of your sowed grain, and in the fall when the feed gets a good start turn your sheep on that which you do not wish to mow. It helps to keep up the fertility of the soil, keeps in check most all kinds of noxious weeds and fits your sheep nicely for winter feed.

If you have a large flock, do not let your lambs run with their mothers until winter, but separate them when four or five months old, and turn them on good succulent pasture and if it is in connection with your corn field so they can run through and crop off the weed seeds, this will be all the better. But do not confine them to a corn field, and as feed gets scarce and dry, bring them into their winter quarters at night, and feed them; thus introducing them to their winter feed by degrees. In a word, put the same time, care and thought into your business, that the lawyers, doctors and merchants have to put into theirs. You



will not then have to say that any fool can be a farmer. But rather if a boy has not business capacity enough to make a farmer, he had better study one of the professions.

## DISCUSSION.

H. ROBBINS—What is your preventive of dogs killing sheep?

MR. COLE—The first sheep I ever owned was killed by a dog and I never had one killed since. I bell my sheep with large heavy bells. The dogs don't like to make too much noise when in mischief and these bells enable us to hear the disturbance in time to get to the sheep and either drive off or kill the dog. Dogs have been among my sheep once or twice but generally got out before I got there.

SUPT. MORRISON—Can Merinos be kept in larger flocks than the mutton breeds?

MR. COLE—Yes, I guess there is no dispute on that point.

SUPT. MORRISON—Have you had any experience with crossing with any of the Downs?

MR. COLE—Some little experience. If I was going to cross I would continually cross in one direction. This undertaking to cross first with the fine wools and then with the coarse wools, trying to get all the virtues wrapped up in one hide can never be done either in man or beast.

J. M. TRUE—How large a flock do you think can be profitably kept in one enclosure during the summer?

MR. COLE—I believe the fewer you keep together the better. I don't know how many you could keep together if you had a sufficiently large pasture. But a few animals do better together than a great many together.

GEO. WHICHER—If you were feeding a

flock of sheep what kind of feed would you use?

MR. COLE—If I was confined to one thing I would rather have clover than any other one thing. If I was confined to one kind of grain, I would rather have oats. But in my practice I feed a little straw and a little corn stalks, and a little hay, each thing at a stated time each day.

GEO. WHICHER—I was told by a gentleman that he had the best results when feeding cut up corn.

MR. COLE—I have fed that a great many times. Sheep like to run their noses into the husks and root out the corn. They will eat it better than when it is husked and thrown on the ground.

QUESTION—How about sheaf oats?

MR. COLE—I guess they are as good a feed as can be fed.

J. M. TRUE—Isn't there a great deal of waste in feeding sheaf oats?

MR. COLE—If you feed them all they will eat, they won't eat much of your straw.

GEO. WHICHER—Would you have them have access to water continually?

MR. COLE—At all times, if possible, though they will do well without water, if they have good succulent food. But there is no condition under which they will do as well without water as with it. They will live with snow, but it isn't as well as to have water where they can get right at it. I have water right in my sheep stables where they can run right to it.

WELDON VAN KIRK—How many pounds of wool ought a well-bred flock of Merinos to average?

MR. COLE—A good flock of Merinos ought to average eight pounds of good clean washed wool.

WELDON VAN KIRK—Do you advise washing?

MR. COLE—I don't advise it, only that it pays. For the good of the sheep I would advise not to wash.

GEO. MCKERROW—I would like to ask Mr. Cole if he has a flock of pure-bred American Merinos or high grades?

MR. COLE—When you get up into the sixty-fourths and one hundred and twenty-eighths we call them pretty high grades, and we have got them right there in the town, that have sheared from seven to nine pounds. As to mutton sheep, if you are going to keep a sheep until it is three or four years old, there isn't a mutton sheep in the world that will compare with the Merino, but if you are going to sell them when they are six or eight months old the Merino won't touch some of the other mutton breeds. Men in our vicinity have gone into raising the mutton breeds and, without exception, it has been a failure. They wanted to huddle them up and keep them on the same food as Merinos, and they gaunted up so that it would make a man homesick to look at them; and the better you fill the Merinos the better they will fill your pockets, I can guarantee that.

A. O. FOX—There is one feature that we have not touched upon yet, which is quite important. I would like to ask what Mr. Cole finds to be the average percentage of increase in his lamb flock for the Merinos.

MR. COLE—There is a point where the mutton breeds are way ahead of the Merinos. If a man has got a hundred Merino ewes, and keeps them the way men generally keep them, and he gets 75 per cent. lambs, he does well. I have had as high as 75 lambs and never lost one but that is a very uncommon thing. Another point I keep in view is to breed from ewes that don't raise twins. A Merino sheep will only bring up one

lamb and do well by it. A coarse wool sheep will do fairly well by them if you feed them well.

SUPT. MORRISON—What is the comparative value of the mutton from the Merino or from the Downs?

MR. COLE—In my opinion the Southdown is the best mutton sheep there is, because they marble their meat the best. The very poorest sheep that I ever butchered was a Cotswold, because they don't marble their meat. Short wool sheep are more apt to marble their meat than long wools. The Merino sheep, in my judgment, if well cared for, is equal to any other sheep except the Southdown.

Here is one point that has not been touched upon yet. Men that keep sheep are troubled with ticks. If you are troubled with ticks get some tobacco stems. There is a kind of poison connected with those stems that will kill the tick as quick as anything I ever tried. Set up a kettle and dip the lambs in the wash and in four hours you won't find a tick.

The man who keeps Merino sheep is in danger of trouble from foot-rot. They are more subject to that disease than any other stock I ever handled. I have cured it in my own flock and in in my brother's and in my neighbor's. I made a trough out of 2x6 stuff, twelve feet long, and fixed sides up to it so the sheep couldn't get out, and on one corner of this trough I ran a piece of gas-pipe which was connected with a tobacco pail outside, in which blue vitriol was poured as strong as it would dissolve. I poured it into the pail and it would come through the gas-pipe into the trough. I pared the sheep's feet off closely, and then ran them through this trough, with the blue vitriol in the bottom. You can have five or six in the

trough at once; and if you are thorough in never letting them step upon ground afterwards that they were on before this process, and clean out your stables at this time, and if you watch your sheep closely afterward, you will find this disease can be cured. Keep some of this preparation in a bottle and if you see a lamb with foot-rot, out with the bottle and apply the preparation.

GEO. MCKERROW—Wouldn't it be better to repeat this same process, after ten days or two weeks?

MR. COLE—I had 200 that I ran through in this way, and only 7 came around for a second treatment.

JOHN MARCH—How long do you have to keep them off the ground they have traveled on when diseased?

MR. COLE—I ran them through about this time of year. They got this foot-rot in the winter time and then they went on to the pasture. My brother let his go back onto his pasture again in the spring, but had no bad results.

J. C. MARTIN—How do you induce lambs to eat grain at weaning time?

MR. COLE—If I don't want to turn into a corn field I put some of my old tame ewes with my lambs, and I have a trough and put a little grain in there. You don't want to put in a great deal, a handful is better than a quart, and keep increasing little by little and very soon they will get a notion of eating. I never turn them into the corn field exclusively.

C. P. GOODRICH—I want to find out something of the profits of sheep raising. Can you give a statement of how much you can make on a flock of sheep in a year?

MR. COLE—I have about 200 sheep. I sheared this last year 187 sheep. My income from those sheep was something over \$700. I have got my sheep on hand

now and I have got my increase on hand.

C. P. GOODRICH—What is that increase worth?

MR. COLE—My increase and shearing produced some \$850.

QUESTION—What will it cost to keep these sheep?

MR. COLE—I estimate that I can keep about eight sheep where I can keep one cow. I think that the feed I feed one cow will keep eight sheep well—it will feed more sheep if you feed your cow well.

GEO. MCKERROW—You want to remember that you keep the cows in the back-yard. Is that hardly a fair comparison?

MR. COLE—I keep my sheep in the front-yard. I have one I keep for a lawn-mower.

C. P. GOODRICH—It used to cost me \$40 a year to keep a cow. If your sheep cost you in the ratio you mention, they would cost five dollars a year or the 200 would cost you \$1,000.

MR. COLE—There is a difference in keeping cows. I keep my cows for ten or twelve dollars apiece. There is an indirect profit from sheep, that is way ahead of anything from any other animal—it helps to keep up your farm. On an eighty-acre farm you can keep two or three hundred sheep and raise as much grain as by not keeping them. There is where you make your profit.

PROF. W. H. CHANDLER—I do not think I can add anything to this discussion. I have never been a very successful sheep man myself, and yet there is no branch of farming industry that has interested me more than sheep husbandry, and I have watched with a great deal of interest and no little attention the efforts of men who have devoted their intelligence and their per-

sistent efforts to this branch of labor. I learned this in my observations: While I was laboring seven days in the week to just get a living raising wheat, my neighbor was doing the same thing in raising wheat and sheep and he had no more help than I had, and at the end of the year he had the profits of the increase of his flock, the profits of his shearing, and the profits through the year of an occasional addition to his table without a money expenditure. Now that I have observed all the way through, I do not see where the expense comes in very greatly in the keeping of a few sheep on the farm. It certainly does not come in the way of personal care. It does come in the way of using some of this land.

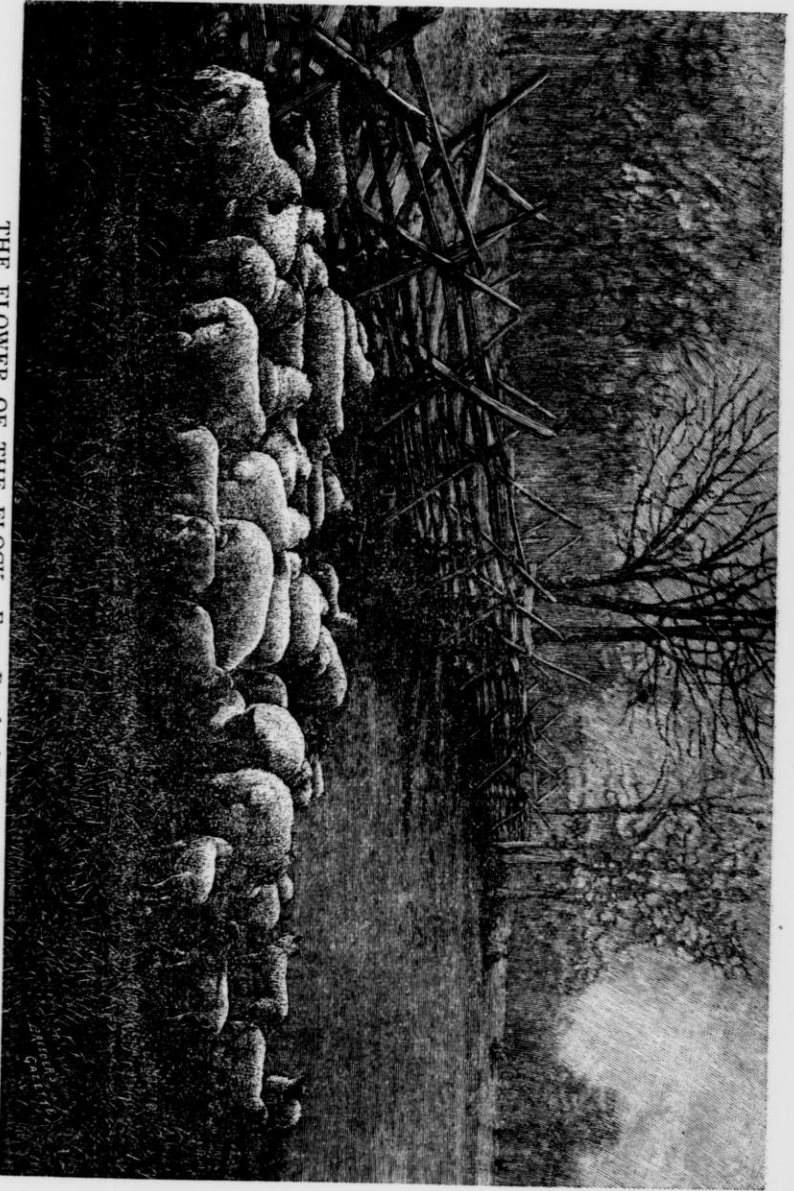
I have watched the operation of my son-in-law in this direction with much interest during the past few years. Now, this last year was not a very prosperous year among the farmers in our part of the state, the central part of the state, owing to the drouth. But that young man had a flock of 200 sheep on his farm of 240 acres. Some of his land is low and unfit for cultivation, and is not even tile drained, it has mere surface-draining. It is a very poor pasture for cows and but a very few cows could be kept in there, but his 300 sheep have occupied that 80 acres of land as a rule. He told me this year that the income from that flock of sheep was just about one thousand dollars; that is his wool and his sheep that he sold at a ready market at home for mutton, and his flock is just as good as it was a year ago. To my certain knowledge he has not paid out \$50 to get this extra income of a thousand dollars. He has of course used that part of his farm for that purpose, but the tract of land wouldn't have

I kept near that number of neat cattle; that would have been impossible. This sheep industry has insured him and others like him a living. He is not at all a shining example of this. The neighbors, I suppose, could tell many better stories about that than I have about sheep. But I see his sheep have insured him an income right along, year after year, without very great variation, and so I conclude that there must be something in this sheep industry.

Supt. Morrison wishes me to narrate my early experience in sheep raising. When I first went upon a farm of wild land in Wisconsin in the fifties, I had to learn everything by hard knocks, and I am happy to say I learned a great deal. I had about 15 or 20 large bodied, coarse-wooled sheep. I had only about 40 acres fenced in, and the sheep ran out on the prairie, where they were a source of trouble to everybody except myself. I got sick of the complaints of my neighbors, and went to one of my neighbors who was apparently a shiftless sort of man. I said to him, My friend, I want to trade my sheep for your cow. It was a good looking cow. He said, I will give you that cow for your sheep. I said all right, and drove the cow home. This was in the spring early and in a few weeks my man had cleaned out the refuse in the cellar and the cow got out of the barn and ate the refuse and swelled up and died. My neighbor turned his sheep out on the prairie and time went on, he paying no attention to his sheep apparently, until in two or three years that man had a flock of 300 sheep worth a thousand dollars in cash. I thought he had the better of the bargain. This is one of the things I learned.



THE FLOWER OF THE FLOCK. From Breeders' Gazette, Chicago, Ill.





## WHAT KIND OF SHEEP ARE BEST ADAPTED TO WISCONSIN?

By A. O. FOX, Oregon, Wis.

If it would be consistent with the title to my subject, I should like to have spent a good part of the fifteen minutes allotted me, in showing some of the many advantages which sheep husbandry has over other branches of stock raising.

### Sheep as Conservers of Fertility.

The wonderful adaptability of sheep as recuperators of worn lands, spreading their rich top dressing, fine and evenly over the growing grass with no other labor than that of the flock while quietly grazing; and simultaneously adding to our visible supply of mutton and wool; the small expense of maintaining fences for sheep; light labor and expense of caring for large numbers; and the semi-annual interest received from the capital invested; these are points upon which I would like to dwell but to which I can only now allude.

The proposition which we are to discuss is what kind of sheep are best adapted to Wisconsin? To answer this it seems to me the questions for us to solve are: how can we market our feeds in the form of sheep products, in the shortest possible time, with a minimum of freights and other expenses; how shall we develop the wool and mutton bearing qualities to such an extent as will put on the back of each sheep, the greatest amount of the highest priced wool, that can be grown upon the carcass which will mature the earliest into deep heavy mutton, of the highest quality and flavor, and in the most compact form for economic shipment?

### Mutton and Wool.

In other words we must have a combination sheep, through which we can afford to market our best foods in the form of mutton and wool.

How shall we go to work to produce this combination sheep is a question upon which many good sheep breeders will differ, each leaning towards the particular breed with which he has been most successful, influenced, perhaps, by local conditions.

But we must throw away all old notions which cannot be logically supported under present conditions. We must be alive to the forces with which we have to deal, the changes that are affecting our markets, we must produce what the consumers want, and for which the best prices obtain in the open markets.

We must look for the animal which is the best adapted to meeting these wants on a minimum of investments, and having found such animal, we must stand by him, whether he be "our hobby" sort, our daddie's, or somebody's else.

Nowadays, the tremendous energy of our people, the wonderful development of trade, the great rapidity with which ideas are executed, all lead to one great focal point, quick maturity.

The four or five year old steers are gone forever, as also the twenty months store hog; that sheep must go too, which cannot be properly fitted into deep, rich, nicely marbled mutton, at eight to twenty months of age.

The common sheep stock of the north-

west, from which we must select our breeding ewes are nearly all of Merino origin, some nearly pure and others graded more or less with the various larger breeds.

#### A Cross for Profit.

For crossing purposes upon these ewes, to start with, I am in favor of using blocky, deep-set, high-bred rams of some of the recognized Down breeds, notably the Shropshire, Oxford, Southdown and Hampshire, my preference being in the order named. By the Down cross, especially the Shrop cross, we at once add from 35 to 70 per cent. to our average increase in lambs over the average of the Merino flocks, there are few flocks of Merinos that will average 90 lambs to the 100 ewes.

I heard one of our leading Wisconsin sheep breeders state at our recent agricultural convention two weeks ago, that his ewes averaged last season 75 per cent. of lambs. This corroborates my own experience with the same breed during a period of several years before we began using the Down ram for crossing. After the first cross of the Shropshire the percentage will raise at once to 100, and the subsequent crosses, if judiciously made, will bring it up to 130 and frequently higher, to 150 per cent. with a corresponding increased ability on the part of the ewes to furnish plenty of milk for twins, and to grow them in every way equal to single lambs. This one item of the increased lamb product is very considerable and is in itself sufficient to make the profit of a flock.

#### Selecting the Ewes.

In selecting our ewes to start a flock, they ought to be of good depth and well sprung at the loins, with neck not too short, a thick-necked or chucky-chopped

Merino ewe is no better breed than a sow with a short neck and deep, heavy jowl. A good brood ewe should be of proper proportions, plenty of length and depth, and good breadth over the loins, not leggy, and yet not chucky, small thin ear, strong head, and a nice clean feminine countenance; she should carry a nice, clean coat of close, even lustrous, fibre.

#### What Kind of a Ram?

The ram should be the embodiment of compact substance, and strong masculinity, a head so strong and masculine as to be almost coarse, with a large, full determined eye. He should be near the ground, heavy in heart, broad and close coupled in the back and loins and must be particularly well carried out in the hip and flanks with a good, straight hind leg. His body, head, belly and legs should be well covered with a good close coat of even texture, but not too fine in fibre for a ram.

With this sort of a ram and the ewes as above described, under good management we are in a fair way to breed first class mutton sheep, which at the same time producing a coat of medium wool, second to none, valuable at once for the splendid protection which it furnishes the sheep, its high combing merits and light shrinkage in the hands of the manufacturers, its freedom from noils in the weaving, and the popularity and durability of the manufactured goods.

But to decide this question of wool let us investigate what kind of wool had we better grow, for what sort is there the strongest demand, where does it come from, and how many will be able to supply it?

#### An Object Lesson.

In order to present to you the facts on this wool question in an acceptable light



and to avoid dry statistics, and political color, I have prepared this little case of wool samples from which we may easily see the relative value of each kind, their prices in the market, and the manner in which each kind may be grown by the farmer.

In order to obtain an accurate basis upon which to place my classification, I wrote to Mr. J. C. Hill, wool merchant of 192 Kenzie St., Chicago, requesting him to send me a sample of each kind of wool as classified on the Chicago market, attaching to such sample its classified name according to the grade of wool to which it belonged, and its then Chicago market price.

These wool samples, their names and their Chicago value are all placed in the right hand column. In the left hand column opposite each of these Chicago samples I have placed other names of like quality, selected by myself. Under each sample of this lot I have printed a history of how the sheep was bred that grew it. Under this again are samples of the manufactured goods, showing the kind of products that each kind of wool enters most largely into.

This wool is all unwashed and the prices are for the unwashed article. Now we will examine these Chicago samples, this first sample is classified as carpet and braid wool, the price sixteen cents to twenty cents.

It is undoubtedly a fair sample of Cotswold as you will see by the corresponding sample. The next sample is called "Quarter block combing," price 24c. to 26c., this goes to make cashmeres and tweeds. The sample to match this is a Shropshire-Cotswold-cross breed, the sample is of seven months' growth. It was grown by one of my patrons in Iowa and sent to me with a history of the sheep from which he clipped it.

The next sample is termed "three-eighths-blood medium," price 27c. to 50c., it is a little finer in texture than the "quarter-blood-combing-wool.

It might be found in a flock bred the same way as the preceding or by Shropshire-Leicester cross which produce an elegant staple like this sample. Here is a nice illustration of what selection may do in a flock.

Here is a sample of pure Shropshire of eight months' growth, which almost exactly matches the Chicago sample of  $\frac{3}{8}$ -blood medium. It is four inches long, fine in fibre, bright and lustrous. The next is "half-blood Delane," price 27c. to 30c., that is a still finer fibre than the  $\frac{3}{8}$ -blood medium. There is a little more Merino to this without the gum. While very fine and silky its shrinkage is considerably less.\* The corresponding Shropshire-Merino cross of seven months' growth; it is three and one-half inches long, very fine in fibre, lustrous and oily, and has not the heavy yolk of the pure Merino. This is a very profitable kind of wool to raise. The next sample is a "Fine Merino," price 20c. to 25c., and I do not consider it a fair sample of Merino wool. It is as far as fibre is concerned, but it is hardly long enough to be classed as a good sample. It has the characteristic heavy gum of the Merino.

It is readily seen here that there is a great difference in the market value of these various grades of wool in favor of the fine, close, lustrous medium staples three to four inches in length, the difference amounts to between five and fourteen cents per pound in favor of the medium wool.

Now in regard to the amount of our supply of this high priced medium wool, I find by the reference to the statistics of Lynch, of New York, and Bond, of Boston, that we are producing about

thirty millions pounds of the medium wool annually and that we are importing annually under the head of this medium wool over thirty million pounds of this same class.

Then under the heads of cheaper grades of wool, quite a good deal of this medium wool is imported to escape heavy duty.

#### We are not Keeping Sheep Enough.

Under these circumstances, with such a premium paid upon the wool, we are not producing half that our mills demand, and this in the face of a much greater demand for the kind of clothing that medium wool makes.

Now friends, why don't we here in Wisconsin put in the necessary medium wool sheep and grow that other thirty odd million pounds of medium wool, instead of obliging our manufacturers to import it at over forty per cent. duty?

Where on earth are there finer hillside sleep walks, all over this beautiful state? Where finer water privileges, where better facilities for feeding and marketing?

Yet look at our state statistics: Wisconsin owns but a paltry 700,000 sheep, while low and sandy Indiana bobs up with a million and a half, Michigan two and one-half millions, and Ohio over four million sheep. Also note the prices that these last two states get for their best medium wool.

Where does Wisconsin wool stand as a class in the open market? It is a fact that the choicest of mutton and the highest priced wool can be produced on one and the same sheep. We can utilize our feeds to the very best advantage, growing two of the highest-priced products. We have it within ourselves, here in Wisconsin, to supply the greatest amount of all the fancy mutton re-

quired by our tributary cities—Chicago, Milwaukee, St. Paul and Minneapolis—and on the backs of these very same sheep to grow the other thirty million pounds of medium wool that will command almost any reasonable price we might ask, just as soon as we can learn to grow it intelligently, to do it up honestly after shearing, and to place it upon the market in an attractive form and a business-like manner, all plainly labeled, Warranted *Double X* Wisconsin Medium.

#### DISCUSSION.

H. ROBBINS—What would you cross with the Leicester full-blood to make the best mutton and wool sheep?

MR. FOX—I think with any of the recognized Down breeds; any animal which was selected from among the recognized Down breeds would give you good results. I know that to be a fact. As to my own individual preference, I prefer the Shropshire, for this reason, he is neither the smallest nor the largest; he is medium in size, and is wonderfully hardy, as has been shown by their being kept in thousands in England, where sheep are subject to tuberculosis. I believe that in making any cross the sire should be of a compact, strong constitution.

H. ROBBINS—How would the Cotswold do?

MR. FOX—I can answer that question no better than to quote the report made by the commission appointed by the Chamber of Agriculture, of Great Britain, some five years ago to investigate as to the various breeds of sheep. That commission reported, after having traveled over various districts, examining sheep and testing a great many on the block. Their report to sum it up in

short metre, was, the best mutton sheep they declared to be the Southdown, the next best the Oxfordshire, then the Hampshire, the Border Leicester next, Lincoln next, and, last of all, the Cotswold. Now, that is the best answer I can give for that.

SUPT. MORRISON—In the southeastern portion of the state we have a great many of the Spanish Merino grades; what cross would you recommend upon those flocks?

MR. FOX—I would recommend the use of Shropshire or Oxfordshire rams on those ewes.

H. ROBBINS—I crossed first the Southdown and then the Lincoln with the Leicester. I crossed with the Southdown and then with the Lincoln on to that.

GEO. MCKERROW—Did that make pretty good hash?

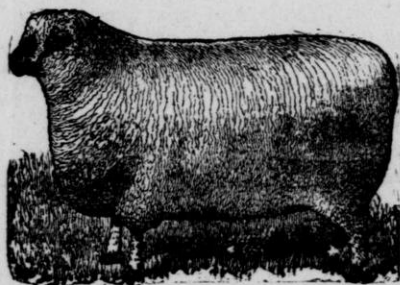
H. ROBBINS—Their wool averaged six or seven pounds and they were splendid mutton.

W. H. COLE—Would you advise crossing for mutton or would you breed right along in one direction?

MR. FOX—I think that in order to get anywhere we have got to have an objective point before we start, and therefore if I was to cross in breeding for improvement, I would like to lay out a line of action and stick right to it. In this subject we have under discussion, that of grading up the common stock, I should prefer taking any of the Down breeds and stick right to that breed, until you have got just what you want. This running all over for sires from one breed to another makes hash, and it is worse than boarding-house hash.

MR. MCCLLOUD—What would Shropshire sheep average apiece?

MR. FOX—I have had a flock of Shropshires for the last fifteen years, and they never averaged less than seven pounds unwashed. That includes the yearling sheep, that is lambs carried over, as well as the brood ewes. In order to produce a heavy growth of wool it requires heavy feeding. That the Shropshire is a good wool grower is amply shown by the evenness with which he grows his wool.



## BEST METHODS OF BREEDING; FEEDING AND MARKETING MUTTON SHEEP.

By GEORGE MCKERROW, Sussex, Wis.

This subject has been pretty well traveled over. You will pardon me if I re-travel some of the ground. First, let us take up the subject of breeding mutton sheep. I will say, first, that the breeder of mutton sheep should breed for the best and should be satisfied with nothing short of getting the best. By this I mean to breed for a class of animals that have in them the traits of early development, quick growth, the best quality of mutton, so that they can turn the food consumed to the best advantage, thereby giving us the largest profits.

### The Mutton Sheep.

Now, I agree with my friend Fox, that in the Down breeds, as they are called, we have the breeds that we must look to at present time, for the production of this high class product, an early maturing sheep. He has mentioned the different breeds I would, having experimented with them all, for early lamb production, choose one of the larger breeds, the Oxford or Hampshire. It is claimed for the Hampshires that the mothers are the best milkers and will produce the heaviest weight lambs at an early age. But that breed lacks the form that we like to see in a good mutton sheep. They are the most rangy of any of the Down breeds, standing higher, not being as well formed or as well developed in those places where we find the high priced meat, the loins, chops and rounds. They are coarser, have coarser bones and have longer necks than the

Oxford, and I therefore have a preference myself for the Oxford for early lamb production. If further back from the market, necessitating the putting of lambs on the market at from eight to ten months or from six to twelve months, I might say that then there would be little choice between the three breeds, Oxford, Shropshire or South-down.

### An Experiment.

Last year I weighed the meat from the three breeds; the Oxford lambs gave an average of 118 pounds each; they were born in March and weighed in August; the Shropshire lambs averaged 100½ pounds each, and the Southdown lambs averaged 101 and 1-3 pounds each. This shows you that the Oxford makes the most rapid growth, which is the reason why I should choose that breed as an early lamb producer. This matter of early maturity in these Down sheep is somewhat questioned by the breeders of other classes of sheep. The reasons that I have for naming the Down as the producer of the best quality of mutton are that in looking over the dressed carcasses at the fat stock shows in Chicago for the last three or four years, I have noticed that the Down carcasses were covered on the outside with lean meat, and when the meat was cut through they showed the marbled meat that is so highly prized by mutton eaters of this and all other countries; while other breeds, particularly the long wool breeds, bunch the fat upon the carcass;



upon some of their carcasses you will find large bunches of fat upon the rump as large as your fist and larger, without any outside covering of lean meat. We find in the Chicago markets right in the yards that the carefully bred Downs bring the best prices.

#### The Downs Topped the Market.

A carload of Oxford and Shropshire lambs shipped from our county in the month of December topped the Chicago market the day they were there at \$6 a hundred. Those lambs averaged 97 pounds each and netted the shipper \$5.73 per head. On the 19th day of March last I noticed a sale in the Drover's Journal of 194 grade Shropshire lambs, average 106 pounds each, which were sold at \$6.85 a hundred, which topped the market for that week.

#### Gilt-Edged Mutton.

Now, if we are going into the mutton business it will be almost impossible for the average farmer to buy a good-sized flock of pure-breds of these different breeds, as they are selling at large prices. But by the selection of a good flock of large, roomy, grade ewes, from two to five years old, and the selection of a pure-bred sire of any of the breeds that we have mentioned, the farmer can start in and produce gilt-edged mutton. The thing he must do is to hang up before him the motto of early development. It takes young pork to bring the fancy price and the lamb to top the sheep market. The earlier that you can put the lamb upon the market the greater are the profits compared with the food that he has consumed.

#### Care of the Flock.

The sheep requires but little care, but that must be given at the right time or you will find loss resulting from the lack of it. We should begin to feed the

flock well in the fall, keeping up an even growth and development; the moment that we allow a flock to run back in condition, the wool stops growing, they begin to lose mutton, the digestive organs begin to get out of condition, and though we may feed the flock highly after that through the winter, they will not recover from the bad effect of starvation in the fall. In the spring of the year we are apt to make a mistake in turning them out upon the grass again, and again we lose in mutton and wool and in the lamb crop, and in the growth and development of the lambs afterwards. When this flock is shorn and the secondary product of sheep breeding is offered to the buyer and he draws out staples from the different fleeces and stretches them between his thumb and finger, they will part, showing where the sheep was starved and the wool stopped growing, and we must take from two to four cents a pound less for the wool than the neighbor who has fed his flock well and evenly through the year. The manufacturer is not to blame; he cannot make good goods out of rotten wool; the feeder is to blame.

A breeding flock should never be made very fat, but should be kept plump and round. Many Merino breeders when they have begun to make mutton sheep have made a mistake in this direction. When a Merino sheep is in good condition it doesn't show it like a mutton sheep does. It doesn't naturally have that rotundity of form, and the man who has bred Merinos is satisfied if his mutton flock looks as well or a little better than his Merinos did, not taking into consideration the fact that they are rounder and should show better than the Merinos. Men who have tried Merinos are very apt to feed too light and to be

satisfied with too low a condition of the flock.

#### Special Care of the Lambs.

When the lambs are born special care should be taken to force them along in their growth. As I said before, the mothers should be well fed, fed upon succulent foods, milk producing foods, so that they will be ready to give the young lamb a good supply of nourishment. Then when the young lamb is old enough to take extra food a part of the pen should be partitioned off with a sliding gate; we make ours of six inch fence boards, running up and down eight inches apart. We let this down and keep it clean and the small lambs will soon learn to go in there. Then I put in a trough standing up about six inches above the ground, with a rail to prevent the lambs from getting into the trough. Into this trough I put some grain—I prefer ground oats, and the lambs will soon learn to eat and will do uncommonly well. They don't eat a great deal but what they do eat they turn into a good price for your grain, continue this feeding, feed the mothers and the lambs very well, until there is a good bed of grass, and then they may go to grass, and then if you have got a mixed pasture on high land, by which I mean access to clover, timothy and wild grasses, blue grass, white clover, etc., and plenty of water, your flock will get along very well, but if there is a shortage of pasture, continue the grain feeding of the lambs. In this way you can force along a lot of well-bred lambs so that at five months old they will average from 80 to 100 pounds each, and will bring you in the Chicago market at least \$6 per hundred.

The question of foods is often brought up. In fattening sheep that are matured, corn comes in as one of the cheap-

est and best rations, but if we are going to make a gilt-edged article of first-class mutton then we must use in this connection, succulent foods and more nitrogenous foods.

#### Cornell University Experiment.

I will quote in this connection an experiment made at Cornell University in the state of New York, during the winter of 1878-9. A few common lambs were bought at the station in the month of November, and they were very common lambs, only weighing from 36 to 50 pounds each. They were shorn in November and put into the trial experiment on the 25th day of that month. One lot was fed a nitrogenous ration, composed of clover hay and bran and cotton seed meal, with a few roots to keep them healthy. The other lot were fed a carbonaceous or fat-forming ration, composed of timothy hay and corn, with a few roots. Six months later the results of the experiment were summed up. The lambs fed on the nitrogenous food had produced mutton at a cost of \$6.03 per hundred, while those fed upon the carbonaceous food had produced mutton at a cost of \$7.59, showing a balance in favor of the nitrogenous foods of \$1.56. Remember that these were young and growing lambs and needed more of the muscle and bone-forming elements than older sheep would have needed.

Then in regard to the advance of succulent foods another experiment was carried on at the same place and same time. One lot of lambs were fed upon hay and grain, having as much as they would eat up clean, and a ration of roots; while another lot was fed upon the same kind of hay and grain, having as much as they would eat up clean, but without the roots. It was found in summing up at the close of the experi-

ment that those lambs that were fed roots had eaten twenty cents worth of roots; they had also consumed fifteen cents worth more of hay and grain than the other lot, but the lambs that were fed the roots had produced \$1.17 worth of mutton more, than the lot not fed roots. In other words, an outlay of thirty-five cents brought back \$1.17. It is a recognized fact that we cannot produce gilt-edged mutton without the use of these succulent foods. The Englishman appreciates that fact, and they understand it over in Canada full well, where there are some of the best sheep feeders in this country. There are men in Canada who make a practice of raising gilt-edged mutton and sending it across the line, paying the twenty per cent. duty, and still selling it in our large cities at a large profit. Now, if farmers up here in Wisconsin, in the same latitude as Canada, where we can grow the same classes of food that they grow there would turn our attention to producing gilt-edged mutton and put it upon the market, we could have some of that money now going across the line into Canada brought here into Wisconsin.

The question is sometimes raised as to whether we would not glut the market if we all went to producing first-class mutton. I have no fear of us all going into it, but to show you there is no fear of glutting the market with this kind of meat I will state that in the fall of 1888 I stayed four or five hours with the buyer of a Boston dressed meat house, who was buying up the surplus at the Chicago stock show; I asked him this question: How many of those sheep such as you have got here could you buy in a week? He said, I would buy 4,000 of them at the same price, if I could get them. The price was \$7 a

hundred. He says, we can't get near the amount we would like to get. He said there was no fear of over-stocking the market with this kind of mutton.

#### Some Drawbacks.

But it is not all plain sailing in the sheep business any more than in any other business. There are the parasites such as the liver worms and lung worms to be contended with. A very good recipe for dealing with ticks is the one given by Mr. Cole, that is, dipping in tobacco water. As to parasites I have found that by keeping salt, with a fourth to a tenth of sulphur in it, in troughs where the sheep can get at it, that I have no trouble with parasites. This may be due to keeping the flock in good condition, but I have noticed that sometimes in wet seasons while my neighbors are having trouble with their sheep I haven't had any. Sometimes in the fall of the year, after weaning the lambs, when we have a wet fall with a good deal of soft grass I find that the lamb flock will begin to scour, and the best remedy I have found for that is common white flour mixed with the grain ration.

The largest profits are made from putting young sheep on the market. You get from a dollar to two dollars a hundred more than for aged sheep, and you can make mutton cheaper on the young sheep than you can on the old ones.

#### DISCUSSION.

J. M. SMITH—At what price would gilt-edged beef have to be sold to secure equal profits with gilt-edged mutton or lamb?

MR. MCKERROW—I claim that I can produce a hundred-pound lamb, not taking the wool into consideration at all, but simply the meat, as cheaply as I can

produce beef on the fifteen-hundred pound steer.

SUPT. MORRISON—What is the best ration for breeding ewes?

MR. MCKERROW—The best ration for breeding ewes with me I think is clover hay twice a day, straw, as much as they want to pick over in the yard the third time and a ration composed of equal parts of bran, oats and corn. If I am short of clover hay and have to reduce the amount of clover hay fed and feed some timothy or corn fodder, then I take out the corn almost or entirely; and I give a ration of roots.

J. D. JONES—I would like to know if the Oxford Downs are considered the best mutton.

MR. MCKERROW—That question is a hard one to answer; so far as the mutton quality is concerned the Southdown I guess is recognized as the best, but its size is somewhat against it in popular favor. Then the Shropshire comes between the Southdown and Oxford, the Oxford being somewhat larger, and its friends think that it is a better producer of the early lamb, as I stated in the beginning.

H. ROBBINS—It is very easy to get rid of mutton lambs, but how do you get rid of old sheep?

MR. MCKERROW—The ewes we wish to cull out of our flock we find no difficulty in getting rid of; we cull them out, sometimes fatten on the grass, sometimes late in the fall and sometimes later in the winter, and we have no trouble in getting from \$4.50 to \$6.

SUPT. MORRISON—To what age do you find it profitable to keep the ewes?

MR. MCKERROW—The mutton breeding ewe has her most profitable time between 2 and 5 years old.

WELDON VAN KIRK—At how early an

age do you have the ewes drop their first lamb?

MR. MCKERROW—At two years.

THOS. CONVEY—Is there much mischief done by exposing sheep to cold rains and damp quarters?

MR. MCKERROW—I believe I have lost as much in my flock by a cold rain before I knew enough to house them, as I have gained by a month's feeding afterward.

SUPT. MORRISON—Have you any system of registration?

MR. MCKERROW—Yes, we place a private ear-tag in the ear of the lamb. I have a regular record with pages and columns. In the first column is placed the name of the sire and dam, with their ear-tag numbers and the record numbers of their record in the acknowledged record of the Shropshire association's record, the Oxford record, the Southdown record, where most of my sheep are recorded. Then when an animal is born he is given an ear-tag, and his ear-tag number is placed in the proper column, or if twins two numbers are placed there; then when placed in the breeding flock they are placed on the proper page, and so on.

W. H. COLE—How old are the lambs when you put the tags in?

MR. MCKERROW—We have to put them in when the lambs are about two weeks old, and it requires special care then to sort them out and see that the ewes have their own lambs.

W. H. COLE—Do you have any trouble with the ear-tag working down into the ear of the sheep?

MR. MCKERROW—I do not; I have had them torn out.

THOS. CONVEY—Will a sheep eat when it is dark?

MR. MCKERROW—Well, I believe it is a pretty poor time for them to eat. They



should not be fed earlier in the morning than sunrise and they should be fed in the afternoon so as to have them through eating by shortly after sundown or about sundown.

**QUESTION**—Don't you think they feed considerable in the pasture before sunrise in the morning?

**MR. MCKERROW**—But I am speaking of feeding in the winter.

**MR. O'NEILL**—How much does it cost to produce mutton?

**MR. KERROW**—A flock of sheep get a part of their living on the farm without much cost; they are good gleaners through the stubble fields after harvest and good scavengers and browsers, and take a part of their feed from the weed and bush that they meet in their way, so that it is pretty hard to figure, unless we make experiments.

## EARLY LAMB RAISING.

By R. C. JUDSON, Farmington, Minn.

### A Promise.

In an unguarded moment I promised to write you a paper on the subject of raising early lambs for market. Now, if there is anything I dislike it is to prepare a paper upon any subject, but as I have promised I will endeavor to keep my word.

I shall not give you the history of my ups and downs in sheep raising in Minnesota for fifteen years, and I shall not speak upon the merits of the different breeds, all of which, or rather the most of them, I have my private opinion.

I realized a few years ago that there was a good market for early spring lambs in St. Paul, and that the large hotel clubs and restaurants were getting their early spring lambs from Chicago and paying a good round price for the same, and I resolved to furnish that mutton, or at least a portion of it.

### Read and Keep Posted Up.

I read all the literature I could secure on the subject and made my own experiments and here they are in a nutshell.

First, I secure after shearing the largest and best high grade ewes that I can pick up. I get them from one year up to four, dip them all so as to kill all ticks and parasites, tar their noses on account of the fly and turn them into good pasture. Keep them thrifty until August, when I have a new pasture to let them run in, get them up to the yard nights and give them a little grain, increasing the allowance until by the tenth day I am feeding a good winter allowance (the grain I feed being oats). This will soon bring the ewe around for service. July 1st I put up the bucks I intend to use in the barn away from all noise of the bleat of the sheep. I commence with a small grain ration and all of the good clover hay he will eat, increasing the ration of grain until each eats his pint of oats three times per day, and at time of service I have a good vigorous ram and his vigor will show itself in his progeny. After the ewes are through with their feed I turn one of the rams in with the flock and allow him to

serve only one ewe when he is taken back into his pen in the barn and another is brought out if more than one ewe is to be served. In the morning the service is repeated and again at night and the same pains is taken until all of the ewes are served, keeping record of each ewe served. After all ewes are safe with lamb the grain feed is gradually withdrawn and they are kept on grass until late in the fall when I commence feeding bran and feed bran up to the day, and for two or three days after each lamb is dropped, when I commence feeding oats with the bran, feeding as is necessary to furnish a full flow of milk.

#### Clover Hay.

I feed my clover hay (which by the way is the only hay fit for sheep), on the ground in the yard. I have one-half acre yard enclosed with a good board fence, and straw, hay and corn-stalks in stacks built against the fence except the north end where my shed is. My object is to shut off absolutely all wind, which is what kills the young lambs. I feed my sheep next to the fence all around the yard, putting the hay up against the fence. By feeding this way you require the sheep to travel backward and forward, in fact a sheep in eating hay this way hardly stops long in a place, and as I want my sheep to get plenty of exercise, they get it by hustling for their hay; and right here I will say that I think plenty of exercise, salt, with sulphur and bran, is just what a sheep needs. The bran keeps their bowels open, and hardly a sheep treated this way is feverish during lambing. I have discarded all warm barns for lambing, and, I prefer the open yard provided, of course, it is not storming. Of course I want the yard protected from winds. The best lambs I had, dropped

in my yards with the thermometer 15 below zero. Out of 83 lambs dropped in the yard with the thermometer below zero, I only lost three and two of them were twins.

I found out to my sorrow that keeping ewes shut up in warm pens during lambing I lost 40 per cent. of my lambs and not unfrequently a few old ones.

#### Care of Lambs.

After my lambs are old enough to begin to eat grain by themselves, I make a little pen adjoining the one where the mothers are kept, and cut a hole through large enough to let the lamb through and feed them ground corn, oats, bran and oil-cake, and give them all they will eat up to the day they go to the block. I market my lambs dressed in St Paul, and get 20 cents per pound dressed from March 15 to May 15. Of course I have them dressed nicely, well trimmed and sewed up in good cotton cloth. My object is getting them to the market in first-class shape, as it is almost impossible to sell any dressed meat or poultry that is bloody and dirty, and placed in the market in a slipshod manner. I commence shipping my lambs when they will dress 30 to 35 pounds. Now, right here let me advise all who intend to butcher lambs, to butcher them as soon as taken from their mothers, as a lamb will bleat himself poor in a day. There is much more that might be said in lamb raising, also in selecting the ewes, diseases that sheep are prone to run across, and trust some day that I may meet with you and then we can compare notes. I will close this by saying that the high-grade Cotswold ewe and the Shropshire ram is what I like, and the nearer full-blood Cotswold ewes you get the better.

# EDUCATIONAL SESSION.

## SMALL FRUIT GROWING UPON THE FARM.

By J. M. SMITH, President Wis. State Horticultural Society.

### Strawberries as Cheap as Potatoes.

I do not appear before you this evening for the purpose of selling you trees or plants. I firmly believe that nearly every farmer in the state, can, and ought to have a full supply of small fruits for the entire year. My object is to try to convince you of that fact, and then give you a few directions as to the best varieties, methods of cultivation, etc. I shall not tell you that you can raise a bushel of strawberries as cheaply as you can a bushel of potatoes, as I do not believe that you can do so. Neither shall I tell you that you can raise 500 or 600 bushels to the acre, as I do not believe that either. I shall not tell you any unreasonable stories of any kind, so please give me your attention for a short time and I will try to convince you that you will add very much to the value, as well as to the comfort and happiness of your homes upon your farms, by having a full supply of desirable small fruits.

Let it be remembered that although we cannot yet boast of a general and complete success in growing apples and pears, there is no state in the Union, that can show a finer record in the yield of small fruits per acre than can Wisconsin. What then about soils? I prefer a rather damp, sandy loam, but if this is not to be had, let it be remembered, that any land that will grow a good crop of corn or potatoes, will grow a fair crop

of strawberries, raspberries, blackberries, currants or grapes.

Another thing to be remembered is that any manure that will make corn or potatoes grow will make the above named fruits grow. As to the amount of land needed to furnish a supply for your families, it is safe to say that every square rod of land devoted to strawberries, and fairly well cared for, will give you at least one bushel of nice berries. Raspberries and blackberries will yield about two-thirds as much as strawberries; currants should yield at least four quarts to the bush, and grapes at the rate of at least three tons per acre. These are all very moderate yields, and you may easily estimate from them the amount of land you will require to furnish a generous supply for your family.

### The Strawberry.

We will speak first of the strawberry. It is well to manure the land for this fruit, even if it is in good condition. It should also be so well drained that no water can stand upon the beds. In short, put it in as good condition as you would if you expected to raise on it 100 bushels of shelled corn or 250 bushels of potatoes per acre. As to varieties most desirable to set, I will say, if the Wilson does as well in your vicinity as it does about Green Bay, I truly believe that you will get more fruit from it than

from any other strawberry plant in existence. It has a perfect blossom and needs no other near it as a fertilizer. Next to the Wilson with me comes the Manchester, and the Crescent. These last two named are both pistillates, and need some perfect flowering variety among them in order that they may do their best, or even fairly well. I have used the Wilson as a fertilizer by setting about one-third of the plants of this variety.

#### Go Slow Upon Novelities.

As to giving any advice in regard to the hosts of new varieties, I will only say that in my opinion, the slower you go upon them the better it will be for your purse, and also for your peace of mind. Let the professional growers test them thoroughly, and when any really good variety is produced, the public will soon be made acquainted with the fact, and you will be less likely to waste both your time and money. If you decide to set Wilson, and wish, as you probably will, to cultivate with a horse, mark the rows not less than three feet apart, and then set the plants 12 or 15 inches apart in the rows. In setting be sure to press the earth firmly about the roots of the plants, and if the weather is dry, give them a thorough watering. If you set the Crescent, the Warfield No. 2, or any other of these very strong growers, make the rows four feet apart, and set the plants 18 inches apart in the rows. Keep down all weeds and grass by cultivation, and go through them when in bloom and clip off all the blossoms so as to throw the entire growth into the plant during the whole of the first season. After the ground is frozen in the fall go over them with marsh hay and cover sufficiently to hide all the leaves, and leave them until spring. Straw is equally good for

covering if it has no foul seeds to grow and choke the plants in the spring.

#### A New Bed Every Spring.

I find it better, and I believe quite as cheap, to set a new bed every spring, as the weeds and grass will come up and annoy you in the old bed; and even if you succeed in keeping them down for two or three years, the fruit is not quite as fine nor the yield as large as the first year. In selecting plants for setting I make it an invariable rule, never to set plants that have borne fruit. Be sure to have young and thrifty plants of the last season's growth, and do not set any others even if they are given to you. Leave the covering on in the spring, until all danger of hard freezing is past, and the young leaves are beginning to start. When I have followed this plan, I have never once had the fruit damaged by late frosts. It will be two or three days late in ripening, but the crop is almost a certainty. After taking off the covering I put on a dressing of fine manure, or what I like better, wood ashes, at the rate of half a bushel to the square rod, keep down the weeds, and in June and July, pick a fine crop of this queen of all the small fruits.

By following these few rules, I have not failed to have at least a paying crop in twenty-five years. The yields per acre have as a rule, been much larger than the amount I have named, as within reach of nearly or quite every farmer in the state.

#### Raspberries.

Give them the same kind of soil as the strawberries, and the same kind of preparation. For varieties I have never tried any that I like as well as the following: The Marlboro for the first early red; and the Cuthbert for the late red; the first named is with me a large and



beautiful berry, and begins to ripen before the strawberries are gone, I believe we have never failed to have them both upon the table at the same time since the Marlboro came into bearing, though we do not consider them quite equal to the Cuthbert in quality. The Cuthbert is a large late berry excellent in quality and very productive. Among the blackcaps the Souhegan is nearly as early as the Marlboro, a good bearer, and of good quality; the Gregg is a large late berry, and with me an excellent bearer of fine fruit. If you wish a few yellow ones take the Golden Queen.

The above named will give a good supply of choice fruit from the beginning to the end of the raspberry season. In setting, the ground should be furrowed, making the rows not less than seven feet apart; then set the plants two feet apart in the rows, press the earth firmly around the roots and water, if the weather is dry. I always grow some other crop between the rows the first season.

#### Protect by Covering.

In the fall, and before the ground freezes, they should be laid down and covered with earth. In covering, if we wish to lay the plants towards the west one man takes a hoe or a common four-tined potato fork, and digs out some of the earth upon the west side of the plant; then another follows and bends the plant over towards the west until it lies nearly flat upon the ground; another follows and throws a shovelful of earth upon the tips of the plants to hold them in place, after which they are covered about one inch in depth. When danger from freezing is over in the spring, they are uncovered and raised up as near their natural position as convenient and the earth is again replaced where it was

taken from in the fall. Then put on a dressing of manure or ashes and cultivate well and thoroughly. All weeds and grass that grow in the rows must, of course, be destroyed with the hoe. You will not get a full crop the second season, as you will of strawberries, but you will get some nice fruit. As soon as you are done picking the fruit, go through and cut out all the canes, as raspberry and blackberry canes never bear but one season; also, cut out the weak ones of the new growth, leaving only a sufficient number to have a good crop of fruit the following season. After this is done we go through with a pair of large shears and cut off the tops, leaving them about four feet high.

I am not sure that this is the best known way of trimming the bushes, but it is a very cheap and easy way, and I get large crops of fruit while practicing it. The red varieties propagate by suckers, and will always give you many more than are needed, which surplus must of course be destroyed the same as any other weeds. The blackcaps do not sucker, but propagate from the tips of their branches. Should you need new sets, go among them in August and bend over some of the branches of the strong thrifty canes, and throw sufficient earth upon the tips to hold them in place, when they will take root, and the following spring will furnish you with nice plants for setting new beds. My oldest bed of Cuthberts, some seven or eight years old, never promised better than this spring. The cultivation of blackberries is so similar to that of the raspberry, that I need not repeat what I have said. They need the same winter protection, and given in the same way, and if well cared for will last longer than the raspberries. During the last five or six years, a great deal has been

said and printed in praise of the dew-berry, or in other words, the running blackberry. I have been spending some time and money upon them for a number of years past, and if I had received one dollar per quart for all the berries that we have picked from them, I should still be some money out of pocket. I have already dug up a portion of them, and the balance of them will soon follow unless they do very much better than they have done.

#### Grapes.

The cultivation of grapes is so easy, that I will say but very little upon the subject. We set the vines eight feet apart each way. They are trained upon a trellis, posts being set about 12 feet apart, and smooth wires stretched upon them.

We trim them in the fall, cutting the branches of the main canes back to two or three buds each. We then lay them down and then cover them with earth one to two inches deep and leave them until we think danger from frost is past. The Concord has long been the grape for the masses, and is still more generally cultivated than any other variety. Sometimes the season in the northern portion of our state is too short for it to do its best. With me the Moore's Early, Worden, and the Massasoit are all from one week to ten days earlier than the Concord, and the two last named are, in my opinion, much better in quality. I would not advise any one in this state to plant any grape that is later than the Concord in ripening, as there are a number of good varieties that I have not named, that I believe to be not only earlier, but better in quality, though I have not yet tested them sufficiently on my grounds to speak confidently of their merits.

#### Currants.

The currant is a northern fruit, and absolutely refuses to do its best in a southern climate. There is no fruit grown with us, that will bear as much neglect, and still have a small amount of fruit as the currant. Neither is there any that will respond more quickly to first-rate care and cultivation than this fruit. It is the only one of our garden fruits that will endure our most severe winters, and come out in the spring without a damaged bud. It is more than thirty years since I set the first currant bushes in this state, I have never given them any winter protection, and have never yet seen a bud damaged by cold. We set the bushes six feet apart each way, manure heavily, cultivate thoroughly and always secure a heavy crop.

For table use, it is doubtful if there are any better varieties than the old red and white Dutch. For other purposes, my wife thinks she has never used any that were equal to the Prince Albert and the Long Bunch Holland. They are much larger than the last named, and with me yield a much larger crop. We let from four to eight canes grow in a stool, and after they have borne a few years we cut them out and allow the strong young canes to take their place. In this manner they may be kept in full bearing for many years.

#### To Destroy the Currant Worm

We use White Hellebore, putting about half a tablespoonful into a ten-quart pail of water, and then sprinkle on a sufficient quantity to fairly wet the leaves. Its use will not injure the fruit or those who use it in any manner.

We trim the bushes any time in the fall after the leaves have fallen from them. I

have in this brief manner given a few rules which if followed to a reasonable extent, and then supplemented by the good sense of our farmers and their wives, will, as I believe, enable forty-nine out of every fifty of them, to have a full supply of all of these delicious fruits, not only during their season of ripening, but also canned, or otherwise preserved during the entire year. The comforts and the happiness that may thus be added to our homes, is only known to those who have had a bountiful supply of them all. If among the many thousands who will doubtless read the Bulletin report of this closing institute, there are a few who will make a faithful and persevering effort to follow out the recommendations here given to supply themselves with small fruits, I shall feel that my efforts in preparing these remarks have not been in vain.

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## THE GOOD FARMER AND THE POOR FARMER---A CONTRAST.

By MRS. J. A. CLARK.

I propose by a few instances and examples to make a contrast between the good farmer and the poor farmer, and to show by their works their utterly different ways of doing things.

### Care of Tools.

The good farmer takes care of his tools. After haying you will see him take his scythe and his rakes up to the top of the hay mow, so as to have them in a safe out of the way place, and fasten them up under the ridge pole. Next summer the scythe falls down on his head and cuts a slice off of one of his ears, and when he wants the rakes, he has to knock them down with clubs. The poor farmer leaves his scythe in a tree, and a man steals it, and he hangs his rakes on a fence and his wife gets them to rake the door yard with, and by the first of October, there won't be a tooth left in any of them.

### Good, Convenient Buildings.

The good farmer may be known by his buildings, he has a three-story pig

pen, and when a hog gets out, his wife and two oldest girls chase him around the garden till he gets hungry and goes into the pen for lunch; for the good farmer keeps no dog. The poor farmer has no pig pen, and when his pigs get out of the yard, he sets his three dogs on them and the dogs bite their ears off and make them bald-headed, and the boys mock them as they go by in the road, and the bears come down out of the woods and eat up those boys, as in old English time.

### "Early to Bed and Early to Rise."

Is the good farmer's motto, and he turns out of his warm couch at five o'clock in the coldest winter morning, and then sits over the stove till daylight, by which time the hired man is up ready to help do the chores. The poor farmer lies in bed till eight o'clock, while his wife gets up and builds the fire and starts the boys off to milk. Look at the difference in their stock. See the noble grace with which the good farmer's horse carries

that excellent man to church where he hitches him in the shed and when that spirited animal hears the soprano sing a solo, he thinks it is an engine whistle and kicks a \$200 buggy to pieces, and nearly breaks up the meeting. Now mark the contrast. You will see the poor farmer's horse hitched to a post in front of a saloon, and the wind blows through him till the tears roll down his face and the people going by, pity him. About ten o'clock in the evening he shakes off his bridle and goes home, opens the corn crib door and eats in peace and quiet till mid-night, when the poor farmer comes home and sits up the rest of the night doctoring him for the colic.

**Look at All the Surroundings of the Two Classes.**

Take the wood piles for instance. The good farmer's pile will be straight and square and ten feet high all around. He will send his small boy out after an armful of wood and the pile will tumble over on to him, and they won't find that boy until the next summer. The poor farmer's pile will be scattered around in lots over the front yard and the boys will bring it in and lay it loose around the stove. When he comes home at night he will fall over it in the dark, and make a very big noise and wake up his wife. Just then the clock will strike two and he will have to explain to her how they have been initiating a man into the lodge and she will wonder how the Mason's hall can hold so many as they have been taking in lately, and how her husband can eat so many nasty cloves.

**A Politician, of Course.**

The good farmer takes an interest in politics, he subscribes for the weekly paper, published at his county seat, and finally runs for justice of peace on the temperance ticket and gets two votes.

While all the paper the poor farmer takes is a paper of tobacco and he never gets any office. The good farmer reads and improves his mind, he is posted on all the new theories of government and tries to make his neighbors know all about it. He goes to the Grange and asks leave to read one of Henry George's nine-column articles. While he reads, the women grangers all whisper, and talk so much scandal about their outside neighbors, that war wages from that time forth in that community; while the male members go to sleep with their mouths open and the flies crawl down their throats and tickle them, and make them smile in their sleep. The good farmer thinks he is interesting them and like Tennyson's brook "runs on and on forever."

But the poor farmer, he goes down and plays cards and pool for his amusement and the only mark he makes in this world is a chalk mark, showing that he owes fifty cents to the saloon keeper. The good farmer reads the papers. He consults the monthly reports and the statistics of the agricultural bureau. He finds out that there is to be a war in Europe, and he knows that wheat will be \$1.25 a bushel by next spring, so he goes to Chicago and buys 5,000 bushels and puts up \$500 as margin and when wheat does go up three cents, he feels mighty good, and figures what he will do with the \$2,000 he will make on this deal. And then it slumps and the margin is gone. When they ask him to put up more, he concludes that this wheat speculation is all a gambling business, and he will never have any thing more to do with it. The poor farmer takes no paper, and when the Bohemian oat man comes along offering to sell him oats at \$10 a bushel and take all he raises at the same price, he buys



ten bushels and gives his note for them. He puts the oats on the barn floor and the hogs get in and rip open the bags, what they do not eat the hens do, and he don't have one of those oats to sow next spring. By and by the man comes along with a hundred dollar note and the poor farmer has to put his farm in his wife's name, and give his brother-in-law a chattel mortgage on his stock to avoid paying it.

#### A Seeker for Knowledge.

The good farmer attends the farmer's institute—the Pomona Grange or the annual meeting of the state agricultural society. He goes to that and attends the Governor's receptions and finds him a first rate fellow and will vote for him every time he runs.

He is present at all the meetings of the State Agricultural society and hears such learned farmers as Jack Hinton and Mrs. Dr. Severance and gets his mind *full of ideas* and when he goes home and meets a neighbor he talks tariff to him and talks and talks until all the dogs in town howl before he goes within a half mile of them.

The poor man also has heard of the agricultural society meetings and thinks he will go to them and see if he cannot improve a little. But on his way up town he steps into a saloon to get a glass of beer and becomes interested in a game of pinochle in which he soon takes a hand, and then more beer and then pinochle and then again more beer, until toward night he gets noisy and a man strikes him and a big policeman arrests him and puts him in the cooler over night.

The next morning the judge fines him all the money he has in his pocket, and he makes his way home partly on the

freight train and partly on foot, and tells his wife that those agricultural meetings are the best thing he has run on to yet, and what he has learned will be worth more than \$300 to him when he comes to put in his crops.

I take one glance at the respective families and then close. Let me compare the children. The good farmer has good children. His boy is neat and well behaved, and is not out in the road "sassing" folks as they go by; no, he is in the house learning the shorter catechism.

When the circus comes round, though he looks anxiously at the bills—he could not be a boy and not do that—yet he recognizes the folly and vanity of such shows, and his parents not approving of them, he stays quietly at home while the procession marches by, content with the promise that if he is a good boy and works well the balance of the season, they will take him in the fall to the cemetery to see his grandfather's grave.

We all know the poor farmer's boy—there is generally six or eight of them. He is always in the middle of the road and *sasses* you as you go by, and you are lucky if he does not heave a rock at you. When the circus comes round he crawls under the side of the tent and comes up under the manager's eye, and the old baboon reaches out and pulls out the most of his hair. But he doesn't cry out or make a noise though he can't wear his hat for nearly two weeks after the show is gone.

The good farmer's daughter is beautiful and accomplished. Her education has been attended to. She can crochet and make tatting. You never see her idle. All the chairs in her father's house are decorated with tidies from her fair hands.

She can make worsted flowers and paint after the manner of the Grecian and the Orientals and knit open work stockings and has a hundred other accomplishments that I do not call to mind. If she does not always get married the only reason is that there is no one in the community good enough for her. If she wished she could have the pick of them—so her mother says.

The poor farmer's daughter has none of these accomplishments. She cannot even draw in rugs. She has to help her mother to make up for the faults of her father. In the summer she does the house work and in winter teaches school. Finally she studies medicine and takes

her revenge on mankind by doctoring them.

I have given you now examples of the good and poor farmer. There was once a negro preacher who held faith in these words:

"Brethren," said he, "there are two paths; the broad and the narrow path that leads to destruction; the straight and the crooked path which leads to damnation. Which will you take?"

"In that case," answered one of the congregation, "dis nigger will take to the woods."

As Capt. Cuttle would say, the moral of this story lies in the application of it.

## SOME HELPS TO HOME MAKING.

By MRS. J. M. SMITH.

### A Good Garden.

Many really good farmers declare that they cannot afford to have strawberries and other small fruits, except as an occasional luxury. Well, if they are to be bought and paid for with the price of oats at 15 or 18 cents per bushel, and other things in proportion, of course he cannot afford it. Yet the very small area of land necessary to produce plenty of small fruits for an average family would not be missed from the amount of grain produced on the farm. He may say he has no time to plant or cultivate it; in fact, I know many farmers who seem to think their time would be as good as wasted in planting and caring for a vegetable garden; while, in fact, a single acre in small fruits and vegetables of desirable varieties, well cared for, will do more to promote the health and com-

fort of a family, to say nothing of the pleasure to be enjoyed, than any other acre on the farm. Only get the boys and girls interested in the care of a berry patch, and let them have a good supply for one year, and they will not be likely ever to forego the luxury afterwards.

In spite of all the poetry written about the happiness and beauty of life on a farm, the fact still remains that there are plenty of hardships for both farmers and their wives, and there is no danger of there being too much pains taken to bring beauty or pleasure, into or around their homes.

### Earnest Young Men and Women.

The most valuable outcome of profitable and successful farm life is realized in the strong and earnest young men and women there trained up to build

future homes, either on the farm or elsewhere; for not all ought to be expected to remain on the farm.

Our country would soon find itself short of capable men to manage its business affairs, and to fill places of public trust, if all the boys should stay on the farm. Then let farmers make the most of themselves and of their homes, thereby treasuring up for their children pleasant memories to help them when they go forth to try their skill in home building for themselves. Then while you see to it that your homes are well supplied with plenty of small fruits, there is still another side to be looked at.

#### Man Cannot Live by Bread Alone.

We are told in a very old fashioned book, that "man cannot live by bread alone;" and might we not add, neither by fruit and vegetables! There is, in my opinion, no way in which so much pleasure can be provided for a family, for so small an outlay of money, as by having fragrant and beautiful flowers around the home.

What shall we have, then? First on the list I would place roses, the queen of all the flowers. I can never forget the roses that grew around the home of my childhood. We enjoyed them while fresh, and when they began to fade we gathered the leaves and scattered them in our drawers and trunks among the clothing, and enjoyed their perfume until the roses came again. Then the lilacs and peonies, which yielded their beauty year by year, with but very little cost or care, were the delight of our childish hearts.

The perennial phlox in variety are very satisfactory later in the season, and give a long succession of bloom. I speak first of the perennials, because when once established they remain year

after year with very little expense. Of course the list may be enlarged indefinitely, as taste and means permit.

But we must have a few of the many beautiful annuals, of which I would put first, pansies, with their infinite variety of colors and markings. I have often heard children compare them to baby faces, and I think the comparison very apt.

#### Flower Seed.

The seeds should be sown very early, in hot-beds if possible, but if there is no hot-bed a cold frame is, I think, much better than a box in the house, as the plants are likely to be stronger and more thrifty. Four pieces of board (which any woman who can use a hammer can nail together at the corners) will answer the purpose. This should be placed over a bed of mellow earth and pressed down at the bottom. If you have any unused windows, they may be placed over the frame, as this will make it possible to plant earlier without danger from frost; but if not, a piece of strong cotton cloth will answer a good purpose. Loops should be securely sewed on to the corners to keep it properly in place, and it will keep off quite a sharp frost. Make the rows from four to six inches apart, in which sow pansies, annual phlox (I prefer the grandiflora varieties), pinks, asters, candy-tuft, balsams and such other varieties as your taste may dictate. By raising nearly all your plants in this seed bed you can get better plants than planting the seeds where the flowers are to bloom; you will also have many more available plants, as they may be grown quite thickly in the rows, then you will also have the advantage of having but a small space to keep clear of weeds, as we all know that they will grow much

faster than the plants that we are so anxiously looking for.

#### Care of Plants.

When the young plants are large enough to be clearly seen, carefully loosen up the earth between the rows, and sprinkle with water when needed. Then when the weather is warm enough for thrifty out-door growth, have the ground where you wish them to bloom carefully prepared, and transplant the young seedlings into permanent beds. If you cannot have a hot-bed, I would not try to grow verbenas plants, as they may be had from any florist for a trifling cost. I have mentioned but a few varieties of annuals, but every one may enlarge the list according to their own taste, or according to the time and labor that they may be willing to give to their care. A few plants well cared for, will afford much more satisfaction than many more if they are neglected. The ten weeks stocks and sweet alyssum, I always plant in a shallow box set up quite off from the ground, as if planted in the seed bed, the small black fleas will eat them up as soon as they come through the ground; while if grown in raised boxes, I never fail to get good,

strong plants. All this may seem to be a great deal of pains to take for a few flower plants, but if you really love and care for the flowers, it will be only a pleasant change from your indoor cares. I forgot to put on the list of seeds the sweet peas and mignonette, which combined seem to be the very perfection of sweetness. One friend used to have what she called her glory-bed, which consisted of a good clump of sweet peas, surrounded by a border of mignonette. Then near her kitchen door she had a bed of bright portulaccas where she could see them as she passed out and in. She said their beauty rested her when weary. I do not think our Good Father over all would have sprinkled bright flowers so plentifully everywhere, if He had not intended us to enjoy them.

Then let us each bring all the brightness and beauty possible into our homes; they will help in educating and developing the characters of the children who are sent to us to cheer and brighten our lives. In the short time allowed me I have only been able to offer a few hints and suggestions, if they should prove any help or comfort to some tired or discouraged farmer's wife or daughter, I shall be content.



## THE COMING FARMER.

By HON. J. M. TRUE, Baraboo, Wis.

It is not my intention, or wish even, to picture to you a man of physical, mental and moral perfection as the typical farmer of the future. Neither will I attempt to please you with highly colored sketches of the beauties and joys of farm life, the superlative grandeur of the farmer's vocation, or the mental and moral excellencies supposed to naturally cluster around the tiller of the soil.

That much is truthfully said that reflects credit upon the farm as the place from which strength and purity is drawn to replenish the vitiated currents of business, intellectual and social thought and action, I am pleased to admit.

That the present position of the best class of our American farmers is a desirable one, I gladly claim. They need envy no one. But that the condition of a large part of those living upon our farms is vastly inferior to what it should be, and might be, I am also forced to confess.

To consider briefly some things that keep the average farmer of to-day from being what the more successful coming farmer must be is the object of this paper. There are many farmers before me this evening whose active experience extends backward over a period of forty or fifty years. The wonderful changes that have taken place within that time in connection with agriculture alone are hardly realized by you even, so gradually has the work of progress been accomplished. Where wide stretches of native forest and prairie then met your view, cultivated fields and pleasant

homes mark the advance of our American genius and civilization.

### The Log Cabin of the Past.

The rude cabin of the early settler now stands obscurely in the shadow of the modern cottage as a reminder of the days of small beginnings. Commodious barns and stables indicate the channels into which, or through which, thrift and enterprise have led the prosperous possessor. "Old Brindle" has passed away with the primitive quarters erected for her comfort, while in the new stables the better bred and more aristocratic Short-horn, Holstein, Jersey or Guernsey are found. Poor "old Brindle!" what might you have accomplished had you been quartered in this model stable, fed a ration of ensilage, clover hay, wheat bran and oil meal, and drank warm water.

Old "Doll" and "Dobbin" plowed the fields, cultivated and gathered the crops, drew the grain many a weary mile to market, and then hitched to the same and only vehicle on Sundays, briskly jogged to the country church. Now the general-purpose horse is unpopular. The muscular Clyde or Percheron furnishes the motive power upon the farm, while the dashing roadster, in a nickle-plated harness, at a three-minute gait, draws the top buggy, in which the farmer's son sits and manipulates the lines. This new horse is not a church-goer. He goes, but not in that direction.

The farm implements of our boyhood, when muscular developments had a practical meaning, have given way to improvements that lightened labor and made it possible for a boy to do the work of ten men.

**Modern Improvements.**

The wives and daughters of to-day know little of the peculiar household cares of their grandmothers. The cooking range, the washing machine and clothes wringers, the sewing and knitting machines, factories for the manufacture of dairy products, illuminating oils, and many other lighteners of toil have come to farmers' homes within my recollection.

Our mothers, fifty years ago, contentedly and well performed their household duties, without the advantages of these modern improvements, and knew little of that modern necessary evil—hired girls.

They were mistresses of their homes, and a consciousness of their independence and natural resources contributed largely to that strength of character we so gladly ascribe to them.

The favored children of to-day seem to be born to a degree of intellectual and scientific advancement, that it would have taken ten years of application in the schools, for their grandparents to acquire, while our social and educational advantages as completely overshadow those of the past, as do improvements in any other given direction.

As the modern school building with its appliances and apparatus is superior to the old log school-house, with its rude benches and bare walls; so the methods and breadth of educational thought differ widely from the past.

An early acquaintance with good books, music, proper games and recreations, in our homes are comparatively new, but strong influences in moulding character, and nurturing that most sacred sentiment—a love of home.

We repeat,— the favored farmer's home to-day is one of the pleasantest in the land. Shall this condition become generally applicable to the class?

**Get Out of the Old Ruts.**

We cannot believe that the spirit of progress that has so signally blessed the American people in the past will fail to continue its beneficent work; but to expect that the coming fifty years will be as prolific of invention, scientific achievement, and intellectual advancement as the past fifty has been, requires a remarkable degree of faith in the unseen.

Farmers, as a class, are perhaps the most difficult to lead out of old, long traveled ruts, and into a *trial* even of that which is radically new.

They do not contribute largely to that changeful, restless element, that would keep society in a constant ferment, and render the foundations of government, even, uncertain.

If they are more persistently loyal to political and religious antecedents, than most other classes, they are also slow to recognize those lines of thought and action that lead up to the better methods and conditions in their own particular interests.

These peculiarities are largely attributable to the isolated character of their lives, to a failure to mingle in society, to assert their individuality, and to consult with the more successful and intelligent of their own class, about mutual interests.

Their narrow view of life leads them to harbor feelings of distrust and jealousy of those around them, especially the more successful of neighbors engaged in the same occupation as themselves; while better methods, better business habits and better education are regarded as delusions.

**Intelligence and Prosperity.**

If the average farmer of the near future can be brought to the general plane of thrift and intelligence, now oc-

cupied by the best representatives of the calling, this will be one of the great social and political events of the century.

To accomplish this the coming farmer must be intelligent in his work; he must recognize the fact that to be a successful farmer he must be a successful business man. No other occupation calls for closer discernment and intelligent action. The wide-awake farmer is not only a producer, but a manufacturer. He must therefore understand the nature of soils, the value and influence of fertilizers, and the laws that govern plant growth. He must be familiar with the principles of the breeding of farm stock, the general form, characteristics and adaptation of the various breeds of the animals he handles. He must have an intelligent idea of the profits he should derive from the enterprise in which he engages. He must have well defined ideas of the values and effects of feeds, that when combined they may produce required results. He will be a buyer and seller, and as such should cultivate a ready and correct judgment. He should study the markets from a consideration of the question of supply and demand, in order to buy and sell at a profit. Instead of being controlled by circumstances, let him aim to be in position to use them for his advancement. If the successful merchant deserves the title of *business* man, the successful farmer should have equal claim to the distinction. The coming farmer will be an active man in public affairs.

#### More Education.

Educational, social and political reform must receive a strong support from the farmer.

Such reforms are an absolute necessity to the maintenance and advance-

ment of his interests, and only will he prosper as they are fostered.

The common school is coming to be more and more an institution peculiar to our rural districts, and the general tendency of advanced pupils from these, to seek better instruction in our village and city high schools has in itself an element of danger to the common district school.

Let not the intelligence and wealth of the country neglect the educational interests of the masses, because better instruction is available to their favored sons and daughters.

The farm will continue to be the best place in which to rear strong brainy men, and pure noble-minded women, and though these may not remain on the farm, but as in the past go out to give strength and character to business, intellectual and social circles in our crowded cities, in the future those who leave the farm will in no sense be superior to those who remain behind.

#### An Interest in Public Matters.

The farmer in politics! Yes, he has had his special province here. He has been a *voter*. Whenever political defeat overtakes a party at a given election it is charged up to a failure to vote on the part of the farmers.

The coming farmer will vote oftener. He will vote at the caucus, and as a result more farmers will vote at county and district conventions, and for these more farmers will be found deciding upon candidates for higher official positions.

I am finding fault with the present condition of things, only to say that the trouble lies with the farmer himself, in failing to intelligently and actively participate in movements that define lines of action and nominate candidates.

This need not produce class parties or

class legislation, but will lead existing parties to recognize general interests, and the necessity of the support of the well posted independent rural voter.

**More Faith in Self and Business.**

The farmer of the future will believe more strongly in himself and his vocation. He will recognize that no social, intellectual or political barriers are raised before him because of his occupation, but that in common with other classes he will pass for what he is worth, but no more.

He will, we trust, develop a stronger attachment to his farm, which will cause it to be handed down from genera-

tion to generation in an unbroken line of ancestry. It shall become to him his bank in which he may deposit accumulations of beauty, fertility, and comfort, and from which may be drawn elements of wealth and happiness for years to come.

When in the future our vast country has been developed; when a largely increased and ever increasing population shall demand that our agricultural resources be taxed to their utmost; when thrift and enterprise shall become necessary adjuncts to insure success; no place will be left for the average farmer of today, and he will unconsciously give way to the more successful coming farmer.





# MISCELLANEOUS PAPERS.

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## WILD FLOWERS.

BY WERDEN REYNOLDS.

[Read at the Green Bay Institute, March 4-5.]

The Wild Flowers, the Wild Flowers, uncul-  
tured and true;

From nature's own garden—of nature's own  
hue;

No hot-bed distortions, nor monstrous forms  
—no—

'Tis thus that I love flowers as God makes  
them grow.

And thus do I love, too, affections of heart,  
Up-welling spontaneous, untrammled by  
art—

I love them all true, unaffected, sincere,  
Like the beautiful Wild Flowers that God  
gives us here.

Then, gather life's Wild Flowers from young  
and from old—

Those grown in true hearts—the pearls and  
the gold—

Bind up a sweet nose-gay to cheer life's lone  
hours,

Mementos of dear ones in language of flow-  
ers.

The Hawthorne of HOPE, the CONSTANT  
Blue-Bell,

The PURE drooping Lily that blooms in the  
dell;

White V'let and Myrtle, so MODEST and  
MILD,

And Woodbine FRATERNAL all native and  
wild.

The Indian Jasmine ATTACHMENT TO YOU,  
The Sweetbrier SIMPLICITY, Bittersweet  
TRUE,

The Orange Flower CHASTE, of so delicate  
tint,

And emblems of VIRTUE the Snow Ball and  
Mint.

The humble-born Daisy, to INNOCENCE dear,  
The Osier of FRANKNESS, and Fern the SIN-  
CERE;

'Tis such flowers—the wild ones—most dear  
ly I prize,

Earth's loveliest symbols of joys in the skies.

Yes, gather them all from the loved of my  
youth,

The Wild Flowers of sympathy, friendship  
and truth,

And wreath their sweet symbols—with Ivy  
entwine

A garland of fragrance for memory's shrine.

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“GATHER UP THE FRAG-  
MENTS THAT NOTHING  
MAY BE LOST.”

By DAVID F. SAYRE, Fulton, Wis.

[Read at Janesville Institute, Feb. 27-28.]

Low Prices.

On the third day of this present  
February, three weeks ago, one of my  
neighbors took six head of cattle to his  
nearest market and sold them for a  
fraction less than two cents per pound.  
Another neighbor sold on the same day  
and in the same market stall fed heifers,  
stall fed during the entire winter, at two  
cents per pound. Oats in the same  
market are sold at 20 cents and corn at  
30 cents. We know that cattle cannot  
be raised for \$2 per hundred, and a fair  
reckoning will make oats cost, I think,  
21 cents, raised on land worth \$40 per  
acre, and at 9 per cent. interest, and

corn under like circumstances will cost  $16\frac{1}{2}$  cents.

What are we farmers to do? Will this state of things bring about the happy time when the farmer can lift up his head and feel that he is even with the rest of the world? Many farmers, and I am not sure that we here are not among them, say "appeal to congress or the legislature." But I can see no reason why we farmers should have laws passed favoring us as a class. No class has a right to be favored by legislation, although it is done to our hurt.

#### Save the Residues.

What shall be done? Some two years ago, I was sitting in a railroad car by the side of John Gould, that man who came from Ohio to teach our wives how to make butter, that man, who, I think, can show as much good sense in a butter talk as any man whoever came into our state. Well, he and I were talking about the great Standard Oil company, whose iron pipes, conveying the crude petroleum from the oil wells to the city of Cleveland, ran under a part of John Gould's farm. He told me that when the oil first came pouring into Cleveland, it was refined there, and the refuse, a black, filthy liquid, was turned into huge vats in the ground and burned, covering the city with a great, black, impenetrable smoke. All this was lost. After a little it was discovered that this refuse, treated by certain chemical substances, would yield naphtha and benzine enough to pay for the whole cost of refining. There was still a residue, a refuse, which went to waste, until some one discovered in it parafine and aniline dyes, and these more than paid for the entire expense of refining.

Is there any way by which we farmers

can treat the residues on our farms to bring about a like result? After we shall have cut our hay, or reaped our harvests or gathered our fruits, is there any residue, using which, we can lessen the costs of producing these crops? This question brings me to the point to which I wish to call your attention for a little time—the residues on the farm.

#### Nature's Fertilizers.

It is but a little time since we came into Wisconsin, we find these openings, these prairies, these lands, now turned into farms, covered by a carpet of green verdure, not one bare spot in sight grass and flowers, flowers and grass, and so it had been all the ages before. Nature, and when I say nature, I mean the God of nature, nature has been fertilizing these lands for us by the continued yearly growth, and yearly decay of vegetation, the snows of winter, and the verdure of summer, alike protecting and enriching the soil. We came and began our work, turning up the furrows and casting in the wheat. Not one year, not two years, but year in and year out, until we had taken from the soil in a good degree, the elements which made wheat raising profitable, then the soil refused to answer our calls, and we were forced to give up wheat. Isn't that your experience? Is not that the experience of all Rock county? Think for a moment what we had been doing; taking the wheat, the grain, which was perfectly legitimate, what did we do with the straw, the residue, the great bulk of the crop which came off the land?

#### Sell the Grain and Burn the Straw.

How many of you pioneers can hold up your heads, and with a good conscience say "we returned it in its best form to the soil from which it came, to help reproduce a new crop." Oh, the

blazing fires of the straw stacks on the prairies of Rock county during the fifties and sixties. I don't want to throw a stone at a neighbor's glass house, but you may fling one at me, and if I wince at the blow, I'll bear it as best I can. One of the many reasons why wheat has fallen from 30 bushels per acre to 10 bushels or nothing, is because of this foolish waste of this residue, the straw.

Within a few weeks I have seen loads of straw going from the farms to a neighboring village for sale. It may have been right under the circumstances, but it was a part of the blood, and next year's crop will suffer from the loss of it. To return to the text, the straw is one of the residues, one of the "fragments, to be gathered up that nothing be lost."

From wheat raising we were driven by our own short sightedness in a good degree, to raising corn, a change for the better for two reasons, first, corn means hogs and cattle, and second, corn means a less severe drain upon the fertility of the soil. But in all those years succeeding wheat raising, what was our corn but a crop of grain, so many bushels of ears to the acre? How many years did it take us to find out that in every crop of corn there were two crops—the crop of ears and the crop of corn stalks. Have we really learned it yet? How many of us really think that the corn fodder is nearly if not quite, as valuable as the crops of ears? The saving of this residue, the working it up for all that it is worth, calls for the earnest attention of every farmer. On a cold morning out of a snow covered stack, to dig out the fodder for the morning's feed, the but of every bundle frozen fast, this is no light task, and if the boy shirks the work, and the cattle low for more, I am scarcely surprised. But even at the best, although the cattle get plenty,

they leave the great, thick stalks on the ground uneaten, to be drawn out for manure in the spring, the stalks in whose cells is stored up the sugar which those cattle ought to have.

#### Better Methods.

There is a better way. A great many of you have found it, but some have not. A few days since I had occasion to call upon a neighbor, a young farmer, a bright, hard-working man. I found him on his barn floor with his hired man cutting up his corn stalks, handed down to him from his tobacco shed, where they had been housed and cured from the rains and snows of winter. I looked at the stalks, bright, soft, unbleached and greenish, worth at least 33 per cent. more than if he had stacked them out of doors; and then the gain in cutting—well, you must go to Prof. Henry if you would know the full per cent. in gain. I thought, as I looked at him, my dear young farmer, you are learning early in your farm life what we old pioneers learned only by hard rubs; and I thought, too, that that was the best use I had ever seen a tobacco shed put to. I speak of this, not as anything new to you, but something new to him.

□ This method is a great advance in husbanding this residue, yet, I think, if you will take my experience for so much, that the cheapest, handiest, easiest and altogether the most satisfactory way of caring for corn stalks is by means of the silo. I think, with the corn crib and the silo, we can well nigh gather up the fragments of the corn crops and little be lost. The point I wish to make is, that good farming—successful farming—demands that you save, not the ears only, but the stalks as well, in the brightest, most savory way for the stock which eats them.

In a late popular novel the author severely inveighs against the doctrines of a certain religious denomination, doctrines, which that denomination, in common with others, used to hold fifty years ago. In answer to this one of the critics of the novelist remarks that she has used her powder in "cannonading dead tomb stones." You may think, that in recalling to your minds the wastefulness of farmers in regard to the residues of straw and corn fodder, that I am aiming "at dead tomb stones." But I have noticed in the acres of corn stocks standing uncut in the fields to-day that there is constant evidence that there are plenty of farmers who need hot shot thrown at them for this very wastefulness.

#### The Golden Grain.

Another question I would like to ask, this corn, this golden grain, which comes to us with, comparatively, so little work, this grain which is so handy on the farm, have we learned how to use it in a way that will bring the best results, in a way that will give the most beef, the most pork? About Christmas day I was called upon to look at some pens of hogs, belonging to a well-to-do farmer, one who earned his money by hard work. There were some twenty-five or thirty hogs in three pens. They were fed by shoveling in to them corn in the ear by the scoopful to be eaten from the pen floor, swimming in filth, quantities of half-eaten corn were lying there utterly unfit for any animal to touch, yet these hogs were fattening for the market. By careful, cleanly feeding that farmer could have made a bushel of corn make him thirteen pounds of pork; thirteen pounds of pork at that time was worth thirty-nine cents (three cents a pound). He would have sold his corn for thirty-nine cents per bushel. One glance at the

hogs and pens, would have satisfied you that he did not get more than six pounds for a bushel, eighteen cents for his corn; twenty-one cents residue lost, or at any rate not saved when he ought to have saved it. Just one year ago, February 12, 1889, I weighed eighteen shotes to feed, the average was 174 lbs. During twenty-two days I made them gain one and three-tenths pounds each day. The next twenty-one days they gained one and four-tenths pounds each day. The next six days, I threw off all limits to my feed, I fed them a swill of ground feed, (corn, barley and oats), wet up with boiling water, all they would drink. I fed them the same ground feed, dry, all they would eat, as a relish, I gave them ear corn plentifully, but not so they left any over. All this in a clean house, with warm beds and access to the yard. I wanted and expected to reach two pounds each day. I did reach fourteen pounds for six days, and that, too, notwithstanding the shrinkage of a five and one-half miles haul to market. Each hog made me in gain sixty-one cents in those six days, I sold at \$4.35 a hundred. Will you tell me why I did not make the same gain in those days before? Through lack of skill in feeding I lost part of the benefit of that corn crop. You have all of you had a like experience, only all of you have not weighed it in the scales as I did. It is attention to these minor details by which "we gather up the fragments that nothing be lost"

#### Skill in Feeding.

This question of feeding is, I think, the least understood of the many problems of successful farming. There is many a good farmer, I mean raiser of crops, who is a very poor feeder. Many a mother, intelligent in many things, ruins the physical constitution of her



child from unintelligent feeding. The great abundance of our corn crops makes us heedless in answering the question whether we get the best possible result from a given quantity of corn. I once bought some growing shoates at 9 cents per pound, paid \$120 for them. Kept them 43 days, including the day I purchased and the day of sale, sold them at  $7\frac{1}{2}$  cents. In those 43 days I made them weigh me out \$240.50, just double the price I gave for them and 50 cents over. I was so much pleased that I bought some more, heavier, more rangy ones. Kept them six months and over, lost money on them. The same corn kept growing harder during the summer and the teeth kept getting more tender, until they would eat only what would keep them alive. Why didn't I have thought enough, in time, to change their whole corn for ground feed. Ah, how much residue I wasted on these gaunt hogs. But corn in the crib was plenty, if they didn't eat when it was given to them, it was their own fault. When I wanted to turn them into money, they were gaunt still, and I was the loser.

#### Nature Conserves Fertility.

There is another point to which I wish to call your attention. In the beginning of this paper I spoke of our finding these prairies and woodlands covered with a carpet of verdure, grass and herbs and flowers the whole season through. That was Nature's process, never to leave the ground uncovered, never sear or bare. Then we came and broke up the sod, and sowed the wheat. You and I well remember with what delight we watched the crop of growing grain, during those three or four months before we reaped it. After the crop was cut off, during August and September, and October and November what? That bare field lay yellow in the sun-

shine, drinking in the rains of heaven, and allowing those rains to filter through the ground to the subsoil beneath. Nature had kept on the surface all the time a vast mat of foliage and rootlets, as a sponge, to catch and hold the fertilizing elements of the rains, and to keep them just where the growing crops needed them the most. We changed nature's law one-half of the year. Permit me to use an illustration which I have used many times before. Take a cylinder, hollow 1 foot in diameter and 3 feet long, drive down in the soil of your farm so that the top shall be even with the surface. Lift it now, soil and all and, set it on a table. Take some water surcharged with the richest fertilizing elements of your yards, and pour it into the cylinder. At first you will notice that the water, as it trickles from beneath, will be clear and bright, the fertilizers are left in the soil, and the water runs away clear. But if you continue the pouring in a little while you will see that the water, as it runs away, is just as turbid and yellow as when you poured it in, showing that now the fertilizers are carried down with the water, and lost to the surface where your plants are growing. This, it seems to me, is the process on our farms when they are left uncovered by a growing crop. I don't think I am firing at "dead tomb stones" now. Here are vast stores of fertilizers carried down by rain too deep for the rootlets of our growing plants to get them easily. Can we remedy this? Can we save this residue in part or in whole? In part, without doubt, you do remedy it, when you sow clover and timothy with your grain. That mat of clover, I am well nigh boyish again in my enthusiasm, whenever I see it. But in your corn crop, cannot we imitate nature, by sow-

ing among the corn some grain, like rye, the last time we cultivate the crop, and let it grow during the trying months of fall. By so doing we shall profit by three residues, first, we shall have a growing plant to help keep the enriching elements of the rain near the surface where we need them; second, we shall have a good fall feed for sheep and cattle; third, by plowing under this green mass in the spring we have this easily decomposing crop for a manure. Are not these residues worth saving? Are not these some of the "fragments to be gathered up that nothing be lost?"

To speak of the residues of the farm, in the form of manures, the when and how to care for them, the when and how to apply them to the land, these topics could hardly be discussed in a paper by itself. Your patience would forbid me to enter upon them.

#### Success in Butter-Making.

But one point I want to touch upon before I close. I never approach the domain of a woman except with reverence. But let me tell you of a little scene which occurred some two years since. I came into the house one day and found the queen of the household working butter; don't smile, there is many a queen in Wisconsin who works butter. I looked at her and saw at once that she was tired out. "Oh," she exclaimed, "I had rather do a day's washing than work this hard butter," and then she drew the ladle through the golden butter with all the strength she could get from her elbows. She patted it, she smoothed it, she dug it again with the ladle, then rolled it over and worked it again, and so on for half an hour. I stood and looked at her until she was done. Her face, this face of a queen, was red and heated; her arms fell listless in her lap, her energy gone and her

work a burden. I said nothing, but kept up a dreadful thinking all the while. When next churning day came I churned as usual, I had never handled a pound of butter in my life except to eat it, but I had heard John Gould's story of butter-making, and had told it again and again in the household. As I finished, I took off the churn lid, and by that time the queen was by my side. I kindly told her that she had nothing to do with that churn or butter. She remonstrated—some queens, you know, can remonstrate—I was firm; I took John Gould's method, washed the butter in the churn as nicely as a man could, salted it, had a butter pail on hand already soaked and salted, and then I began to take up the butter and pack it into the pail. Then the remonstrances began afresh. "No one will eat that butter, it isn't worked, there may be specks in it, they will throw it away, let me do it"; but the king was firm, the butter was packed into the pail by his own hand, and in a little while it was on its way to Chicago, with a letter telling the whole matter, and ending with, "You can throw it away, or pay me what you see fit."

In a day or two a letter came back saying, "it's such butter as we cannot buy for less than 30 cents; we cannot afford that, but will give you 25 cents if you can supply us." Butter was bringing, say 12 cents in the village. You can surmise that that queen has never worked any butter since, in that old fashioned way.

Moral 1.—The queen has a right, by reason of her queenship, her womanhood, to have the king's shoulders put under the burdens too heavy for her to bear.

Moral 2.—The energies of many a woman have been wasted on work which

she had been taught was necessary, but which was entirely useless. The necessary cares and duties are wearing enough, without adding any unnecessary ones. We owe it to ourselves, to our homes, to skillfully direct the work so as to avoid all undue tension of the nerves, all wasting of the nerve force.

#### The Farm Homes Give Industry, Thrift and Character.

Please let me go into your home, let me see your home life. That boy of yours, strong, manly and stalwart, the world before him. You have used his best physical and mental energies during the season, to make that season a success. He has worked, if not willingly, at least faithfully to the end. You and I have, many a time, looked on and have seen with joy and pride, those youthful muscles and vigorous brains producing with the machinery of today, results which were beyond our reach 25 or 30 years ago. What in your estimation is the end of a farmer's boy's life? To get the greatest amount of work out of him, as you would out of that horse you prize so highly?

#### Don't Drudge, Drudge,

Drudge, all day long in the field, and in the house a listless weariness, which never catches or holds a smile, or gets a glimpse of commendation for the work done? In your house, are breakfast, and dinner, and supper dull, still meals merely to satisfy hunger? Across the table there, has that wearied mother of the household, that daughter, too, as well as the son, had their burdens lightened by any fun, any frolic, any story you could have told? and has any ray of sunshine come to them through you? Oh, how the taxed energies of your household, yes, and your own weariness, too, could be relieved by a smile, a bit of

fun, an appreciation of what each one is, by giving in to innocent indulgences, by cherishing a grateful, thankful, rejoicing heart yourself, and letting the over-flow of that grateful heart surround each one in your home.

#### Where Are the Papers and Magazines?

I don't mean the county paper merely, that is absolutely necessary, but the publications of art and literature. What books are in the library? Books of farming and feeding; all right, don't forget them. But remember that the boy's best book on farming and feeding is out of doors, that he has been reading it for twelve hours a day for 300 days in a year. How would it do to add to the library, for varieties' sake, some books of amusement, of history, travels, some books of biography, some novels, anything good, to draw blood to the brain, while the tired muscle rests. I say light books, too, so long as they are bright and good. Your girl or your boy, after working, say ten hours through the day, is not to be caught and held by a heavy book of sermons or history. If he can be held by singing, let him sing. The old-time singing school did as much good often as an old-time sermon.

The sense of the matter is, the energies of the household, of father, mother, son, daughter, are strengthened, enlivened, made healthy, by driving the farm out of the house while you are within, by winning a smile from the mother, by the radiance of your own face, by dropping a little money into the deft hands of your daughter to beautify your home, by teaching your son that goodness, cheerfulness, intelligence, manliness, independence and hard work will make the home of any farmer in Wisconsin the "palace of a king."

## OUR HIGHWAY LAWS AND COUNTRY HIGHWAYS.

By D. E. MCGINLEY, Secretary Ozaukee  
Agricultural Society.

[Read at Cedarburg Institute, March 13-14.]  
The Farmers' Institute.

The farmers' institute is, without doubt, a valuable adjunct to the educational system of our progressive young state, and as a school of the farmer promises to do all that its most enthusiastic supporters expected of it.

It teaches the farmer numerous things that will improve his standing financially, politically and socially; but, thus far it has said too little to him on a question which is of vital importance to every live farmer, and that is: the construction and maintenance of good wagon roads.

The farmer may garner a most bountiful harvest, and yet fail to realize a profit thereon, owing to the fact that the bad condition of the highways prevents him from marketing it to advantage.

In these days of small margins the farmer, in order to make his vocation a lucrative one, must learn to watch the markets closely, and sell the products of his farm when the prices are the best. In order to do this he should have highways that, no matter whether it be March or September, June or December, will always be in good condition for the transportation of heavy loads.

### Good Highways.

"Of all the economic questions affecting the welfare of the farmer and every good citizen; there is none of greater importance than the construction and maintenance of good highways, over which they may pass to and fro in their commercial and social relations with one another."

"The world," we are told, "is main-

tained by intercourse," and of all inventions, the alphabet and printing press excepted, those inventions which abridge distance have done the most for civilization. Every improvement of the means of locomotion benefits mankind morally and intellectually as well as materially, and not only facilitates the interchange of the various productions of nature and art, but tends to remove natural and provincial antipathies, and to bind together all branches of the great human family.

How often do we hear farmers discussing the financial situation, declaiming loudly against "corners" in the market, denouncing monopolies or demanding reform in every branch of our government, seemingly forgetting that they themselves are a part of this government, that *they* are much to blame for the short-comings of our laws, and that right here at home many of them make bad laws worse by shirking their duty in regard to them. Where is the intelligent, thinking farmer who has given the subject the proper thought, can deny the fact that the highways of Wisconsin are in a deplorable condition, and that there is great need of reform in the manner of collecting and expending our highway taxes?

We are told that our highway laws are patterned after those in vogue in the feudal days, when, as one of their various duties, the tenants were obliged to build and repair the highways. Wherever it originated, our present manner (it is unworthy of the name *system*) of constructing and maintaining highways is common to a large majority of the states of our Union, and is a disgrace to our thrifty nation and the intelligence of the nineteenth century.

Some of the European countries, France, England and Scotland among



the number, are now blessed with fine highways of which they are justly proud; but history tells us England was cursed with roads, the counterparts of which are so common in the United States to-day. It tells us that it was about the year 1760, that the people of England began the agitation which eventually forced her to repeal her defective highway laws, and to enact the system which to-day is her pride. At that time England's highway laws were similar to those now in force in the country districts of Wisconsin. The peasantry were required to give six days' gratuitous labor on the highways each year, and if that was not sufficient a cash assessment was levied to hire labor.

Their roads became so bad that the markets were actually inaccessible during certain months of the year; and at times the fruits of the earth rotted in one place, while at another but a few miles away, the supply fell far short of the demand, transportation was so difficult.

To remedy those evils, new laws were passed, but each law affected only particular parishes, and between 1760 and 1773 no less than 452 highway laws were enacted without making a material change. Finally a general law was enacted providing for a uniform system of collecting all taxes in money, and for constructing and repairing the highway throughout the kingdom, and from that time the highways of England steadily improved, until to-day a person can ride from one end to the other of that country, over a uniform system of scientifically built Macadaman Telford roads.

#### Our System, A Farce.

Is not the fact very discreditable to our inventive and enterprising Yankee

Nation, that it is to-day wrestling with the inefficient highway laws that were discarded by England over a hundred years ago? Should not Brother Jonathan cease boasting of his greatness until he can have highways as good, at least, as his neighbors across the water? Over one hundred and fourteen years ago he rebelled against England's unjust laws, and yet when he came to set up a government of his own, he adopted some of her worst statutes, among them the highway laws by which he is still oppressed.

Here in Wisconsin we have the county and town method of road control, the laying out, opening and repairing of highways and bridges being in the hands of the county and town boards of supervisors. The town board divides the town into what is called "road districts." In each road district is an overseer of highways, who has charge of the roads and bridges in his district, and whom the law intended should be under the control of the town board, and should be held responsible for the condition of the roads under his care; but in most towns the last two provisions are practically null and void, owing to the fact that the town board does not require the overseer to qualify as such officer.

The overseer is chosen by the electors of his district. If a vacancy occurs in the office the town board fills it by appointment, and in ninety-nine cases out of every hundred, the overseer lacks the technical skill and special knowledge of road-building that such an officer should possess.

At the annual town meeting the rate of the highway tax to be "worked out" during the ensuing year is fixed by the voters present, and many a voter makes it his special business to be "present," in

order to work and vote for low taxes, be the consequences what they may. The voter from the clay district wants a four-mill or five-mill tax to put the roads in a possible condition, but his neighbor from the sandy district, which has plenty of gravel handy, says that the roads in his part of the town are "good enough," and that he thinks that a one-mill tax would be sufficient. Sometimes a division of the house is needed to decide the question, but generally it is decided by acclamation, when the low-tax men are sure to shout long and lustily, while a feeble response comes from their opponents, and dozens of voters stand around in disinterested attitudes, never opening their mouths, and a low rate is fixed.

The law says that two-thirds of this tax shall be expended before the first day of July. During the last days of May and the first part of June, the overseer, having received the "warrant" from the town board, calls out the men, boys and teams of his district, and for a few days does his best to make the roads worse if anything than they had previously been. Thus, after we have wallowed through the mud all spring, and just when the roads are getting dry and passable, they are attacked by unskilled crews under incompetent bosses, and are plowed and dug up and filled with loose earth and stones, while drainage is generally neglected or ignored.

#### The Macadam Road.

As Macadam says: "The whole science of road-making consists in furnishing a solid, dry path on the natural soil, and then keeping it dry by a waterproof covering of stone which should form a hardened, smooth surface for transportation;" but our overseers usually manage to build road-beds which will soak in and retain about all the water that falls

on or near them. The first heavy rain that comes turns those "improvements" into guagmires, and in the latter part of June the farmer who is obliged to use the highways can be seen picking his way slowly along, while the wheels of his conveyance go down, down through the "improvements" until they reach soil that has not been disturbed by the "road-makers."

July's hot sun dries the artificial quagmires, and soon deep ruts and high hubs or hummocks are formed, over which it is dangerous to ride in a light vehicle, and exceedingly trying in any kind of a conveyance.

A railroad company has men constantly on its tracks, keeping them in thorough repair, but the wagon road has no one to care for it,—no mud-hole is drained, no rut is filled, no hummock is leveled, and when another June comes around the road is generally in a wretched condition.

#### Who is to Blame?

Nothing daunted the overseer again orders out his crew, and hauling gravel, which costs fifty cents to a dollar a load by the time it reaches the spot, dumps it into the mud-holes and ruts, and thus levels up between the hummocks, still neglecting to properly grade or drain. As a consequence new ruts and hubs soon appear; and thus the waste of labor and money continues year after year with little or no improvement.

Nor is the overseer entirely to blame for this squandering of the public funds. The law allows each man \$1.50 for each day's work of eight hours; fifty cents a day for each wagon or plow, one dollar a day for each yoke of oxen, and \$1.50 a day for each span of horses he may furnish, agreeable to the requirements of the overseer. Thus a man with a

span of horses and wagon can earn \$3.50 for each eight hours' work on the highways, when \$2.25 or \$2.50 is the current wages, laboring ten, twelve and fourteen hours a day at any other work.

One would naturally suppose that such literal wages would induce the taxpayer to do his best to honestly earn them, but it is an undeniable and shameful fact that the cases are numerous where the tax-payer endeavors to do as little as possible during the time he is required to spend at road work, and thus cheats himself and the public in general. He is sure not to arrive on the ground until his more honest neighbor has worked a quarter or half an hour. Then he will have long stories to tell and must always cease work while he tells them. Again, he has his pipe to fill, an undertaking that usually takes up a good deal of his time, and he finds numerous other excuses for shirking his duty. Every little while he will stop, look up at the sun and wonder what time it can be, and is often heard assuring his neighbor that they have already worked over time. If he is ordered to bring a team, with wagon and "dump boards," with which to haul gravel, he sure to have low "side-boards" and no "end-boards," sure to avoid using a shovel to assist in filling his loads, and equally sure to avoid moving his team out of a slow walk during the whole eight hours.

#### Nor are the Taxes

Thus "worked" the only ones that we have to pay for the maintenance of poor highways. Special taxes are levied, payable in cash, and are expended on highways and bridges as the town board directs. While preparing this paper, I examined the highway records of a certain town in this state. It is a town which is not noted for good

roads; but has the name of being a town whose public affairs are managed in a very economical manner. It was organized in 1848, in six miles square, its surface is principally high and rolling, and it has an abundance of gravel which is purchased on very reasonable terms. I found that during the last six years that town had expended \$17,700 on its highways, or an average of \$2,950 annually. Of that sum over \$600 was annually collected and expended in cash, \$185 a year being paid for plank and spike for small culverts, two-thirds of which were unnecessary. If this town, which can boast of its economy, squanders so many hundreds of dollars yearly, how many thousands must be wasted by an extravagant town in a like period?

If that town has collected \$17,700 wholly in cash, and had expended it in a systematic manner under competent commissioners, it could have constructed at least eighteen miles of well drained, well graded gravel road, or, better still, twelve miles of macadamized road, besides keeping its other highways, in a passable condition.

#### One Hundred Years Behind the Times.

After a century of failure, is it not about time to try a change? That is what the intelligent men of this country are now asking; and the question of adopting a better highway system is being agitated all over the Union. New York, Pennsylvania, Massachusetts, Ohio, Maryland, and Missouri have each made changes in their highway laws during the last year or two; but "that the reform may be thorough and permanent there must be harmony in legislation and unity in aim and purpose,"—a good, uniform system must be adopted throughout the Union.

Before railroads became so numerous some of the states built what were

known as "state roads." These roads were paid for out of the state funds, and ran from one great market centre to another, back and forth across the state, forming a network of highways that were far superior to the other roads, and that were powerful factors in the development of the resources of the commonwealth?

#### The Times Require Better System

It has been suggested that that system should, in a measure, be revived. That all highway taxes should be collected in money. That the state should build and maintain the main roads—at least one or two in each county; the work to be done under the direction of a competent civil engineer, who should be a state officer and should have control of all state highways and bridges. Each town should have a commissioner or superintendent of highways, specially fitted for the office, who should have the supervision and control of all highway work ordered by the town board.

All bridges costing \$1,000 or more should be built by the state. Often we find a town through which one or two large streams wind in such a manner as to necessitate the erection of a number of large and expensive bridges. Such bridges are of great benefit to the public in general, and it is unwise and unjust to tax one town the whole cost of their construction and maintenance.

It has been truthfully said that "he who seeks to change a long and established custom, is likely to be the most unpopular of men," for a time at least. He will be disliked by the timid and lazy, who fear the dangers and troubles of a change; he will be fought by those who are satisfied with the old though evil way, and he will receive little support from men who are conscious of the existing evils, because the remedies that

he recommends will not act as a charm and instantly remove the ills. "Habit often becomes a second nature, and it is only by the positive pressure of evil that we are driven to reform."

But, farmers of Wisconsin, it is to your interest to work for this reform. Don't say: "Let us wait to see what other states will do." The Badger state seldom, if ever, waits for others to lead. She endeavors to obey the command expressed in her motto; and if you will enter this struggle with a determination to win for the right, our state will, in this, as in other great undertakings, move steadily and gradually forward.

## HOW CAN OUR NOXIOUS WEED LAW BE MADE MOST EFFICIENT IN ITS PROTECTION OF OUR FARMS?

BY DR. R. J. WILCOX.

[Read at River Falls Institute, December 2-3.]

#### Canada Thistles.

The Canada thistle is a weed which seems to have demanded legislative enactment to protect the farmers of the states from its inroads for nearly one hundred years. In the meantime, while state after state has adopted laws for its suppression, year after year it has moved steadily, silently, and resistlessly forward, in its western march.

More than twenty-seven years ago our state enacted a law to suppress it. This law, amended from time to time, with its stringent provisions, stands today as a bulwark to protect our farmers from its occupation of our soil. Coming stealthily, none can tell when nor how, it finds a lodgment in our richest soil, and unthought of and unseen, it secures a foot-



hold on the farm, and is seldom revealed till it appears, not as a single plant, but as an armed host, and he is above the average farmer in wisdom, who, considering the best mode of attack, is able to subdue and exterminate it, and avoid multiplying the pest with plow, cultivator and harrow.

That this most noxious of weeds is with us to stay, is no longer a question. In the counties of Pierce and St. Croix it has established its foothold on more than one hundred farms, which we can locate, and from these points, as centers of dissemination, it will in a very few years find a home throughout the length and breadth of this great valley.

When we listen to the experience of some of our Irish friends who tell us that oftentimes in Ireland before they could harvest their grain they were obliged to go with thick protection for their hands and expend from twenty to thirty days' labor in pulling up and carrying off the thistles from one acre of grain, one may perhaps catch a glimpse of the cost of our crops in a time coming, too soon, unless unremitting vigilance and ceaseless effort by the co-operation of all our farmers enable us to stamp out and subdue this foe where it is.

When we increase the labor and expense of producing our crops without a corresponding increase in the amount and value of the crop, we depreciate the value of our farms.

In some portions of our state farms are found which have already depreciated from thirty to fifty per cent. in their cash value, because of Canada thistles.

The farms of Pierce and St. Croix counties represent an invested capital of more than six millions of dollars. Permit these farms to become infested with these thistles and how soon will they depreciate in value five, ten, or even

twenty per cent. Ten per cent. means a loss of six hundred thousand dollars, the result of slackness and indifference, because this pest has not yet come to your farm, that you know of.

#### A Good Law.

We have an excellent law, but it needs wise judgment on the part of the commissioner — vigilance, unflinching perseverance and thorough co-operation among our farmers to make it efficient. Many obstacles stand in the way of its enforcement. In the first place, there is a too general ignorance of its importance and of its requirements. We doubt, if a majority of the towns listen to its perusal at the annual town meeting, as the law directs, or if they hear it, consider it of so much *personal* interest that it need be enforced.

#### A Live, Practical Weed Commissioner.

Again, the chairman who appoints the commissioner, is not always wise in his choice. Its duties are often delegated to the overseers of highways—a plan tried for many years under our former statutes and found inefficient in its results.

Again, the weed commissioner often thinks his whole duty done when he serves the notices required, and the ignorance or indifference of the farmers of his town, never suggests any liability of a fine on him for neglect of duty—though some of the noxious weeds are over-running every farm subject to his inspection.

Again, it is often difficult to learn where the noxious weeds are located, except as their presence is disclosed by their abundance—and then the task of destroying or removing, seems too formidable for any immediate accomplishment.

Again, it sometimes happens that the officers of one town are vigilant in their

compliance with the law, while a neighboring town neglects its duties in this respect. It then becomes the duty of each and every farmer to whom this knowledge may come, to follow up this neglect, even if the fine is necessary. The law is ample in its provisions and its enforcement should be a matter of interest with all.

Again, a mistaken economy often causes the chairman to restrict the watchfulness and care of the commissioner so that he fails to accomplish and finish the work committed to his hands. This becomes especially apparent sometimes in the case of lands owned by non-residents. The law requires the occupant to prevent the noxious weeds from seeding. In the practical working of the law the tenant is sustained in claiming he occupies only the land he tills. The fence corners, the roadsides, the waste places, where many of the noxious weeds find a safe retreat, are not in his occupancy, and therefore if attended to at all, must be under the supervision of the commissioner.

In one town we can name, three patches of Canada thistles for the past three years have grown, bloomed, and sown their seeds unmolested. Again, the freedom of action of the commissioner is restricted by the very general impression prevalent, that the time to reach these weeds most effectually, is when the seeds are nearest being fully ripened. Consequently, many deem the commissioner intruding, trespassing on personal rights, over officious, if he, seeing the ripening crop, insists on their destruction before they are ripe.

Again, the farmer crowded with his work in haying, sends the boys to destroy the thistles. They report having done so. He rests easily, but inspection shows the work imperfectly done,

in boy-fashion, cutting the stalks so far above the ground that many branches with their crop of blooms and seeds are unharmed, an occurrence happening in several instances under our own observation the past summer among some of the best—certainly among some of our largest farmers.

But leaving these minor points which are easily remedied by the farmers when they understand the situation, let us consider the best way to exterminate the various weeds named in the law. This has been discussed by Prof. Goff, in *Bulletin* No. 20 of the State Experiment Station, and to which we shall recur very freely in these remarks.

#### Noxious Weeds.

The burdock (*Lappa officinalis*), is a biennial plant, that is, it reaches maturity at the end of two years from the seed and dies. If the stalks are cut when in full bloom below the crown it will give no further trouble.

The cockle bur, clot bur (*Xanthium Strumarium*) is rapidly gaining a general foothold in this vicinity. It is an annual and if faithfully followed with cultivation is easily kept in subjection. But while it seems at home in almost any soil, it is especially luxuriant on our dry runs, and is evidently spreading, by the water conveying and planting the seeds along their borders from which it invades the farms.

Sour dock, yellow dock and curled dock (*Rumex crispus*) is spreading very fast in this section. It is a deep rooting perennial plant, and if pulled and thrown on the surface will perish, but will retain for a long time vitality enough to grow, if it becomes covered with a little earth. It is very abundant in many portions of our country and threatens much permanent annoyance.

The ox-eye daisy, white daisy or white weed (*Chrysanthemum Leucanthemum*) is reported from four towns in Pierce and two towns in St. Croix counties. Summer fallowing or devoting it to a hoed crop is the plan recommended by Prof. Goff.

The snap dragon, also called by some toad flax, butter and eggs, (*Linaria vulgaris*) is one of our very noxious weeds when once it obtains possession of the soil. It monopolizes the ground, is very aggressive, and is difficult to exterminate. Prof. Goff recommends summer fallowing as the only effectual treatment. It has a footing in several towns about us and is proving more than a match for a single season's summer fallow. Perhaps repeated plowing while summer fallowing would subdue it.

The sow thistle (*Souchus arvensis*) is a perennial plant nearly or quite as difficult to destroy when established in our soil as the Canada thistle. It is reported in several towns near us and resists all ordinary means of treatment. A friend who has been contending with it for several years, thus speaks of his experience with it. He says: I have tried to subdue the sow thistle by thorough cultivation with corn, this will keep them from seeding if *thoroughly* cultivated, but the root stocks are loosened and scattered and the following year the weeds are more numerous than before.

The same is true of summer plowing, as far as my experience goes. I have tried it to some extent, but with little success. I have tried pulling them, but this only puts them back a little more than cutting, as the fine roots break off in the ground and send up new stems. Seeding to grass and pasturing will check their growth and prevent spreading and in parts where the stock travel

back and forth a great deal will kill them, but this treatment will not exterminate them, for in land I have had in pasture eight years, and seen no thistle for five years, when plowed, I find roots of the thistle in some places, and these will send up stems and blossoms as soon as the land is cultivated. A heavy growth of clover seems to smother them out the best of anything I have tried, but it is hard to get a good catch of clover on land badly infested with these weeds. I have sown clover with oats on one piece of ground two years in succession and failed to get a catch of clover, this year I sowed the land to buckwheat, plowed that in when in bloom and then fall sowed rye. I thought that plowing the land in June and then immediately sowing the buckwheat which is a rapid and rank grower would be better than summer fallowing, then plowing under this crop I thought would smother the thistle roots to a considerable extent and the rye sown this fall would get a start a head of any thistle that might be left, and so keep them down, this is not yet proven, however. I have killed some small patches by covering with half rotten straw to a depth of sixteen or eighteen inches.

#### Canada Thistle.

The Canada thistle remains for our consideration, and an examination of the experiments cited by Prof. Goff may aid us in solving the difficulties which surround the question of exterminating the weed. Some of our friends tell us that they have no fear of Canada thistles. They have had large experience with them and can kill them every time—in the meanwhile we can point to numerous patches established from five to fifteen years, treated with watchful care every year to some of the means which are so sure to exterminate, and

every year has seen the patch spreading till the single plant of ten years ago now occupies a quarter to one-half acre, and of all the patches not one in fifty has yet been exterminated. Why this discrepancy in statement and fact? The experiments in New York, of Ambrose Stevens in 1841 to 1845, referred to by Prof. Goff, explain this: Three soils were tried: 1st, a strong clay loam intermixed with slate. The thistles here were killed by plowing nine inches deep in April and repeating till September in a very dry season. They did not survive the third plowing.

The second soil was shallow upper soil, vegetable mould, alluvial deposit and clay resting on hard pan. Three tests were made on this soil—fire heating the ground to hard pan, fire and salt, a plat soaked to the hard pan three times with strong brine. All these tests were completely successful—the thistles were destroyed in each case.

The third soil was a rich alluvial bottom; the roots penetrated three feet deep. Here plowing deeply six times from April to August only made the thistles more vigorous than before. This plat the next year was planted to corn May 2d, and plowed and hoed in June, July August, and hoed in September, but in October the thistles were more vigorous than ever. Salt and fire were equally ineffectual on this soil. Red top grass sward was tried, and wherever the grass became established it choked out the thistles. Timothy and clover on bottom lands failed. The last named soil in many respects would fairly represent the average soil of this portion of the St. Croix valley where we find the thistles. His conclusions are worthy of our careful study. Whatever will effectually exclude the plant from light and air will destroy it.

Wherever the soil is of a depth permitting the root to be reached and effected in its whole extent by the plow, hoe, fire or salt, the thistle may be destroyed by these means.

In all bottom grounds where the roots descend deep and the soil permits access of air, neither the plow, hoe, fire nor salt will destroy the thistle—here the grasses will be found the best destroyers. Whatever limits the *thorough* application of the means of destruction will proportionately diminish success. Hence, in many locations it will be found difficult ever to eradicate them, the plow will not reach the roots, and the roots will not grow thick enough to smother them. Sheep, salt and the scythe will have to follow them with ever watchful vigilance. One of our friends in an adjoining town says he has destroyed them on his farm after two or three years of faithful labor by destroying, every ten days or two weeks during the growing season, every shoot or leaf which appeared above ground.

Col. Dill, of Prescott, tells me he has made a very thorough test of kerosene the past summer, but without success.

Prof. Goff truly says that the past sixty years have added remarkably little to our knowledge as to the best means of extirpating this plant.

Such being the nature of it, already established in one hundred and forty farms in Pierce and St. Croix counties of which we know, and with twelve towns in the two counties not heard from, but with a reasonable presumption they are more or less infected, is it not time that the farmers of this valley should be awake to the coming of this pest, and very much in earnest in destroying it where established?

The question at once recurs, how far will the faithful enforcement of this law



be sustained by the farmers. No commissioner can carry out the requirements of the law against the opposition and example of a very few of the leading farmers of his town. Very quickly would he find his footsteps watched and he be told he was partial, afraid to disturb the well-to-do farmer and quick to molest the poor, over-worked man of less pretensions. There should be an honest pride among all our farmers to so enforce the law for themselves, avoiding all occasion for the commissioner to visit their premises on account of any of the weeds named in this law. Many think the law well enough when applied to thistles, but of little benefit when applied to the other weeds it includes. Can the commissioner do his duty and discriminate between the weeds mentioned when he sees them permitted to grow unmolested. These are some of the questions for you to consider and aid the honest efforts of a faithful officer instead of opposing or treating with indifference his endeavors. Intelligence and experience will teach us how to meet the requirements of this law in the best way and in the meantime patience and earnest co-operation will make the law of value to all without disturbance to any.

## CLOVER.

By C. H. EVERETT, Beloit, Wis.

### Clover is King.

Of all plants raised on the farm the clovers are the most valuable. Clover is the only crop we can raise that will yield a direct profit, and at the same time enrich the land; it furnishes at one and the same time, the best hay crop, and the best manure crop.

But some farmers seem to think if they seed a piece of land in clover and

let it lay for four or five years that land is enriched for all time, that is wrong, and shows a lack of knowledge as to the intelligent use of the plant. Clover should never be left down longer than the second year.

### Sow With all Small Grain.

My method is to sow clover with all small grain, and when the crops are taken off at harvest time the whole farm with the exception of corn land, is green with clover, it protects the land from the burning sun, and later on makes good fall feed. One should keep up a rotation, sow every spring and plow up a portion every fall.

I always sow in spring just ahead of roller, I never sow more than six quarts, and have had a splendid stand from three.

Land plaster used in connection with clover can not be too highly recommended. We are told by learned men on this subject, that all vegetable matter while decaying generates ammonia, which becomes vaporized at 80 degrees, and consequently lost to the soil, but by the decrease of the temperature of the atmosphere, the ammonia is condensed with moisture brought down by dews and rain, the plaster being mixed with the surface of the land acts to hold and incorporate it with the soil, whereby it becomes fixed as plant food.

### Increases Fertility.

I had a piece of land a number of years ago that had become so depleted it did not pay for cultivation, I sowed it to rye, and the next spring in March I seeded to clover on a light snow at the rate of six quarts per acre. When that rye came off that yielded, by the way, ten bushels per acre, I found a nice growth of clover, by not pasturing it in the fall, the following spring it was all

alive. The first of May I sowed 100 pounds of land plaster to the acre, by the 15th of June I had a heavy growth for that soil. I commenced cutting on that date, cut it all down and let it lie; in a few days the second crop made its appearance, came right up through and grew very rapidly, when ready to cut for seed I used the old-fashioned reaper leaving it in windrows. I obtained from that ten-acre piece thirty bushels of clean seed that sold for five dollars a bushel. I then took the plow with sod jointer attached, and turned it over, plowing under the first cutting, the next year that land produced seventy bushels of shelled corn to the acre. Now how do we account for the increased productiveness of that field in two years. I reason it out in this way. The long clover roots reach down into the soil absorbing fertilizing influences that are beyond the reach of ordinary vegetation, bringing them to the surface, and as I said before the ammonia brought down by moisture is caught and retained by the plaster the whole when plowed under is secured for the soil and held as food for the succeeding crops, and by plowing under as I did, the first growth of partially rotted clover, it had a tendency to loosen the soil and make it more porous. But were I to redeem an impoverished soil again, I would cut the first crop for hay, then sow plaster again and turn under second crop when in blossom. Clover, when properly cured, makes the finest kind of hay for all kinds of stock.

#### Curing Clover—Hay Caps.

We all know that to obtain the best possible results, clover should be cured in the cock, but to do this successfully the first requisite is the hay cap, for the average farmer with 10 to 15 or 20 acres of clover, five or six hundred will be sufficient, they cost \$5 per hundred and

are nothing more than good cotton cloth tear them off one yard square and hem the rough edge, tie a stout cord to each corner, fasten the cord to a smooth stick ten inches long, these are used to fasten them down, such caps, if taken care of will last many years, and they are almost water-proof when drawn tight, and will pay for themselves in one year in quality of hay. As soon as clover begins to look red all over the field, it is time to commence cutting. Many farmers make the mistake of waiting until the heads begin to turn brown, and before they are through cutting is very ripe, every change after the blossom is full is to mature seed, and the stalk is constantly changing to a woody, hard substance that is indigestible and worthless.

The mower should be started in the morning as soon as the dew is off, but never before, cut what you think will make 150 cocks, see that none is left in bunches at corners or other places, it should all have the sun for 3 or 4 hours, if the weather is favorable; by one o'clock or a little later it is ready to rake and cock up, it should not be put in great, large piles, but as the hay is green, it can be put into nice piles of medium size, the caps should be put on, and pinned down by sticking the wooden pin well into the hay. The next day repeat the operation, and soon until the end of the fifth day when you have got 600 or more caps covering as many piles of hay; on the morning of the sixth day, if the weather is fair, the first 150 caps should be taken off and the hay opened, by nine o'clock or when you have finished cutting for the day, it is ready to go in and the caps may be used again, so after the first five days you can cut and draw every day until done, your hay will not get wet nor will it all

dry up in the sun, but it will come out of the mow in March bright and green, and every head and leaf is saved. Hay put up in this way stops drying up and sweats in the cock, and will not heat in the mow.

By the best possible results obtained by all other methods, one-third, and many times one-half, of the feeding value is lost, and it is poor economy in my judgment to raise 20 acres of clover to get the feeding value of 15, besides the handling, carting, storing, etc., of the five acres, only to cart it back on to the land in shape of poor manure. Ten acres of clover hay, cured as every farmer can and ought to cure it, is worth more than twenty acres of the coarse, woody, unwholesome stuff we find everywhere in abundance. Cut what you can handle and make first-class hay of, and plow under the rest. Invest a few dollars in hay caps and be convinced.

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## AN INTRODUCTION TO THE BEE AT HOME.

BY REV. JAMES BAIN, OXFORD, WIS.

[Read at Westfield Institute, January 23-24.]

Permit me to open before you an average swarm of bees for a five minutes inspection, that we who prize the product may become better acquainted with the producers or manufacturers, which may be turned greatly to our advantage.

I see even now alarm clouding many brows while you look suspiciously around to see a *real* hive brought forth with vivid recollections of some past experiences in which you and the hive suddenly parted company exchanging a long to be remembered smart for a sting.

Our hive will be but pictured to the

understanding, an introduction by letter to the honey bee, associated with the history of man through all the ages of the past, giving to Israel's promised country the descriptive title of

**"A Land Flowing With Milk and Honey."**

Bee-keeping has become an important national industry, there being 300,000 bee-keepers in the United States, with an estimated annual production of 50,000 tons of honey. Our own county is not behind its neighboring counties in utilizing this very important channel of pleasure and profit which adds much to our national wealth.

The habits of the bee have been carefully studied by learned and scientific men in ancient as well as modern times, developing the fact that in all the annals of natural history nothing is found more interesting and wonderful than the internal affairs of a bee hive. An average colony contains 30,000 inhabitants, composed of a queen or mother bee, several hundred drones or males, and workers of undeveloped gender, the mass of the colony, the government of which is not monarchical, as many suppose, but purely democratic, which fact should produce political affinity. The queen, the only perfect female, seems to have allotted to her as sole duty the depositing of eggs in brood cells, prepared by the workers. From 100 to nearly, if not quite, 2,000 are deposited daily, according to the season and weather. She can be readily distinguished from them by her size which is much larger. She certainly is the center of attraction among her people, who bestow upon her the great attractions and affections.

She possesses a sting but never uses it excepting in combat with a rival queen. Never goes abroad after her bridal tour excepting with a colony swarming, and retains her vigor about three years.

Drones, gentlemen of leisure, differ much from the queen in appearance, are less active, have no sting, no proboscis for gathering honey, no basket for pollen, no socks for the secretion of wax which the workers have. In the latter part of summer they are usually looked upon as unnecessary and burdensome members of society and are put to death.

#### The Workers.

Workers are the sole laborers, bringing into the hive four substances out of which is produced all things necessary for the construction of the hive, raising the young, etc. 1st. Honey nectar of flowers extracted by a kind of proboscis, stored in honey sacks and carried to hive. This honey has to be prepared by mixing with it formic acid secreted in the bees' jaws and mixed with honey by vigorous stirring. 2nd. Pollen dust is used to feed young bees and cap over their cells as it is porous and very much cheaper. 3d. Propolis or bee glue obtained from the willow, poplar and other trees used to cement cracks and crevices and as stays to strengthen cells. 4th. Water to give drink to their babes and mix with their food. Wax or bee tallow is not gathered like the other material, but secreted under little scales underneath the abdomen. When wax-making, they eat honey and hang together in clusters while the operation proceeds, causing their owners often to judge them wrongfully, thinking them idle. The queen begins to lay as soon as pollen can be secured from blossoms, which is mixed with honey and water partly digested by the bee and laid in the cells with the eggs to feed the larva as soon as hatched. In about 3 days the larva hatch a tiny worm without legs. They are fed until about 9 or

10 days when they nearly fill the cell refuse to eat and are sealed over.

Around themselves they spin a silken sock changed from larva into a perfect bee coming forth in about 20 days from hatching, and 4 days later go forth as master workmen wearing out their lives during busy season in about six weeks.

Queen cells can readily be distinguished from other cells, much resembling an acorn cup and are placed in the comb vertical instead of horizontal in outer edge of comb.

Young queen bees are fed with royal food and come to perfection a few days sooner than the others. With this brief insight into the hive among its busy inmates another five minutes would give an outline of their culture drawn from my own personal observation and experience.

#### A Blessing to All.

That every farmer and fruit grower is benefited by a few bees in the neighborhood is now a well established fact. They perform an important service by fertilizing the blossoms of fruit-bearing trees and seed-bearing plants, mixing the pollen with the stigma of the flowers when in search of honey.

Therefore, although the manipulations of the apiary differ materially from the farmer and horticulturist each so contributes to the welfare of the other that harmony and good will can but exist. Let no one entertain the belief that any one can be a successful beekeeper or that they can be kept profitably in all localities. A natural inclination or aptness for the business which can and must be developed by personal application as thorough and persevering as that required in any of the great branches of industry is necessary, and yet although but few have the faculties,



time, means to become thorough apiarians there are few who may not aspire to ordinary proficiency which shall yield them a generous remuneration for labor expended. Especially would I recommend apiculture to adults of either sex in search of health who would find light out-door employment with genial mental exercise better than a medical course of treatment, with profits instead of doctor bills as their share of the enterprise. Many farmers, too, whose ambition survive their ability to do general field labor or oversight, might lengthen out their days profitably with a few bees. All necessary information can be secured by reading *ABC of Bee Culture*, by A. I. Root, Medina, O., together with some standard bee journal, such as *Gleanings in Bee Culture*, by the above named author, and the *American Bee Journal*, published by Thos. G. Newman & Son, Chicago, Ill., who also issues the *Honey Almanac* which reveals the fact that in the culinary art honey can be used instead of sugar in almost every kind of cooking, is pleasant to the palate and healthful to the stomach. An excellent article on the hygienic advantage of honey over all other sweets has been given to the public by Dr. J. W. Vance, of Madison, while from Mr. Tefft, good authority, we quote: "It is a true brain and nerve food. It gives refreshment and nutriment to mental and physical energies, new life to the weak and debilitated, relieves nervousness, improves the appetite, tones the system," etc.

Apiarians have their favorite breed the same as other stockmen, so that with beginners either the Italian, Cyprian, Syrian, Holy Land or the brown German bee will sufficiently answer. Last season from 30 colonies of the German, or common black bee, I received

about 2,000 lbs of salable section honey besides more than doubling the colony, yet I think the Italian is the general favorite. Bees do not work for nothing and board themselves, so pasture is necessary, consisting in this county of basswood or linden and buckwheat. Two of which must be in sufficient abundance within three miles to meet their demands. The old box hive must be laid aside with the sickle and hand loom as curiosities of antiquity and some approved moveable frame hive with supers and sections used. My experience with the Simplicity Langstroth and Wisconsin is that either is desirable, although I rather prefer the Wisconsin. Super honey in one pound sections are better in the ordinary apiary extracting, many yield greater returns but require far more time and skill with a less general market. Wintering in a dry cellar with a uniform temperature of 45° is my choice. Take them out when willow and soft maple are in blossom.

Put on supers as soon as clover blossoms appear. Feed weak colonies with honey or syrup made of coffee "C" sugar. Take honey to market crated in good shape so that the maker's name is a guarantee that all is as represented and all will realize the fact that we, too, live in a "land flowing with milk and honey."

## HOME EDUCATION.

BY ALICE BALL LOOMIS.

[Read at the Lone Rock Institute January 2-3.]

'Tis education forms the common mind.  
Just as the twig is bent the trees inclined.

—POPE.

### The Common People.

Common minds like common people are the rule upon this earth of ours. Abraham Lincoln once said that he thought "the Lord must have specially

loved the common people, for he made so many of them." Now, because he has made so many of them, it stands us in hand—"we common people with common minds"—to see that we make the most of our opportunities of securing the best education or the proper development of all the faculties of the mind. Our schools and colleges are doing a great work, but their efforts must be premised and supplemented by the education of the home to obtain the best results. Education begins with consciousness. From this time on, the formation of mind and consequently character are greatly the result of environment. Rarely do we see a beautiful character rise lily-like from the mud and slime of social mire—rather are they the fruit of careful tending and pruning. The education which marks a character for integrity must be received under the parental roof. And no act, however small, but contributes its share to the making or marring of it.

The little toddler just becoming initiated in the mysteries of falling and catching itself, accomplishing the first, but failing in the second act, is perfectly capable of understanding that it was not the "naughty floor" that was to blame for the bump received. But how many mothers in giving their sympathy to the little one, blame the "naughty floor," and strike it for "hurting baby," thus giving the first lesson in untruthfulness and teaching the child to shirk the responsibility of its own acts. Sympathy should always be given, it is one of the divine attributes of humanity, but never at the expense of absolute truthfulness.

#### All Eyes and Ears.

Figuratively speaking, a child is all eyes and ears, and the impressionable mind retains all of their communica-

tions. How necessary then that each childish inquiry should be truthfully answered, and that each act it witnesses should bear the stamp of genuine integrity. For the seed of dishonesty once sown, the *extent* of its fruition can not be computed. A carelessness in business relations, a neglect of the smaller affairs of life to the indiscriminating might convey an impression of dishonesty, and as discrimination is largely a matter of cultivation, we cannot expect children to possess it in any great degree. Therefore, even a seeming carelessness should be avoided and each adjustment of affairs, however small, should be made with such nice precision of justice as to leave no room for misconstruction. When we have given integrity for the basic principle of a character, we have a sure foundation, and whatever the superstructure may be it cannot fail to possess moral beauty.

The law of self-preservation which nature has planted so strongly in all organisms reaches its highest development in man in what we denominate the business faculty. And it is the province of parents to see that its principles are properly regarded—teaching by precept and example.

#### Industry and Economy.

The proper sphere of the business faculty is not of dominion. This is the abnormal development and therefore should be restrained—for the man whose intellect, love for his family and mankind are swallowed up in business, is indeed a pitiable object. For him the sun never shines nor the flowers bloom, he views nature only with an eye to what she can produce for him—he is dead in all that makes life worth the living. But, that care for *future* which provides for the physical and intellectual com-

forts, which is marked by industry and economy is the proper function of the business faculty.

In the household of the farmer especially the practice of these virtues is a necessity. The profits of the farm are not large and if obligations are met promptly as demanded by good business method and strict integrity as well, there is very little room for what in common parlance is called "style"—unless we close the avenues of culture to meet the demand, and to do this is to condemn our better selves to inanition and thus deprive us of the purest enjoyment of which human beings are capable. For the pleasures of the senses and the gratification of pride are not to be compared to the pure delight of intellectual and spiritual activity.

Habits of industry and economy are the prime factors in a business training with a skillful care and the higher faculties be not stunted or lost in their activity. In the process of education it is well to bear in mind that the *abnormal* development of our faculty means a corresponding latency of others.

The home culture of the intellect is too often neglected by the farmer. The long days of manual labor stupify the mind and deaden all desires but those that are distinctly physical. But with the coming of winter the stress slackens and a disposition for amusement appears.

The love of play is one of the properties of animal life and we do not look for the exemption of the human animal. But we do look for something more.

There exists a widely prevalent disease which could be properly named Intellectual Laziness. It is in a great measure, no doubt, the natural sequence of the too great physical activity which the law of self-preservation under our

defective social system entails. But it is our duty to make the most of our opportunities and to make our opportunities, when within the bounds of possibility.

Amusements should be directed into intellectual channels when time is a consideration.

#### Culture and Information.

The daily conversations of the family may consist in the discussion of intellectual topics—history—its connection with the affairs of to-day. The schemes of government for the betterment of mankind. Biography, the debt of gratitude we owe to great characters who have made our existence in our present state possible, their emulation in all that our *added* advantages render consistent. Philosophy, its relation to our lives and literature with its pen pictures of beauty and love. Its dark characters that have failed to shadow forth the divinity that dwells within them, and met the reward that is meted to such and others who have lived the higher ideal life placing self a willing sacrifice upon the altar of truth—all of these things as annexes to the well selected and regular evening readings are fruitful topics of conversation.

#### Know Thyself.

There is growth and development in their assimilation, not only intellectual, but moral and spiritual as well. "With wider view come loftier goal." It has been said that "books are the grindstone upon which we sharpen our intellectual weapons," and it would not have been far out of the way to have added *moral* weapons. We do not expect a nice ethical perception in the African savage, but fill him with the contents of good pure books and we have a Fred Douglas. A miraculous metamorphosis!

No, simply an illustration of the potency of environment. Nature furnishes us no miracles, all is the result of "law and beautiful order."

"Yet I doubt not through the ages one increasing purpose runs,  
And the thoughts of men are widened with the process of the suns."

It is man's high prerogative endowed with reason and volition by an infinite wisdom, to co-operate with that law. To develop his own mentality and to aid others to the extent of his ability is a duty that the quickened conscience can not fail to recognize, for the hoarding of a truth, whether through fear of ostracism or till such time as it shall become valuable among men is a crime against the universal law of evolution, the *intelligent* co-operation with which is the ultimate destiny of man.

#### Love of Country.

The subject of patriotism is at present occupying the thoughts of some of our people to a considerable extent. Perhaps the dearth of it in public places has aroused the people to the necessity of its cultivation. As a result of this awakening we have the nation's flag in our school room as a means of its inculcation. Patriotism is one of the higher virtues, but its roots lie deeper than mere respect for a symbol. Patriotism means love of country; it means a love so deep and broad that the nation's highest good is a chief consideration; it means a broadening of the family circle until it extends to the country's farthest limits.

Patriotism never can be construed to mean respect for a symbol which is a shield for injustice. There was a time when our flag protected chattel slavery. Then its flaunting folds were synonymous of injustice and outrage to those pure soured patriots, the early abolition-

ists; but when the flag symbolizes justice and equality, homage is spontaneous and does not require cultivation. We can not be too careful that homage to the nation's flag and *patriotism* be not confounded. It is the privilege of the unite upon which this government rests to say what the flag shall symbolize—whether it shall be partisanship or the dictates of a *pure* patriotism.

#### Aim at a High Ideal.

The home is the nursery of high ideals, great ends cannot be attained without them. A thing must first live in thought before it can be shaped forth to the world. The steamboat first existed an ideal in the mind of Robert Fulton before it sailed up the Hudson.

The ideal citizen has an abiding sense of his responsibility. He realizes that it is his business to know for himself, and to rely on his own judgment, for it is impossible to tell how far self-interest may influence the judgment of others. Goethe said: "Think for yourselves, even though you may think wrong."

The ideal citizen judges measures and men at the bar of conscience, and he does not give conscience a vacation when he goes to the polls in the exercise of the chief duty of citizenship. The ideal statesman is one who is capable of anticipating the needs of the governed, who is above a bribe in any form, who *realizes* that the true function of government is the protection of citizens in the exercise of their natural rights, and that to do more breeds injustice. He realizes that governments derive their just powers from the consent of the governed, and that the "governed" are not all the male sex.

The ideal being of whatever calling is one who adds to professional excellence



the exemplification of the golden rule in his intercourse with his fellows.

My chapter on the lessons of the home would not be complete if I omitted politeness. Some one is responsible for this comparison: "Politeness is like an air cushion; there may be nothing in it, but it eases the jolts of the world wonderfully." And I would have every one a Chesterfield, with the genuine kindly feeling which is the prompter of true politeness. Even the empty forms are active agents in harmonizing the little discords which are liable to occur in the home circle, and are therefore worthy of cultivation; for the discords once harmonized, the farms will not long remain empty. It might be charged that I have omitted the main feature of the home education should I fail to speak of religion. But integrity of character and the strict observation of moral precepts are the foundation principles of religion. That higher development in which the soul takes cognizance of its relation to the infinite and co-operates with it is an attainment which is the natural sequence of the self-abnegation which a higher sense of duty entails. The subtleties of theology should have no place in the education of a child. Give him a strong character and a matured reason and he will try all things and prove all things and come out the stronger for the conflict.

#### Have a Teachable Spirit.

People of advanced and middle age are too apt to think it too late in life for them to do anything in the educational line and leave the younger members of the family to work out their own salvation.

Home education should be co-operative, each member contributing his share.

Such old sons as "you can't teach an old dog new tricks," should in white house parlance, be consigned to "inocuous desuetude." These oft-quoted lines of Longfellow seem to fit nicely right here:

It is too late! Ah, nothing is too late  
Till the tired heart shall cease to palpitate.  
Cato learned Greek at eighty. Sophocles  
Wrote his grand Oedipus, and Simonides  
Bore off the prize of verse from his compeers,  
When each had numbered more than four  
score years.

And Theophrastus at four score and ten  
Had but begun his Characters of Men  
Chaucer at Woodstock with the nightengales  
At sixty wrote the Canterbury Tales.  
Goethe at Weemer, toiling to the last  
Completed Faust when eighty years were past.  
These are indeed exceptions; but they show  
How far the gulf-stream of our youth may  
flow

Into the active regions of our lives  
Where little else than life itself survives.

For age is opportunity no less  
Than growth itself, though in another dress,  
And as the evening twilight fades away,  
The sky is filled with stars invisible by day.

## TOBACCO CULTURE.

BY LEVI KITTLSON.

[Read at Stoughton Institute, January 2-3.]

This is a subject that is out of the general line of discussion at the Farmers' Institutes of the state, but to hold an institute here at Stoughton without this branch of farming on the program, to ignore a branch of farming that is so general in this vicinity, was undoubtedly considered unwise by the authorities. Although the use of tobacco is considered by all decent people as a vile and nasty habit, and justly so, nevertheless we farmers of this part of the state are perfectly willing to furnish all such foolish people with the weed, provided, however, as long as there is a profitable

demand for the product, but of course at the same time pitying the young dude struggling to form the habit, as well as the older slaves to the use of the weed. I doubt if the southeast part of Dane county today would have shown the well cultivated farms, the fine buildings and the general prosperity of the farming community of this section, if the growing of this *vile stuff* had never been engaged in, but in its place had spent their energies entirely to the progenerating of the Jersey cow.

#### Sowing the Seed.

I have been successful in getting a good stand of plants by sprouting the seed in sawdust, and sowing it when well sprouted on newly fitted seed beds, tramping it down thoroughly with the feet. And for covering the seed beds, I have never known anything better than this so-called "tobacco cloth," sold by agents through this section. It is very thin and seems to be a sufficient covering to hold the moisture, and at the same time thin enough to get the full benefit of the sunlight, and will keep the plants a-growing right along. Last spring I used this kind of covering side by side with common sheeting, on plant beds that were sown at the same time, and in all respects exactly similar. A marked difference could be noticed from the start. Those under the "tobacco cloth" came up sooner, grew larger leaf and healthier looking plants from the start, and were ready for transplanting fully ten days ahead of those grown under sheeting.

This cloth is sold through agents, and costs retail from 2½ to 3 cents per yard, and there is undoubtedly a large profit even at these figures, because the agents can be seen traveling through the tobacco growing sections in as fine "turnouts" as any of the farm implements agents

use. However, it pays the grower to use it, as it enables the grower to get earlier plants, and earlier plants means earlier tobacco, and early tobacco is usually the best in this locality.

#### Preparing the Ground.

My tobacco field is on the edge of a prairie, consequently my experience will not hold good on clay or a hard soil, but on mellow land. My experience teaches me, that on such soil as I have, that to plow in the fall is only beneficial so far as plowing under second growth. Where there is not sufficient second growth to warrant it, I do not plow the land in the fall, but prefer plowing twice in the spring. The first plowing is usually done between seeding time and corn planting, plowing quite shallow, and afterwards planking it down smooth. Then I apply all the manure I can get, which is the only rule necessary in applying manure to a tobacco field. The second plowing is done just before the transplanting season commences, and we then plow as well as we know how. The more dragging, pulverizing and smoothing the better, as it is labor well spent because it saves labor in the cultivation of the crop, besides being in better condition for the transplanting by holding moisture longer. I have noticed fields side by side, where transplanting could be done all day after a shower in the field that was twice plowed in the spring and thoroughly fitted, while in the other field with the same amount of rain, but the ground was thoroughly fitted, the ground would be too dry in an hour or two for transplanting. Therefore, if this was the only consideration and benefit to be derived from thorough plowing and fitting the ground, it would more than pay for the extra labor.

**Transplanting.**

In the last year or two machines for transplanting have come into quite general use. As to their merits over and above the old fashion of back bending, I am not prepared to say, as I have had only one season's experience with a machine, and the crop also being destroyed by hail. However, I am going to use a machine for setting my tobacco this next year, and am of the opinion also that the last acre has been set on my farm by hand. My main reason for this belief is, to set more plants to the acre. I believe the great fault with us here in not getting as fine a quality of tobacco as the climate and soil will allow, lies in our tendencies to plant too many acres and the plants too far apart. If we would plant only six or seven acres where we now plant ten acres we could by making the soil rich and strong, plant just as many plants on 6 or 7 acres as is usually set on 10 acres, and get a much better quality of tobacco, and as many pounds, too, as are usually raised on ten acres. I saw a crop the other day of the Spanish variety which yielded 2,000 pounds to the acre. It was set 18 inches in the row and the rows a trifle less than three feet apart. The usual yield of Spanish tobacco is about 1,000 pounds to the acre, and the average yields for the state seldom go as high as 1,000 pounds per acre, thus showing that close planting does not diminish the weight of each individual tobacco plant, but that it weighs as much when closely set as when set far apart, besides being usually a finer quality.

**Topping.**

When to top, and whether to top low or high, is a question that growers differ in greatly. I believe that the tendencies of the majority of those that believe in low topping even top too high, and also

let the plant develop too much before topping. We are liable to be penny-wise and pound foolish in this matter of topping. We may go into the field with the resolution to top low. We take hold of a plant below a large leaf, we look at it, hesitate, and finally say to ourselves "this will cure out," and the result is that the large leaves seen on the ground with the top when you first commenced to top, will gradually grow less in size and fewer leaves with the top broken off. In topping low the leaves spread more and makes leafier goods, and undoubtedly gives as good a yield per acre, if not better than when topped high, and the top leaf will be as good as the rest of the plant.

**When to Harvest.**

Any experienced tobacco grower can tell a green tobacco field from one that it about ripe; but when it is ripe enough is when we differ, and no wonder, because we know by sad experience that in some years our tobacco would cure out badly, being full of white veins, fat stems, green leaves, black leaves, etc., almost regardless of the time it had been allowed to ripen in after topping. It is usually conceded that the late tobacco will contain the most fat stems, but this year is an exception; the earliest harvested tobacco has more fat stems than the late tobacco. What is the cause? Can you tell? I certainly will not attempt to account for it. We have our theories as to the causes of these unaccountable freaks of nature, but experience tells us that our theories can not always be relied on. We all know that to enable tobacco to ripen it must be growing. In dry, cold and chilly weather, when the tobacco does not grow, it will ripen less in twenty days after topping than it will in ten days with warm showers and a hot sun.

Therefore, we cannot be guided by the number of days since topping, but by the actual condition of the crop, as to when it is ready for harvesting.

For inexperienced persons as good a rule as can be laid down for them to follow is to harvest when good-sized suckers appear the entire length of the plant. Another reason for the slow ripening of the crop is in allowing the suckers to grow until the time of harvesting. Tobacco can be suckered as much as five or six days before harvesting, if well and thoroughly done, and it will not be necessary to go over it again before cutting and harvesting. By keeping the suckers removed it hastens the ripening and thus enables the grower to harvest sooner and get his crops out of the danger of hail, wind and frost, which are elements that may change the question of profit or loss in a day or less. A grower feels comparatively safe when the crop is harvested, but before it is harvested and safely housed he does not know whether he will have a crop or not. Tobacco should not be allowed to wilt too much on the field before piling, because when wilted too much the leaves adhere to stalks and is more liable to defects in curing than when wilted only sufficient for handling without breaking. The practice of leaving cut tobacco out over night is also a bad practice, as you run the chance of having a shower come up during the night to spatter mud on it, besides a heavy dew is sufficient to make dirt adhere to the leaves lying on the ground.

The distance between the laths in the shed is a matter that no rule can be given for. There are so many conditions to consider, such as the location of the shed, whether it has a damp bottom or a dry one, whether your shed is surrounded by trees or is exposed to the

wind from all directions, etc., and also what you *think* the curing weather is going to be. The kind of weather in the fall is the main factor, but the grower does not know what kind of weather he is going to have before it is too late to remedy his error in hanging his tobacco. I have a damp bottomed shed, and hang the laths usually from seven to eight inches apart, I have in some seasons had shed-burn at this distance apart, while these last two seasons it would have been better for the curing if the crop to have hung the laths only half that distance apart on account of the extremely dry weather. Thus we see that to procure a fine crop of tobacco, requires experience and thorough work, good judgment, and a considerable portion of good luck. Nevertheless an observant and thorough farmer—will succeed a part of the time, but a shiftless grower—hardly ever.

#### Stripping.

It is my opinion that tobacco should not be taken down before the weather has been cold enough to freeze the stalks, because it evens up the colors in the leaf, when next time the tobacco comes in cure. A tobacco stalk is green until it freezes and therefore does not help to color the leaf, but after a hard frost it becomes brown in color and when tobacco is in cure its juices run partially into the leaf and gives the color, but this is only my opinion with many other growers, while there are scores of others that practice and advise taking down and stripping as early as possible, so that this question is one of many that the "doctors disagree on."

#### Assorting.

Very many growers get an erroneous idea how tobacco is assorted in the ware-



house by the dealers. A grower happening into an assorting room where a poor crop is being handled by a packer will wonder at the carelessness shown in the *assorting*, and will go home with the conviction that the much talked of warehouse sorting is a humbug, and when a dealer afterwards should happen to say to such a grower that his tobacco is good but poorly assorted the grower will naturally think such talk is all nonsense because he has seen the warehouse men do it worse still! The fact in the matter is, that a dealer when handling a poor crop *does not assort it all*. He merely sets his men to evening up as to length, called "sizing", and ties it into "hands" and pack it and send it to Europe for the foreigner to smoke, whose sense of smell is not so delicate as the inhabitants of this country have. A crop of tobacco that contains enough wrappers or even binders to warrant spending time and labor on, you will find the packer assorting with care every time. And on this point is where the grower frequently makes a great blunder by not spending necessary time and labor on a good crop, or sells it in the "bundle" for a song, or on the other hand spends a great deal of time and labor on an inferior crop, and likely as not asks fifteen cents a pound for it because some neighbors has received such a price. We should study the requirements of the trade as it develops from year to year and spend our time and labor judiciously and also be able to tell what quality of goods we are handling.

#### Packing.

If there is one thing more than another that spoils the looks of tobacco and hurts its selling value it is careless and poor packing. Tobacco should always be laid away straight and closely together at every stage of its handling,

as well in the "bundle" before assorting as afterwards, besides tobacco once thrown carelessly together with the leaves sprawling in every direction, the tips of the leaves curled, etc., it is almost impossible to get it back again into good shape. And such tobacco is frequently sold for a cent or two a pound less simply for the reason of its defective packing.

### CORN CULTURE.

By O. S. Sisson, West Salem, La Crosse county, Wis.

The culture and production of corn may properly be divided into "three" classes as follows:

- 1st. The soil and preparing it.
- 2nd. Seed and planting.
- 3rd. Cultivating and tillage.

#### Preparation of Soil.

In presenting to you the subject of soil and preparing it, we must say that in our observation as a farmer for the past 23 years, we find that there is too much "hap-hazard" and wrong ideas maintained; that corn planted on any kind of ground, with all of the different kinds of soil that Wisconsin has, can be made successful and profitable to the producer.

Observation has led us to believe, that many fields are annually planted when the fertility is poor; also on side hills that will wash away when the frequent rains come, or on low, wet ground which cannot be cultivated, and put in proper condition for planting, at a date to fully mature in the fall before the frost comes, and lessens the crop from one-third to one-half.

As has been previously mentioned all kinds of locations and ground are not suitable for corn.

But we would dispel the "delusion" that corn is not only "King," but one of the best paying crops for the farmer, and can be enormously produced on most any kind of soil, where the *fertility* is properly preserved; and this can easily be maintained by the free use of "clover," and an annual ration of crops. Should the fertility of the soil, through excessive crops or other causes, be exhausted, sow to grain and seed down to clover, with not less than six quarts per acre of clover seed. The following fall and winter take the litter from the horse stables, and cow stables, and haul directly to the fields and spread, as fast as a load accumulates. And continue in so doing until the fields are too soft in the spring to go on to them, as they should not be trampled upon while the frost is going out, and not until they become quite firm and solid. If sufficient time has not been secured to complete dressing of the field, it can be continued (ordinarily) until about the 10th of May, when it should be thoroughly dragged with a smoothing harrow, then it will not impede the cutting of the grass.

If the soil has a mixture of sand and clay, great results will be received by sowing from 50 to 75 pounds of plaster per acre, by which the clover will receive immediate benefit, which will also help in restoring the fertility.

Make a specialty of cleaning up all of the old straw stack bottoms and yards where horses and hogs and cattle have been kept, and finish dressing the field after haying.

No fears need be entertained by spreading of the coarsest straw or manure, as the clover will soon grow up through, when it will readily rot, and furnish food to make strong and vigorous roots to the plant. And at your

plowing which may be done in September or October, at a depth of five inches, you will not find the soil in a doughy and heavy condition; but in light and good order, which will pulverize up freely and finely, and should be leveled with a harrow before the ground freezes up in the fall, which will greatly facilitate the time in the spring, as well as improve the condition of the soil.

In preparing the ground in the spring for planting, it should be commenced as soon as dry enough, or at an ample date to secure early planting.

Not waiting as old "foggy" notions would have it; for the sweet tones of the "Lark" and "Whippoorwill," but commence at once. The surface of the ground to the depth of two inches should be thoroughly pulverized and made fine with farm implements. We use the Gorham seeder and slanting tooth drag, and go over the ground twice with the seeder, and twice with the drag before marking, which is sufficient not only in properly fitting the ground. But in eradicating all early weeds that have a tendency to start.

This system of restoring "fertility" to worn out land is just as applicable when the field is used for pasture, and can be followed with corn with equal results.

Under the head of class second seed and planting, comes a very important part of the success of the crop.

#### Seed.

The seed should be selected from the loads at husking time when the "best," "choicest" and *purest* ears can be sorted out, and a place secured where the heat of a stove will dry them out sufficient to shell in about four weeks, and before it will *sour* or *mold* on the *cob*, thereby injuring the germ or sprout, which seriously retards the growth. In regard to the variety we would say: If

corn is your principal object and you wish to secure large yields, a staple variety of the "yellow" dent is highly recommended.

#### Planting.

Circumstances and conditions of the ground sometimes make it preferable to plant in hills three feet eight inches apart, which is usually better adapted in working the cultivator. If planted in this manner an average of three and a half stalks to the hill is sufficient.

As the seasons are not alike, we are somewhat governed by the time and indications of the weather "prospective" to the time of planting. We have planted as early as the 27th of April and as late as the 12th of May, and in each case had good corn. Though as a rule we consider late planting more risky, as three frosts in the spring are preferable to one in the fall, before the maturing of the corn.

The best results are usually obtained by not planting over an inch in depth, also before the ground becomes too dry. Many fields are made a failure by late planting followed by a few weeks of dry weather, in which there is not enough moisture to swell the kernel and start a growth.

The utmost care should be used in regulating the *planter*, and watch the depositing of the kernels as to the required number.

We will give you one incident where a farmer got behind with his planting, and in a desperate hurry repaired to the field with helpers, when the click of the planters could be heard, showing a lively pace throughout the whole day in order that the field might be finished.

Meanwhile the required amount of seed had been taken to the field and placed in care of a six-year-old son to watch while they were making their

rounds, as there was no time to fix *pen*<sup>s</sup> and *fences* and "pigs" were free commoners.

The weather being favorable it needed only a few days before the corn began to come up. But, to the astonishment of the farmer, a majority of the hills were limited to "*ones*" and "*twos*."

He remarked, in the presence of his youthful son, that the seed which he got from his good neighbor must be poor, as the planters worked good two or three years ago, and a second tour was made to the field for examination.

The father yielded the point when the son showed him his hills he had planted in his arrangement of the fox and geese ground; and he only put in *two* quarts in each hill.

#### Cultivating and Tillage.

"Cultivating and tillage" is the last but not *least* consideration in which the farmer leaves his crop in condition for nature's "development."

And by so doing he will be in readiness when the weather is favorable and the ground not too wet; and give the field one or two good harrowings before it gets up, which should be followed by weekly cultivating until the "tassils" are quite conspicuous.

Corn should be cultivated at least six times, we frequently run through ours the seventh. Cultivating after tassiling out is beneficial if the ground is not stirred to deep to injure the roots.

Please remember when corn is three to four feet high the roots are about of equal length and form almost a solid mat from two to eight inches under ground across the rows.

With ordinary seasons and previous good management, not much hoeing need be done. There should be a few days of spare time between haying and

harvesting, when a person can go over about five acres a day with a hoe, and cut down all weeds that have been left and are likely to go to seed, which, if left, not only help to use up the "fertility" necessary for the crop in its advanced stage, but are serious "eyesores."

No doubt many of you who are present at this meeting today, were observant of the fact that, owing to the repeated frosts of last spring, some were in a state of "disparagement" and openly avowed any possibilities of the maturing of a crop, and many fields were thus neglected. While those of you, who did not propose to be thwarted, and let the weeds predominate, and took the time and eradicated them were bountifully rewarded.

"Narrow, indeed, must be the scope of one's business, wherein arises no time for the "destruction" of "weeds." "Retribution surely overtakes wrong-doers."

#### A Low Average.

Before closing this subject we wish to inquire how many there are here, who wish to be classed under the "head" of "average Wisconsin farmers?" Who, according to the secretary of agriculture says, only produce  $26\frac{1}{2}$  bushels of corn to the acre. Let us see where the profits come in. It costs six dollars per acre to raise corn. Add to this four dollars more for rent of land—which equals ten dollars, "actual cost." Now,  $26\frac{1}{2}$  bushels (the average for Wisconsin farmers) at 30 cents per bushel, would bring \$7.95, which shows a loss of \$2.05 per acre.

Now, this estimate shows on the face of it, there is something wrong, and such yields can not be tolerated with any degree of success. Each and every farmer should try and lay a foundation for bet-

ter yields, which only can be done with renewed fertility and proper cultivation.

In this system as given you, we have been able to produce at one time,  $82\frac{1}{2}$  bushels of shelled corn per acre, from a field of  $10\frac{1}{2}$  acres. The yield was ascertained as follows. Each load was counted and set down as fast as husked. Three average loads were weighed:

First load weighed 25 bushels and 30 pounds.

Second load weighed 26 bushels and 15 pounds.

Third load weighed 25 bushels and 40 pounds.

But they were called an average of 25 bushels to the load. The number of acres was ascertained by counting the rows each way, which would make it approximately correct. Last year we made an other estimate from a field containing 13 acres. A double box found to be 10 feet long and 26 inches deep would hold 45 baskets. The total number of loads was 52. Measurement of ground by rows, this yield was found to be 180 baskets per acre.

These figures may seem rather astounding to some, but this may be somewhat lessened, when we stop and consider that there are 3,240 hills on an acre when planted 3 feet 8 inches apart. If they produce 4 ears to the hill, and each ear weighs one-half pound, you will have  $92\frac{1}{2}$  bushels per acre of shelled corn, or if you can grow three ears to the hill, with an average of one pound to the ear, you can produce the "enormous" amount of 276 bushels of ears per acre, which equals 138 bushels of shelled corn.

But, says one, can ears of this size be produced? To this we would say "yes." The fall of 1888 and the fall of 1889, we had ears on exhibition at the *Journal* office in West Salem, that averaged over



a pound and a quarter, which was witnessed by many people.

Thanking you for your kind attention, I leave the subject for your consideration.

DAIRY EXPERIENCE.

BY DR. C. V. PORTER.

[Read at the Viroqua Institute, Jan. 14-15.]

In the winter of 1888-9 I commenced using Short's test in a dairy of twenty-eight cows. I did not purchase a complete apparatus. I sent to Greiner, 63 Maiden Lane, N. Y., for a dozen bottles graduated on the neck, and for a ten and twenty cubic centometer pipette, the smaller for measuring acids, the larger for milk. The chemicals I had prepared by our city druggist. The alkaline solution is now made of one pound Babbitts' Potash to two quarts soft water. The acetic acid used should be the U. S. P. acid, sp. gr. 1.047. The tin man make me a water bath (an eight quart pail with copper bottom), for a rack for the long style of bottles I took a tin maple syrup drum and made a dozen holes in it for bottles and holes in bottom and sides to admit water. Thus for less than eight dollars I had a twelve bottle test apparatus with chemicals for two or three dozen tests. The cook stove took the place of a lamp.

Fourteen of the twenty-eight animals tested were half-blood Jersey heifers 19 to 28 months old. This accounts partly for an average yield of only 155 pounds.

The following table gives approximate amount of butter made by each cow, together with number of pounds over or under estimated cost of keep, and estimated profit or loss given by

each cow for the year ending September 15, 1889. This statement is predicated on butter product alone, not reckoning growth of heifers, calves, skim milk or fertilizers into the account:

*Average Cost Yearly Keep of Cow Estimated at \$25.00. Butter for Test Year Netted About 19 cents per Pound; Hence it Took 133 Pounds of Butter to Support an Average Cow.*

	Profit or Loss.
No. 1 made 321 lbs. butter, or 188 lbs. over cost of keep.....	\$35 72
No. 2 made 183 lbs. butter, or 50 lbs. over cost of keep.....	9 35
No. 3 made 271 lbs. butter, or 138 lbs. over cost of keep.....	26 22
No. 4 made 174 lbs. butter, or 41 lbs. over cost of keep.....	7 79
No. 5 made 217 lbs. butter, or 84 lbs. over cost of keep.....	15 96
No. 6 made 117 lbs. butter, or 16 lbs. less than cost of keep.....	8 00
No. 7 made 143 lbs. butter, or 10 lbs. over cost of keep.....	1 90
No. 8 made 135 lbs. butter, or 2 lbs. over cost of keep.....	38
No. 9 made 143 lbs. butter, or 10 lbs. over cost of keep.....	1 90
No. 10 made 196 lbs. butter, or 63 lbs. over cost of keep.....	11 97
No. 11 made 127 lbs. butter, or 6 lbs. under cost of keep.....	1 14
No. 12 made 152 lbs. butter, or 19 lbs. over cost of keep.....	8 61
No. 13 made 149 lbs. butter, or 16 lbs. over cost of keep.....	8 04
No. 14 made 183 lbs. butter, or 50 lbs. over cost of keep.....	9 50
No. 15 made 186 lbs. butter, or 53 lbs. over cost of keep.....	10 07
No. 16 made 81 lbs. butter, or 52 lbs. under cost of keep.....	9 88
No. 17 made 169 lbs. butter, or 36 lbs. over cost of keep.....	6 27
No. 18 made 185 lbs. butter, or 52 lbs. over cost of keep.....	9 88
No. 19 made 185 lbs. butter, or 52 lbs. over cost of keep.....	9 88
No. 20 made 20 lbs. butter, or 113 lbs. under cost of keep.....	21 27
No. 21 made 128 lbs. butter, or 5 lbs. under cost of keep.....	96

No. 22 made 258 lbs. butter, or 125 lbs. over cost of keep.....	\$23 75
No. 23 made 114 lbs. butter, or 19 lbs. under cost of keep.....	8 61
No. 24 made 90 lbs. butter, or 43 lbs. under cost of keep.....	8 17
No. 25 made 179 lbs. of butter, or 46 lbs over cost of keep.....	8 74
No. 26 made 65 lbs. butter, or 68 lbs. under cost of keep.....	12 92
No. 27 made 113 lbs. butter, or 20 lbs. under cost of keep.....	3 80
No. 28 made 67 lbs. butter, or 66 lbs. under cost of keep.....	12 54

If my tests are nearly correct it will be seen that there are ten animals of the twenty-eight that failed to make the 133 pounds butter necessary to pay cost of keeping them. Four of these were mature cows and six were grade Jersey heifers. The four best cows paid a profit above cost of keep of \$101. The four poorest ones, all mature cows, gave a loss below cost of keep of \$31. By mixing these ten non-paying animals with the eighteen paying ones, we see that No. 1 of the list, on the basis of butter product alone gave \$17 more profit than all the rest of the herd save Nos. 3 and 22.

How does this test estimate compare with the churn? The sum total of my test estimates was 4,351 pounds.

The amount of butter and cream sold together with the estimated amount, butter and cream used in the family, which was 365 pounds, differed but 25 pounds from the test estimated for the year.

I have not found this test sufficiently accurate for determining the amount of butter some cows give in a day. Three tests made from 15 pounds milk well mixed gave 72-100 of a pound each, while the churn test gave fully a pound of twice worked, unsalted butter, from the 15 pounds milk. The churn in another instance gave 1.75 pounds butter from

milk which Short's test showed contained but 1.42 pounds.

The results, however, in testing a whole herd for a month or a year, tally so closely with the churn yield that these differences are of minor importance, and perhaps may be due to some error in the analysis. I believe the freshest and sweetest milk analyzes best, and the drops of acid left in the bottles from the previous analysis coagulates the milk when first put into them, and the bottles should be well washed after use. I have broken two or three bottles by allowing the water in the tank to boil, and find that a degree of heat little short of boiling answers all purposes.

## WHAT WE GIRLS WANT.

By MRS. SARAH W. GETCHELL.

[Read at River Falls Institute, December 2-3.]

A Wise Man.

We have not come before you my dear farmer friends, to ask sealskin coats, with oats at seventeen cents per bushel, neither do we mourn for the ten dollar boots, when corn cannot be sold for 20 cents. When our hogs have to be marketed for three cents per pound we will not speak of silk hosiery; no, not even of the gingham dresses we would like. 'Tis not the articles that money can buy that we want more than all else, though I presume the sound of "filthy lucre" would make a beautiful jingle in our ears if it only could get into the family pocket.

I have read: "A wise man, one who loves his wife, will not tell her all his business." Why? I ask. Are we not co-workers? What kind of a business firm would it be that kept each his own secret opinion, did each one his own

buying and selling without a word of counsel? We are not babes; we have a right to know and be consulted, and also to counsel with our husbands in all of the business of the farm, no matter how large or small.

Two heads are often so much better than one. You may be called upon while yet in active life, while your children are to be supported, to leave the business and the farm for the land where the sheaves are all garnered and there is no thought of care.

#### A Business Education.

Do you stop to think how your wife, if she were unlearned in the arts of your trade, would keep the family together; she with no knowledge of the work! The land could not be sold to help her in other ways, because she who has worked a third more hours to get the home than you have has no right to sell but her paltry third. The reason that law was made was because fathers kept their daughters from becoming business women, and husbands have not helped them to broaden their education in that direction as they should have done. We hope to live to see the time, when through the justice of men, and the education of women, the wife will have full control of all property left at the death of the husband.

Girls, you need to understand your father's business, both for his sake and your own. It may keep the silver locks from fringing that dear brow if you know *just how* the money comes, and how much of it there is to be used in the family expenses. You need also to understand mother's care for her household; to take her place at times as manager, and let her go away to rest. Let the dear old hands that have labored for you, be folded in rest sometimes here. You could keep them longer with

you, you know, and there will be no pang of regret when the time comes for you to take the last look on the still white face, and thoughts like these pass through your mind:

"Pale withered hand that more than four score  
years,  
Had wrought for others, soothed the hurt of  
tears,  
Rocked children's cradles, eased the fever's  
smart,  
Dropped balm of love in many an aching heart;  
Now, stirless, folded, like wan rose's leaves  
pressed  
Above the snow and silence of the breast.  
In mute appeal they told of labor done,  
And well earned rest at set of sun;  
From the worn brow the lines of care had  
swept,  
As if an Angel's kiss the while she slept had  
smoothed the wrinkles quite away,  
And given back the peace of childhood's day;  
And on the lips the faint smile almost said,  
"None know life's secrets but the happy dead."

#### Home-Making.

We all need to know the business of home making; then there will be no use for the one-third law. We want a free use of the family pocket-book, whether it contains much or little, to know our husband's work as well as our own.

Now, young man, don't let me hear you say: "Yes, I guess there would not be much money left if a woman had the handling of the pocket-book."

Well, it is your own fault if you choose a wife who does not know the value of money as well as you do. If you will be careful and mind these few don'ts you will be quite apt to get a wife that will be a help to you. If you go to visit the young lady at meal time, and mother gets the dinner alone, while she sits with you—don't! If mother washes the dishes while she entertains you—don't!

If the young lady wears the better clothing, and mother takes what is left—don't.

If she does not treat her own big brothers as well as she does you—don't Choose a wife who is self-denying, and be self-forgetful yourself, and there will be even pulling on the long haul of married life.

#### Help Each Other.

Now, big brothers, I've a word to say to you. Don't leave your sisters to the care "of whom it may concern." Your sisters are only human, and if they tire of staying at home, may accept the company of young men of whom you are not altogether proud. Oh! I hear you say, "Two is company, three is a crowd," or, "I don't go with my own sisters when I can go with other girls." Who does more for you than your own sisters?

Think twice, boys, you are in a measure responsible for your sister's welfare. We mothers all recall the thrill of delight tempered by pain when our wee baby girls are for the first time laid within our arms, there to learn their first lesson in waiting. How tenderly we hold them until they receive the needed comfort, nor do we think to chide them if they weep.

Just so surely should our larger babies find comfort in mother's arms. When your school girls come to you with a sorrow, or the first tale of childish love or some disappointment, don't, oh! mothers, say: "Oh! go along with your silly talk, wait until you are older before you talk such things." Look backward into your own life when you were as young as they; and if you are honest you will find feelings there akin to theirs.

#### A Mother's Love.

Hold them tenderly, heal their sorrows yourself with your own balm of healing. Do not let them away from you to seek comfort and guidance from girls of their own age. Let us make our daughters know that mother's love is first, last and

most. Then we will fill the first great want of our girls' lives. We want most of all material things, our husbands to be always our lovers, to know that the love you were so eager to express years ago, before so many cares came to bring the silver threads, and the "crow's feet" are ours yet.

If a neighbor's wife who has much more time and money to use than your wife has, does look a little more dressy, don't say to her: I do wish you would look as neat and trim as Mrs. B—. If her daily life is so full of care that there is little room left for self-culture, do not as you sit quietly reading to yourself while she is mending the torn pants, or darning the little mittens, venture to remark, that she has retrograded, while you think you have advanced, since your marriage.

If she cares for you, instead of the sleep and rest that should come, her mind will be full of ways for improvement, her heart will hold a great pain and there will be tears on her pillow that never should have been there.

Remember, oh! husband, your sphere is as large as the world; your wife's does not reach beyond the garden gate. Your wits are constantly sharpened by whetting against other's outside, while hers grow rusty by disuse. But of all our needs, the greatest is a trust in each other, in our children; most of all in our God. "To feel and know that we may go where ere He leads the way."

### THE FUTURE FARMER AND FARM WIVES.

By MRS. M. C. OAKEY, Osceola Mills.

To the farmer of to-day in this new country, belongs the bone and sinew work of clearing and breaking the land that their children, the fu-



ture farmers and farm wives, may come into possession of cultivated and fruit-bearing lands. Those here who are already in possession of such are mostly on the shady side of life's journey. And should we ask the farmer, why are you toiling away the best years of your life to get the farm in good order just as old age comes on, he will answer: It will be a home for us old folks, and when we are gone our boys and girls will have what is left; the highest and noblest aims being for the good of their children.

Yes, the farmers of to-day are building homes for the next generation, and as you work to give them a goodly inheritance, you ought to see that they have the training that would fit them to properly fill the place; that is, give them a few lessons in practical farming, the results of your experience.

#### The Country School.

The first lessons, almost, must be learned in the country school. While there are many things in them to be commended, there are also many things to be regretted, and many of the latter cannot be well avoided, while many more could be easily remedied. One of the greatest trials is the shortness of the terms, which, till we get better able to afford more school, cannot be well avoided, and for that reason a continued change of teachers, which, if the teacher be a good worker, is a great misfortune. But herein comes another source of ill. About half the teachers have no interest in the school other than drawing their salary and trying to dress in a manner to astonish the plain country folks. But the other half are the ones that the school board should try to secure. Teachers that are honest and wish to earn every cent that you pay them, for one of the very best lessons

for a child to learn is to ask nothing when nothing is given.

#### A Practical Education.

It is not necessary to send the boy to college to learn something that will be useful to him on the farm. I think you could count on your fingers all the farmers that are intelligent and successful that have ever attended a college or high school, but there are many useful things that could be taught in the public school. I think a few nails and a hammer and a saw would contain a lesson whose moral would help the boys in the future repair of their farm buildings and fences. Did you know that the boys and girls would take as much pride in keeping the school houses and fences in order if you would create a sentiment in that direction as they now do in tearing down and disfiguring with their knives and pencils. I remember in one school where I taught the porch got out of repair and they had some lumber there left from a coal building and two of the boys worked every noon till they had a neat porch built, and the board told them they could build a walk to the gate, the boys wanted pay for their work and said they would if the board would get us scrapers and they did so. I made a suggestion that was followed, that a few tools be bought for the boys and I never knew a board to stay off after that, they took pride in keeping up the repairs and their parents were proud of their work. Try this and see if it will not be a saving experiment. Get some crash for one-half dozen towels, they will be a great comfort, the girls will hem them, take them home and wash them and will learn something too, I don't doubt that some genius amongst the boys would make you a roller to hang them on, and will thus learn how to make one for his own

home, and there are many useful things that a teacher whose aim is the good of the children can bring in that will give the children a respect for work and for the vocation which will probably fall to their lot.

**Exalt the Farm and Speak Well of It.**

But as the school hours are only from nine till four, there are the long winter evenings that the boys and girls are left to you after the chores are done and mother has sat down to knit or sew, don't forget to talk to the boys and girls about the things you have learned by experience, talk to them about your mistakes, and do not blame every failure to the farm, or say that every one is trying to swindle the farmers, for you only discourage them, and they will think that the farm is a poor place, and farmers are abused nobodies, but if you ever do get discouraged and feel that way, do not say a word to the boys, but go visit some of us that do not live on a farm and see if you are living off the fat of the land. I think we will go home more encouraged, and advise the children to stick to the farm.

We must not forget that the life is more than meat and the body more than raiment, and aside from being successful home-builders our boys and girls are going to be the society and law makers of the future and their place in society will depend much on the home training and influence. There are few of us that do not want our children to stand amongst the educated and intelligent citizens of the coming day and there are a few that are able to give them college educations. But in this day where a good paper can be had for a whole year for \$1, once a week, we ought to all take at least one and talk to the boys and girls about the news, get them familiar with the workings of

the government, and with manufactories and industries. It will give them a patriotic love and respect for their country. They will have such an understanding of its needs that it will not take a smooth-tongued politician and perhaps a glass of larger beer to secure an intelligent vote from them.

**Good Books and Magazines.**

Good books were never so cheap as now. I have a catalogue where many of the best authors well bound can be bought for 30 cents. Get good story books for them when they are young and as they grow older they will develop a taste for good reading, just think, for three drinks of whisky (if any farmer ever does indulge in such) you could buy a book which would cause enjoyment to yourself and your entire family for a good many long evenings, and be a lasting benefit to all.

There is one thing to be careful about and that is these trashy magazines that send out chromos to catch subscribers. I do not blame you for wanting the pretty cards for the boys and girls, and I believe the love of the beautiful is their higher and better nature coming out. But go to the store and buy them the cards and for the dollar which the magazine will cost you can get the cards and two or three good books, but do not let your boys and girls waste their young lives over the hair-brained adventures of imaginary people who could never exist. It makes real life a burden to them. It is hard to peel potatoes for mother, after having been decked in diamonds and laces with Augusta Angelina. And much of a man's standing depends not only on the intellectual, but his moral make up.

Just imagine the rich man that is sordid and mean in his dealings with his fellow men. Be he ever so well educat-

ed no one ever respects the man that respects no one but himself. So do not point out the faults of the wrong-doers but emulate the good qualities of the successful ones, and make the boys and girls feel that honor and virtue will surely be rewarded.

As we are looking at the man who is lying drunk in a ditch there are few of us, although we may frequent the saloon, that would not almost rather bury our children than see them thus. And let's be honest with them and tell them the dangers of dissipation and excess in not only the saloons but other places where there is no good and much of evil. What we want most is not so much a harder working class to fill the place of the present farmer, as a class that will rise up and do justice to their parents to requite for the anxious care they have had for them.

The farmer of to-day is doing a grand and noble work for those that will come into possession of their homes after they have gone. And even though they may make some mistake in the sowing of the seed, I doubt not in God's good time, the harvest will bring forth golden fruit and our boys and girls, the future farmers and farm wives, will shine forth as the stars in the firmament.

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## WHAT SHALL WE READ?

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By MRS. M. McCoy.

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[Read at Belleville Institute, March 18-19.]

### Education and Progression.

We are told by a great philosopher that "A little learning is a dangerous thing," and to avoid the danger we must increase the knowledge.

It is of vital importance to all students, how they can best attain to a

thorough knowledge of life, and acquire an education necessary for the discharge of the duties which every human being owes to each other, and the facilities now within the reach of all the inhabitants of these United States for so doing, is beyond, far beyond, anything our ancestors dreamed of. But those who from age or lack of sufficient means cannot afford, or avail themselves of those privileges provided by the State, in our colleges have the blessed privileges of reading and studying the books, which are accessible to all so "what shall we read" is the subject under consideration this evening.

Among so great a variety of books it is very difficult to make a good selection, but as we farmers are supposed to know very little of book lore, we can choose a few of the best, which will be sufficient to enlarge our ideas of God, man, the world, and illimitable space, and to even take a peep into some of the sciences.

### History.

First, let us look at history. And beyond all comparison we place the book of books (which it is presumed the inhabitants of Green county are conversant with) above all other history in point of time or authenticity, as an able writer has said: "It has God for its author, salvation for its end, and truth without any mixture of error for its matter."

And from this highly inspired pinnacle we step down to profane history. Giving age precedence we have as accessible to all readers, Rollins' Ancient History. The style in which it is written makes it most pleasant to the general reader, and is in many parts like a work of fiction for readableness.

History enlarges one's ideas of the ancient world, and we owe much to

those historians, who to fit themselves for their work must travel and find out all about what they write, about the colonies, who started them, what led those colonists from home, why the Persians came, what they believed, what countries they attacked, and of Egypt, what about its sources, rivers, soil. About their gods and their belief, that all events were under the guidance of the gods, so, we learn that there is an instinctive consciousness of a supreme being in every human breast. As every American should be interested in the history of his own country. Bancroft's history of America ought to be within the reach of all.

But to know how other nations were governed we must consult those which are notable for reliability, among which are Humes' History of England, and Gibbon's Decline of Rome. Humes' is perhaps too voluminous for the average reader, who likes to have everything condensed, as it were in a nut shell. Gibbons is very readable and reliable, but sometimes sneeringly suggestive of skepticism. Then we have an excellent history of Greece, by Grote, and of the French Revolution by Carlyle, and of the south of Germany by Yonge, but we had almost forgotten the facile Macaulay, whose History of England is so fascinating.

#### Biography.

We next glimpse at biography, and we must adjudge the foremost place to "Plutarch's Lives." If you want to know of the great orators, statesmen, soldiers, rulers of the ancient world, the kingdoms of Greece and Rome, by all means read "Plutarch." It is very profitable to read the "lives of great men. They remind us we can make our lives sublime," and the lives of such men as Baxter,

Bunyan, Luther are a great help to stimulate spiritual life.

Then we have Boswell's Life of Johnson; Boswell, prince of biographers.

Next looms up the great prose writers of fiction of more recent times.

Scott must be awarded the post of honor. His novels, historically, cover a period of 200 years, and who near his last said he had never written a line which he would wish erased. His purity, humanity, and generosity, endeared him to all his acquaintances.

Dickens, whose works were the means of directing the attention of the "Powers that be" to the terrible state of gaols, work houses, and tenements, in fact, to everything that would ameliorate the distress consequent on poverty, and made the wealthy and selfish to see the need of reform, and caused the thinking people of London to think and act for the down-trodden, degraded habitue of the slums of his great city, his works are a benefit to the human race.

Every age has had its marked phases. The civil war in England brought out such men as Jeremy Taylor, John Milton, John Bunyan, and their work remains and will endure while the world lasts.

Luther and Melancthon were the offspring of the reformaton, and we owe much to it for the books we now enjoy.

A book to be beneficial must be a truthful delineation of the times, and must be essentially human, and we must trace the influence of Scott's works to his recognition of the sympathetic in common life. Our day has made an advance in this line, we have annals that enter into all the bearings of discipline in forming men and events, which make a true history of the times, and those who would benefit the race must be keen observers of men, and enter into their



forms of life and society, and those books which live through the ages are those which connect themselves with human life and action.

#### Good Books, An Inspiration.

Every good wise book helps us to understand the world, or God, better. There are many who prefer sentiment to humanity, and they will meet with authors, who seeking a temporary reputation, later to their appetites, but such works are short-lived.

The beginning of the present era had many noble minds, and some, though pagan, entertained ideas far ahead of their times and a perusal of their works, though only translations, will repay the student. Books can only be profoundly influential as they unite themselves with decisive tendencies—our society has a great influence for good or bad on us. If we move in an atmosphere of good, pure books we get the very best society, needing no introduction, and can meet them at leisure unchanged and unchangeable. Such names as Bacon, Erasmus, More and others, rise in our minds as superior to the average intellect, and every age has its own typical life stamped indelibly on its institutions.

It is pre-eminently fortunate when the contributions to one's life comes from sometimes opposite and remote points, so the stream is kept fresh and full by distant yet converging tendencies.

#### Modern Authors.

We cannot omit our modern female authors as Hannah More, Charlotte Bronte, George Eliot, Mrs. Phelps, Mrs. Stowe, Miss Willard; but their names are legion who have battled for temperance, purity, freedom, and all that ennobles home life.

I need not name theological works, as each branch of the Christian church has its favorites in doctrine—some Armenian, others Calvinistic, and some like Mrs. Ward's Squire, who would like a Christianity without a Christ, who had men of straw created for him to knock down, a dishonest, misleading and unfair manner of debate.

Youth is so susceptible that parents should use all caution in regard to what is admitted to the home, and no questionable literature should be admitted. In reading we should use discrimination, diligence, and earnestness; we should read for facts—quality of matter is the main string. We can be at no loss in these days for variety in books. Do we want a "feast" of wit or "flow" of humor, we have only to take up Swift, or Lamb, or Wordsworth, or Goldsmith, or Irving, whose Knickerbocker, etc., is matchless for humor, and his Sketch Book unparalleled for beauty of description and pathos. Cervantes, too, whose Don Quixote served Chivalry, as did Mrs. Stowe's Uncle Tom's Cabin slavery. Then we have the immortal dreamer, whose Pilgrim's Progress, which has been translated into every European language, thrills us with a view of the Christian's course from the slough of despond to the pearly gates and golden streets of the New Jerusalem. We dare not omit the imaginative De Foe, whose immortal classic, Robinson Crusoe, considered by many as only fit for the young, and never think of reading it in mature years, yet if they did would find more religion, philosophy and political economy than in some works which bear the name. Johnson's Rasselas, and Goldsmith's Vicar of Wakefield, have long been classed among the best English classics.

Eber, Ware and others who have

written on Egypt, Greece and Syria convey through good fiction solid truths of the habits, institutions, and life of the people they portray. Books are a power at work, silent but impressive companions, and in the retirement of our rural homes have through them and a healthy press, nutritious food for our children's intellectual and moral growth.

#### Poems of the World.

As we desire to aim at knowing the best, we turn with pleasure to greet those who have long been adjudged as the greatest poems of the world.

First in point of time and matter Carlyle, that great thinker, but dyspeptic pessimist, places the Book of Job for sublimity and grandeur of description.

Then we name Homer's Iliad and Odyssey, Virgil's Aeneid wherein the boys can read of the affection Aeneas bore to his aged father, by carrying him on his back out of burning Troy, though by the transaction he lost his wife.

Next comes Dante, that superb Italian poet of the thirteenth century, whose "Divine Comedia" has had cosmopolitan fame.

Tasso, also Italian, of the sixteenth century, whose "Jerusalem Delivered" has fed the soul of many a scholar, with "thoughts that breathe," and tells of his restless energy in the race after fame.

The unrivaled Shakespeare, whose knowledge of human nature was unbounded.

Then Pollock's "Course of Time" which was dear to many of the past generation.

Young and Thompson are still read with pleasure. Byron's "Childe Harold" and Moore's "Lalla Rook;" Gray, especially his "Elegy;" Bryant, Longfellow, Tennyson, Burns, all these are good

poets, but none of them will give the boys more pleasure than Scott's "Marmion" and "Lady of the Lake."

#### Books of Travel.

In travels we can scarcely make a selection. There are so many well written descriptions of foreign lands, and so felicitous in style that the most exacting taste must be satisfied.

"Views Afoot," by Bayard Taylor is very interesting; but we have exceeded our limits, and yet only mentioned a few of the many that might be read with profit, and to sum up all, if you will own a good encyclopedia, a Webster's unabridged, a family Bible containing a Smith's dictionary, Young's concordance and the many tables chronological and informative on different subjects, you will be well instructed in all matters of essential importance, and you will have no time or desire for yellow-backed literature.

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## THE BUSINESS FARMER.

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By C. W. STAPLES.

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[Read at Osceola Mills Institute, Nov. 26, 1889.]

#### Looking Upward and Onward.

In speaking on a subject of which you know but little about, it is much easier to criticize than it is to advise, hence I will attempt to criticize the average farmer for not earning and wearing the title of this essay, and perchance throw in a little advice on the side.

There seems to be enough advice afloat from good and reliable sources, but there also seems to be a backwardness toward accepting anything but those old tried methods, that have proved good in their day, but are entirely inadequate to the needs of the modern business man, and right here

seems a slight mistake, the farmer is not generally known as a business man, the term does not seem to apply to him; and no doubt you noticed that it sounded somewhat far-fetched in the former sentence. We say that a person is a good business man when he not only accepts and tries new approved plans and methods, but throws his individuality into his business, and conducts it in a little different manner than his competitor, he buys as cheap as he can and sells as cheap as he can afford, in fact he tries to undersell his neighbor. How often do you hear of a farmer trying to undersell his neighbor? His word is as good as a bank note and his advice and influence is respected in the whole community. Such a man, we call a good business man, and when a farmer (and there are many such) conducts his farm in a similar manner, he, too, becomes a good business man and usually a successful one. The farmer is to blame for this distinction between men engaged in mercantile pursuits and those engaged in tilling the soil. The difference is only imaginary, and the only way to remedy the imagination is by not only "looking backward," but by looking upward and onward, in earning the title and wearing it with professional pride.

#### "Who's to Blame?"

I have known farmers to spend more money for books, papers and periodicals each year than they did for tobacco, cigars and whiskey. How many do you know that do the same thing? Not many. Then "who's to blame?" if the farmer is not generally known as a good business man.

A judicious investment in this line will bring you in far greater returns than you may at first suspect. No man can make a success at anything now-a-

days unless he invests in printer's ink, and the amount of work accomplished in his toil will be far greater for the moments spent in papers devoted to farm work. The household work will be far lighter if the magazine makes its weekly visits in the library, and the chores make light work for glad young hearts when the round table is replenished with fresh and wholesome reading matter every few days.

I have also known of a farmer who sends his boy, a good, strong lad of sixteen summers, into the field to work along side of the hired man, and expected that the boy would perform as much work for his board and clothes as the hired man did for one dollar a day; and then when the day was done, the boy must do considerable more than his share of the chores and run on errands about the place until long after bedtime. Oh, what a blessed privilege it is to be *such* a boy on *such* a farm.

Mothers and daughters, also, do the work incident to the household, taking care of the yard and garden, for their board and clothes, while at threshing time father hires a neighbor's girl and pays her seventy-five cents for doing about half the work the daughter does every day in the year. No wonder the life of the farmer's daughter has been praised in song and verse, and that the beautiful girl clings so tenaciously to the old homestead. Don't make such a mistake; pay the boys and girls for their work; pay them according to their worth; pay them promptly as you agree, and let them do as they choose with their earnings. More farmers' sons would succeed the father in business and farmers' daughters would be better satisfied with their lot as farmers' wives, if the latter plan be adopted.

**Impractical and Unremunerative Methods.**

There is but little reason, justice or judgment in the present system of educating the boys to succeed as on the farm; and the failure of the system is shown by the number of boys who are anxious for anything but the farm, and the girls are also dissatisfied with the farm as a home.

I have known farmers who never paid the land for the crop it gives them year after year; they took off all they could get, but never put a cent's worth back in the way of fertilizers, and then even wondered why they don't raise as much wheat or potatoes on an acre as they used to, when the greatest and only wonder is, that they can get anything off of land that has labored so long for not even board and clothes, we might as soon expect our land to give us a crop without proper fertilizing, as we would our binder would cut our harvest without oil; one is as essential as the other. If you haven't enough manure to properly keep up the farm, and the crop does not warrant buying, then sell a piece of land and buy stock with the proceeds, and thus make the supply equal to the demand. You may steal ten dollars from the land in the spring but it will cost you twenty dollars by fall, and is far better to be honest and pay for what you get in this line as well as any other.

I have actually seen farmers who didn't have time to clean up their doorway, fix up a piece of lawn or set out a few shrubs and shade trees; but they *did* have time to go to the village every day or two to play a game of cinch at the corner saloon, or gossip with the horse-trader an hour down the lane.

Does a business man think he can do business in a slovenly, dirty shop? If so he fails and finds out that his customers have gone over to John Wideawake,

a progressive and thoughtful competitor.

**The Usual Surroundings.**

Poor fences, a littered door-yard, no trees or flowers, the little scraggy wood-pile lying at loose ends about the place, all betoken shiftlessness, laziness and illiteracy. Hang out a better sign if you would be classed with business men. A good business man never misses a chance to better his trade or condition by the experience of others, he studies closely the trade journals, and the new methods of advertising; he attends the conventions and belongs to the associations that are held for the benefit of his trade. But how is it with the average farmer, he rarely attends and takes but little interest in the county fair, but leaves the horse jockey to manipulate the management to his advantage, he has no time for the farmers' club, but leaves the routine work of that and preparing for the institute to a few enthusiastic villagers who have no direct interest therein. What other class of business men, when meetings are gotten up for their benefit would allow another profession to come in and transact the business of the meetings? Surely we know of no other, but it is a common thing all over our land to see agricultural associations and farmers' clubs, managed by those outside the farm.

I have known a business man—no, a farmer, who had a thousand dollars' worth of machinery exposed to the weather, hunt an hour for a twenty-five cent jack-knife that he had lost.

Now, this is not an absurd comparison, but a true one, and if he had worked that hour putting up a shelter for the thousand dollars' worth of machinery, he could have bought him a brand new one dollar and a quarter knife with his savings.



I have known farmers who claimed that they are too poor to provide shelter for their cattle, and so let them run to the straw stack for fodder, seek shelter on the shady side of a barb-wire fence, and drink ice water to quench their thirst, during our cold and severe winters; by a little fore-thought and the farmers' journal, they can see that shelter and warm water costs nothing, comparatively, except a little labor; that to keep stock warm saves 15 to 20 per cent. of the fodder, and that it is unnecessary for cattle to run out for exercise in this cold climate. The increase in the value of the herd could be directly traced to the farm journal or the Farmers' Institute, which give us theory and experience far cheaper than we can get it ourselves.

#### Intelligence and Application Bring Success

There is no business that will succeed when the manager does not put all his time, energy and thought into it every day counting three hundred and sixty-five days to the year.

No business will thrive when the manager is continually telling that it does not pay—that he is running behind—that he is heartily sick of his business—and wishes he could find something else to do. A man must like his calling before he can expect any valuable returns therefrom; and those who are lukewarm to their own interests, will find it far more congenial if they would take off their coat occasionally and help sustain the county fair, the farmers' club, the institute work or any other means by which the farmer may gain knowledge without the slow, tedious and sometimes expensive, "actual experience." Every business farmer should be progressive and alive to the needs of his profession, and to the demand of the times; by so doing he can bring up the

standard of the farmer, and be able to wear with distinction and pride, the title of a good business man.

## IMPROVING SANDY LANDS.

By W. R. BARNES.

[Read at Friendship Institute, January 21-22.]

### Push, Clover, Fertility—Success.

When we purchased the land on which our homestead stands, which is a sandy soil, or clear sand as most folks would call it, the part which was under cultivation was so exhausted with poor farming that many people thought it utterly worthless, and when, in the second year, we put up a large barn, 36x45 feet, our neighbors laughed and wanted to know what we were going to put in it. We told them that we would fill it with black oak brush if we could find nothing better.

Knowing but very little about a poor, sandy soil, coming as we did from the rich, black soil of Racine county, we had but one thought, and that was that the success or failure of a man was in the style of farming he practiced, and I am still of the same opinion. A man cannot make a success of farming, either on clay or sand, and be half of his time sitting on a dry goods box smoking cigars and drinking beer, unless he has more brains than the most of folks. Common sense taught us that we could not get something out of nothing; but we firmly believe that such land could be made productive by putting on manure, sowing buckwheat or rye and turning it under when green, sowing clover, and following with a thorough rotation of crops. The result has been that the land under our system of farming has been gradu-

ally improving during the seventeen years we have been upon it, and the yield per acre as great or even greater than upon any clay farm with which I am acquainted. Our potatoes this year yielded 415 bushels to the acre; our corn 170 baskets per acre; barley 50 bushels per acre; oats 60 to 80 bushels per acre; clover, medium, 4 bushels, and mammoth 5 bushels of seed per acre, and sorghum syrup at the rate of 200 gallons per acre.

#### Conserving Fertility.

Looking forward to clover as the principal agent in improving the soil we had first to do something to make the clover grow. For this purpose we plow deep, and sowed buckwheat early, and then turned that under when in full bloom. Plowing under old hay or starw or rye when green would answer the same purpose. Then we sowed clover and got a fair start in the way of improvement.

Mammoth clover is much the best kind for restoring fertility to exhausted soils, and great care should be taken not to sow too much seed. Having the largest kind of clover, and so thin on the ground that each plant has room to do its best, then the roots are large and penetrate to a great depth, finding plant food at a far greater depth than it reached by any other crop and bringing it to the surface. Then when that clover is plowed under the top soil is enriched with all the best elements of plant food without the disadvantages of a clay soil.

One of the best materials for enriching sandy land is fresh coarse barnyard manure, when you have plenty of it, the coarser and greener the better it is, as it takes more time for it to rot and leach away, also holding the moisture and making the land less liable to dry and burn with the heat of summer. If you

put well-rotted manure on sandy land you need not expect much benefit from it as it will all be used up the first year so do not leave your manure to lie a year or two in your barnyard, but clean them out every spring and every fall, and give your land, and not your barnyard, the benefit of it. And mind, you spread your manure as you haul it, so that every part of the land receives equal benefit. It pains me to see a man waste his strength, waste his manure and spoil his land by leaving his manure in piles three or four months. There will be a patch about four feet square where the crop will fall down and rot, and the best of the ground will look as if no manure had been spread on the field.

But as the quantity of manure on the farm is always limited, clover comes in as the farmer's best friend, on which he must place his chief reliance for enriching his soil, and it is equally adapted for both clay and sandy soils. It possesses the most nutritive properties for the feeding of stock. By growing it you can keep more cows, horses and hogs, all yielding present profit and making an abundance of manure for the future, and when you plow it under, the rotting of the whole plant, including the roots, makes the soil in the best possible condition for every kind of crop.

#### Clover, Hogs and Dairying.

As farmers here are turning more of their attention to dairying since we had such a prosperous and well conducted cheese factory in this village, they will find clover the very best pasture for producing the largest amount as well as the best quality of milk, and it is also the best pasture for the hog, we may assert that it is, on the whole, the most profitable crop on the farm.

Our sandy soils should be kept in a good state of cultivation from the start.

For this purpose have a regular rotation of crops. When clover sod is broken up it should be followed by a clean, hoed crop and then seeded down again with clover along with the following crop of small grain:

On exhausted, sandy soils the first start in improvement is the most difficult. As I said before, put on all the manure you can scrape up, sow buckwheat or rye and plow under when in full bloom; and to still further insure a good stand of clover, sow equal parts of salt and land plaster, 100 pounds of each to the acre at the time of seeding the clover.

Before plowing up a clover sod cover it well with manure, either in the fall or early spring, and leave it as long as possible before plowing, so that the clover gets a good start, and you have quite a crop of green clover to turn under. This causes quick fermentation and decompo-

sition of the whole clover plant—roots and top—and gives the corn or potatoes an early start and a vigorous growth; then let the cultivator and hoe be freely used, allowing no weeds to grow, and you are pretty sure of a good crop, whatever the season may be. Follow the next year with wheat, oats or barley, seeding down again with clover.

I consider clover seed a profitable crop to raise on sandy land, as the few bushels of seed you get takes almost nothing from the soil, and the rotting of the straw and the roots of the clover add an immense amount of fertility to the soil. I would, in conclusion, say to the tillers of sandy farms—Don't get discouraged, but go at it with a will to win; put on your manure, sow on your clover, and attend well to the growing crop, and I have no fear of your success.

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## RAILWAYS AND MILEAGE IN WISCONSIN, DEC. 31, 1889.

Lines of the Chicago, Milwaukee & St. Paul R'y.....	1,310.09
Lines of the Chicago & Northwestern R'y.....	946.55
Lines of the Wisconsin Central Associated Lines.....	641.47
Lines of the Milwaukee, Lake Shore & Western R'y.....	571.57
Lines of the Chi., St. Paul, Minneapolis & Omaha R'y.....	553.86
Lines of the Minneapolis, St. Paul & Sault Ste. Marie R'y.....	266.85
Lines of the Milwaukee & Northern R'y.....	254.50
Lines of the Chicago, Burlington & Northern R. R.....	230.50
Lines of the Green Bay, Winona & St. Paul.....	221.80
Lines of the Illinois Central R. R.....	91.31
Lines of the Northern Pacific.....	84.30
Lines of the Duluth, South Shore & Atlantic.....	67.98
Lines of the Sault Ste. Marie & Southwestern.....	26.88
Lines of the Milwaukee, Dexterville & Northern R. R.....	25.40
Lines of the Eastern Railway Company of Minnesota.....	20.70
Lines of the Wisconsin, Pittsville & Superior.....	20.29
Lines of the Chicago, Fairchild & Eau Claire River.....	16.00
Lines of the Milwaukee, Menominee Falls & Western.....	14.60
Lines of the St. Cloud, Grantsburg & Ashland.....	12.00
Lines of the Menomonic R'y.....	5.02
Lines of the Goodyear, Neillsville & Northern R'y.....	5.00
Lines of the Duluth Short Line R'y.....	1.94
Lines of the Prairie du Chien & McGregor.....	1.75
Total mileage.....	5,390.36



# WISCONSIN AGRICULTURAL RESOURCES

## SIXTY-EIGHT COUNTIES.

No. of farms .....		141,675
Acres of improved land.....		8,115,333
Acres of unimproved land.....		4,533,715
Acres of wood land.....		3,660,198
Value of farms .....		\$415,000,000
Value of farm implements.....		\$15,997,989
No. of swine.....	1,596,200; valued at.....	\$5,102,376
No. of cattle and calves.....	1,843,899; valued at.....	\$28,062,598
No. of sheep and lambs.....	1,429,137; valued at.....	\$2,353,015
No. horses and mules.....	498,132; valued at.....	\$41,049,563
No. of cows.....	700,000; valued at.....	\$15,237,468
Pounds of butter.....	50,000,000; valued at.....	\$7,500,000
Pounds of cheese.....	45,000,000; valued at.....	\$4,000,000
Bushels of wheat.....	12,683,933	
Bushels of corn.....	38,058,857	
Bushels of oats.....	48,293,415	
Bushels of barley.....	15,502,443	
Bushels of rye.....	5,049,784	
Bushels of potatoes.....	13,492,108	
Bushels of apples.....	1,903,699	
Bushels of cranberries.....	289,145	
Bushels of strawberries.....	76,975	
Bushels of clover seed.....	61,371	
Bushels of timothy seed.....	101,960	
Value of agricultural products annually.....		\$135,000,000
Value of manufactured products annually.....		\$200,000,000

# WISCONSIN PUBLIC SCHOOL STATISTICS.

## ADMINISTRATIVE.

- 1 State Superintendent.
- 42 City Superintendents.
- 70 County Superintendents.
- 43 Boards of Education.
- 6,104 School District Boards.
- 1 Board of Regents of the State University.
- 1 Board of Regents of Normal Schools.

## SCHOOLS.

- University of Wisconsin and Agricultural College.
- 5 State Normal Schools.
- 165 Free High Schools.
- 817 Graded Schools.
- 5,931 Ungraded Schools.

## RESOURCES.

### *Annual Income of*

State school fund .....	\$193,820.70
University fund.....	15,241.35
Agricultural college fund.....	14,512.26
Normal school fund .....	85,364.58

### *State Tax for*

Common schools .....	\$577,092.82
Free high schools .....	50,000.00
State university.....	71,653.76

### *Productive Fund of the*

University of Wisconsin .....	\$187,948.32
Agricultural college.....	229,660.00
Taxes by counties, cities and districts .....	3,559,666.39
Value of school property in the state .....	8,898,603.00
Number of persons of school age (4 to 20).....	577,123
Number of teachers required.....	8,218
Number of Teachers' Institutes held (in 67 counties) .....	91
State tax for Teachers' Institutes.....	2,000.00
Productive fund of normal schools.....	1,473,243.55

# Farmers of Wisconsin

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— OF —

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The Shropshires are the hardiest of all mutton breeds—they are wonderfully prolific. The first cross on a common flock of ewes will increase the number of lambs over 30 per cent.

The Shropshires grow a close, compact protecting coat of the highest priced medium wool, of which the manufacturers of the United States import over thirty million pounds annually at a duty of over 40 per cent.

WOODSIDE FLOCK has been carefully selected from among the best flocks in England and Scotland. They are large, blocky, built with heavy bodies near the ground. They are beautifully covered over the bodies, heads, faces and legs with fine, close even fleeces. As an indication of the superior breeding qualities of this flock, I will say that in spring of 1890 the ewes had one hundred and fifty-six per cent. of strong live lambs at foot when turned out to grass.

Choice stock, all ages, both sexes, at prices lower than to be found elsewhere for stock of equally high pedigree and quality.

A full registered pedigree and certificate of transfer furnished free with every sheep. Stock crated, supplied with feed and delivered at Oregon Station, free of extra charge. Special reduced shipping rates for all my customers. Send for catalogue.

Correspondence solicited.

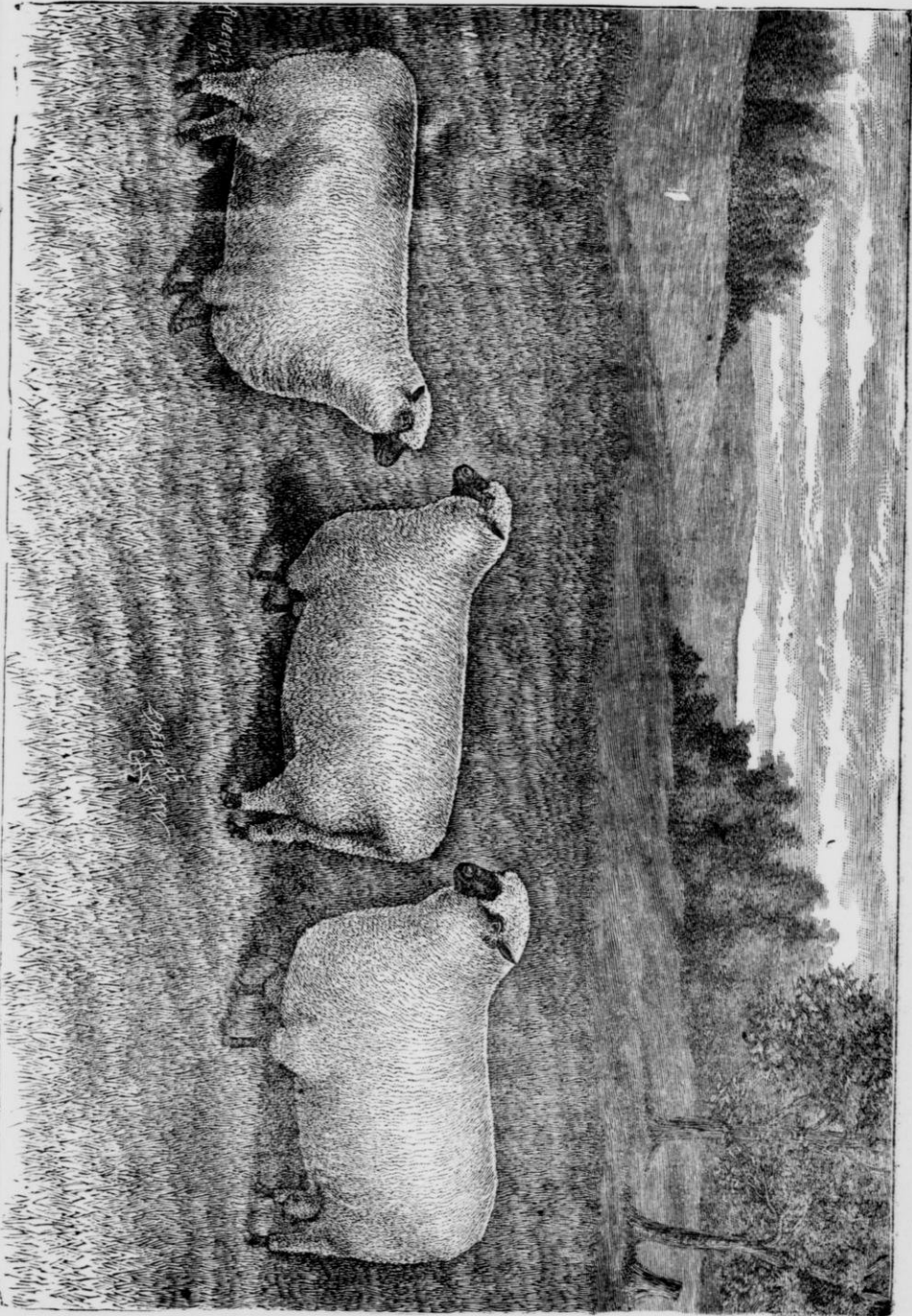
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**SHROPSHIRE** from **WOODSIDE FLOCK.**  
**PROPERTY OF A. O. FOX, OREGON, DANE COUNTY, WIS.**

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— OF —

## FRENCH COACH HORSES

Will always be found to contain a choice selection of young stallions from the best breeding establishments of France. They are all bought when colts and are matured and acclimated on our farm, so that the buyer has all the good there is in them. They run at large in paddocks and are kept in plain flesh.

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First Prize and Second Prize Winners in the Four Year old Stallion Class at the Great Horse Show of 1888.

At the Minnesota State Fair, held at St. Paul, September, 1889, WOODSIDE STUD won 1st and 2d prizes on stallions 4 years old; 1st and 2d on stallions 3 years old; 1st on stallion 2 years old; 1st on stallion 1 year old; also grand sweepstakes for the best Coach Horse, any age.

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Weighing 1300 to 1500 lbs. at 4 Years Old.

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FRENCH COACHER GODFREY (152)

French Coach Stallion GODFREY (152), 16½ hands high, weight 1500 pounds.  
PROPERTY OF A. O. FOX, WOODSIDE FARM, OREGON, WIS.

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Size ranging from 15 1-2 to 16 1-4 hands; weight from  
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**Stallions, Stud Colts, Fillies, Brood Mares,**

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Garden City, Butler, Burton,  
Langford, Britton,  
Newark, Brampton, Sargent,  
Harlem, Monango, Edgeley,  
Orient, Millard, Hosmer,  
Hillsview, Eureka, Eden.

## IOWA.

Covington, Atkins, Newhall,  
Van Horne, Keystone, Vining,  
Gladstone, Ferguson, Haverhill,  
Melbourne, Collins, Maxwell,  
Huxley, Woodward, Jamaica,  
Bagley, Bayard, Dedham,  
Templeton, Aspinwall, Manila,  
Astor, Earling, Panama,  
Portsmouth, Persia, Buck Grove,  
Bell, Kenwood, Charter Oak,  
Ute, Rodney, Charles City,  
Peru, Cedar Rapids, Highland Center.

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### Model Percheron Horse Stock Farm,

Situated in the town of WAUWATOSA, three miles west of the city of Milwaukee, Wisconsin, where some of the most carefully selected famous

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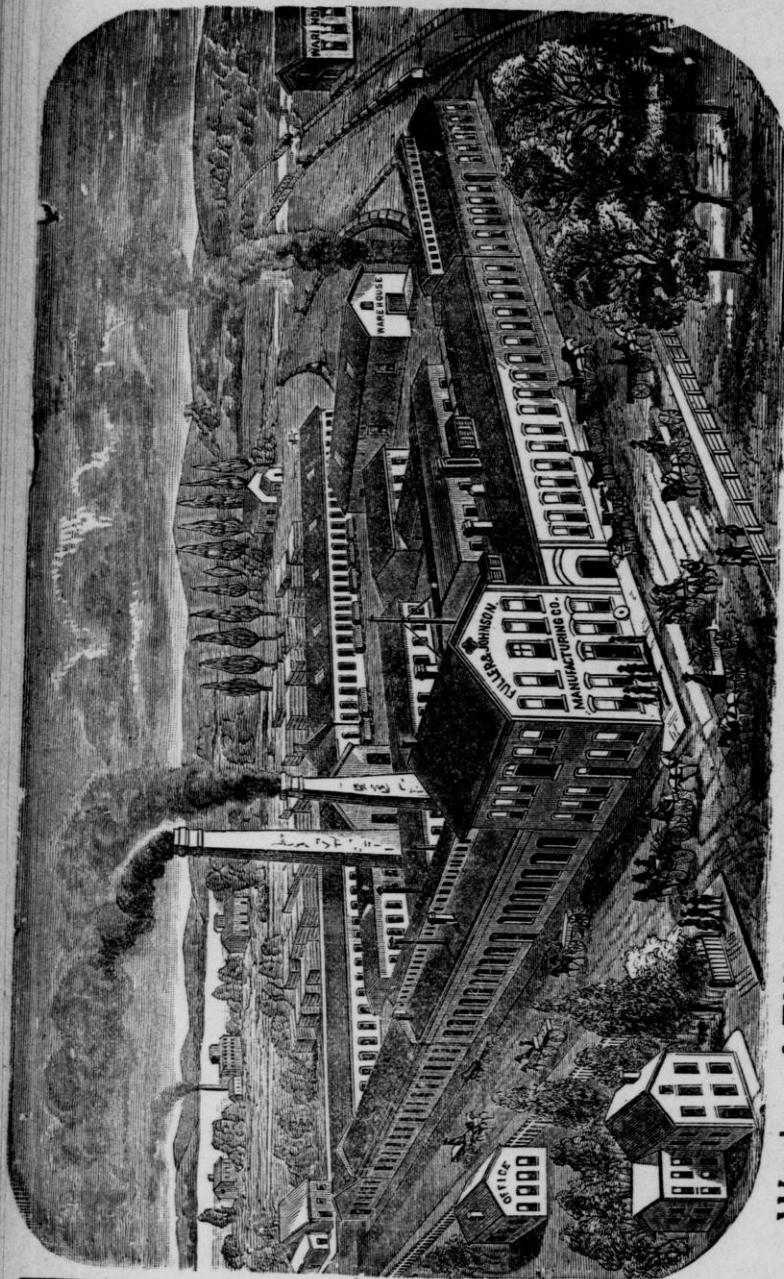
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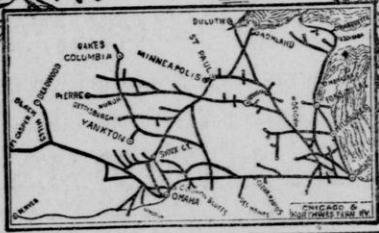
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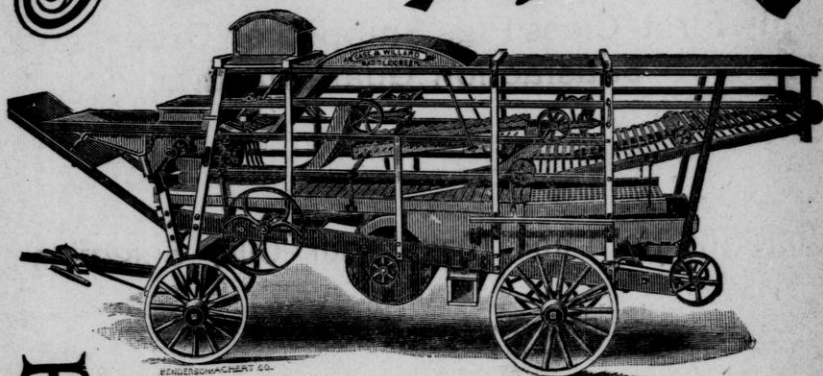
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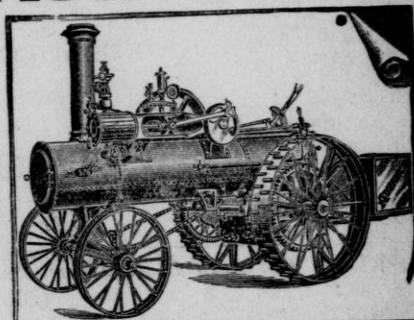
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
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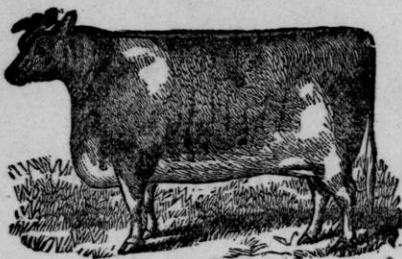
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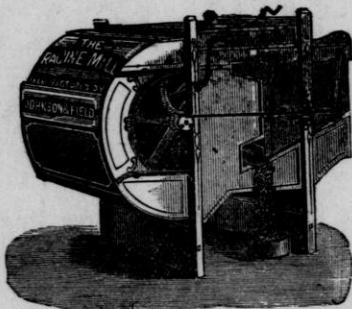
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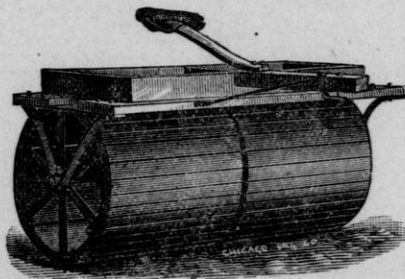


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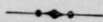
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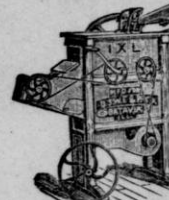


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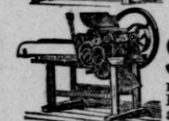
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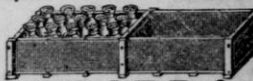
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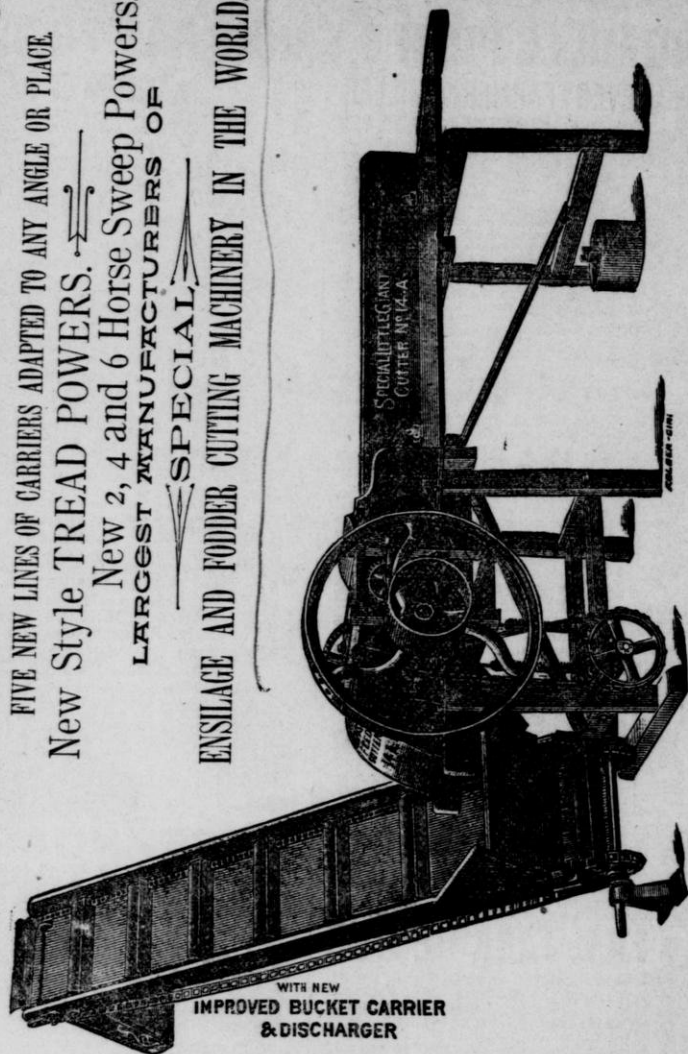
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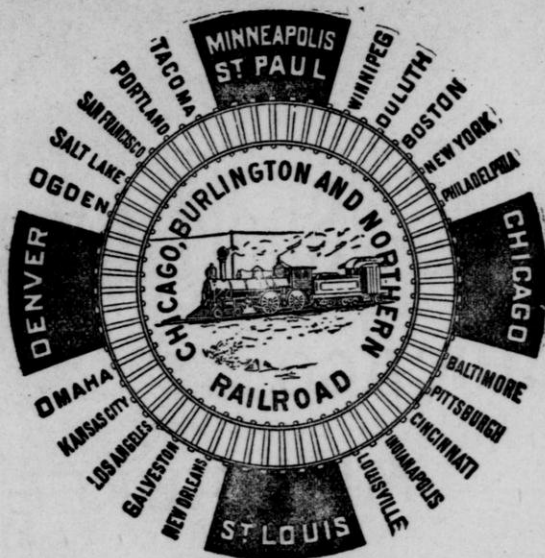
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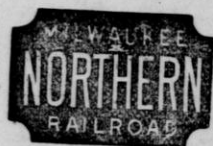
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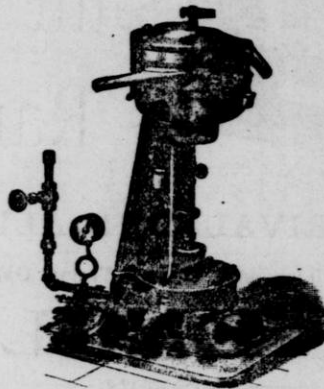
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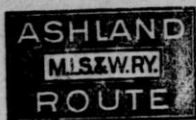
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She will there find hundreds of useful things for the

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That she had never thought of, or had neglected to purchase, and which she will not be without when she sees them and realizes their usefulness and ascertains the Low Prices at which we are selling them.

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
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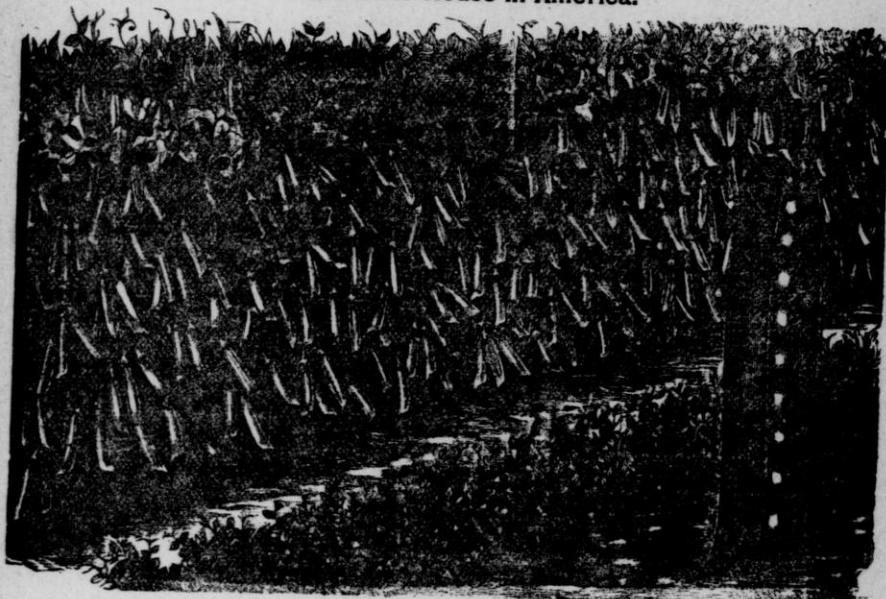
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Your flower seeds were the best we ever used.  
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Had radishes in 23 days from planting.  
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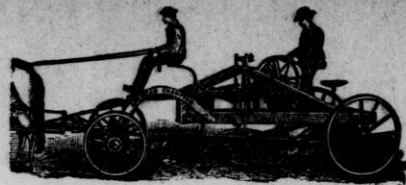
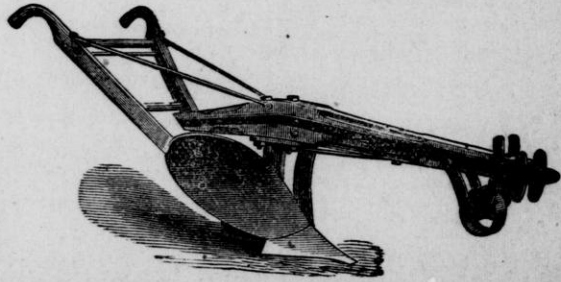
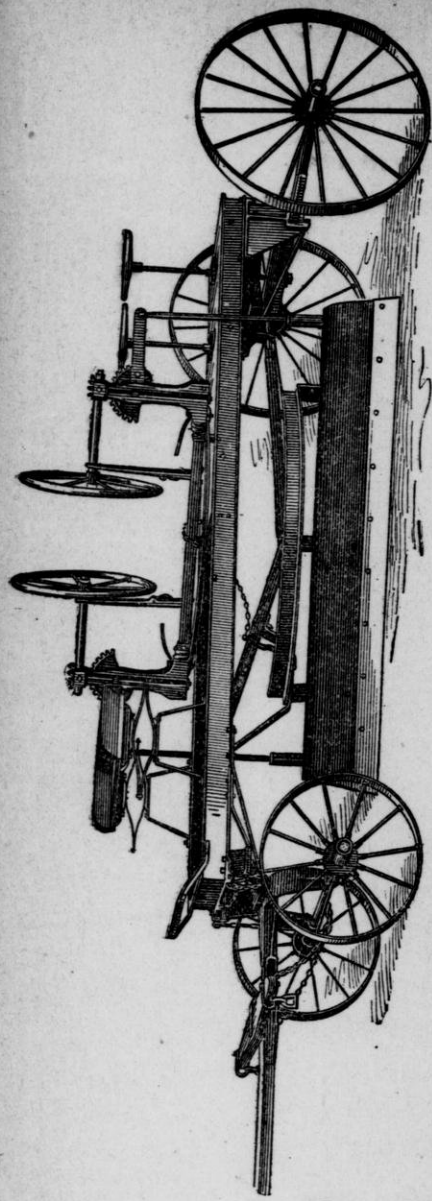
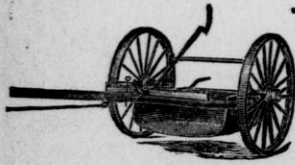
Success to THE PRAIRIE FARMER. Your paper is a good one. No farm ought to be without a copy of same.  
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Last year I carried an ad in your paper and also in three poultry journals; but as your rates seemed high, I concluded to advertise only in the poultry papers this year. Accordingly I made our contracts with five of those journals the first of the year. But I have concluded that my little ad in THE PRAIRIE FARMER paid me best in the end, as I am still getting an occasional order from that source.  
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And all points in **EASTERN WISCONSIN** to  
NEW LONDON, MERRILL, STILLWATER,  
STEVENS POINT, WINONA, HUDSON,  
GRAND RAPIDS, LA CROSSE, EAU CLAIRE,  
WAUSAU, CHIPPEWA FALLS,

St. Paul, Minneapolis, Sioux City, Omaha  
**AND COUNCIL BLUFFS,**

And all points in Minnesota, Dakota, and all points on the **NORTHERN PACIFIC RAILROAD** and **ST. PAUL, MINNEAPOLIS & MANITOBA RAILROAD**; is the

**SHORT LINE**

From **WINONA, LA CROSSE**, and all points on the **CHICAGO, BURLINGTON & NORTHERN RAILROAD, WINONA & ST. PETER RAILROAD** and **SOUTHERN MINNESOTA RAILROAD**, to

MERRILLAN, STEVENS POINT, FOND DU LAC,  
NEILLSVILLE, APPLETON, SHEBOYGAN,  
GRAND RAPIDS, OSHKOSH, GREEN BAY,

— AND ALL POINTS IN —

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Passengers from all points—West, Northwest and Southwest—will find the

**G. B., W. & St. P. R. R.**

The **DIRECT LINE** to all the above points.

THE PASSENGER EQUIPMENT of this Road embraces all the modern improvements and conveniences that tend to make traveling by rail safe and comfortable.

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**J. B. LAST**, Asst. Gen. Pass. Agt.

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 PUT IN GRAIN AND MANURE. Always pulverize the  
 ON CORN STALKS, STUBBLES. Soil for any crop.  
 FALL OR SPRING..  
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This Hanger lightens Draft and will not wear out. Used only on the "KEYSTONE" DISC HARROW. Increases Yield.

Cover Grain and Manure to the **PROPER DEPTH.** Saves time and seed.

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**A ROTARY PLANTER, CHECK ROWER AND DRILL ALL IN ONE MACHINE.**

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# "KEYSTONE" Corn Husker and Fodder Cutter

— COMBINED. —



IT IS A SUCCESS. SEND FOR ILLUSTRATED CATALOGUE.

## A VOICE FROM KANSAS ABOUT THE HUSKER.

C. C. Gardiner, of "Bright Side Stock Farm," Bradford, Kansas, writes us  
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"I had some trouble in adjusting the Corn Husker to my two horse tread power, but after experimenting some, Presto! Eureka! we got there hands and feet! The horses traveled nearly natural, but still a little slow, but it gave all the motion to the Husker that was necessary. When the fodder was dry we could run it through as fast as it could be put upon the platform.

"The corn went 60 bushels to the acre and the fodder was large. It had to be fed on the jump to keep the Corn Husker up to its capacity. It took one man to load on table as fast as the Corn Husker would take it. We could not have husked more if we had had an engine. It worked us hard and we were obliged to reduce the speed. We fed one large load through in 30 minutes, and we were obliged to rest 20 minutes before starting again, we were so exhausted.

"I was using two 1200 lb. horses, and we have husked 150 bushels in 4 1/2 hours. By using a tread power instead of an engine or sweep power, we saved one man's wages and the fuel for an engine. I raise from 150 to 200 acres, and it has been an unsolved problem with me for a good many years how to handle the fodder crop, but it is now solved by using the Keystone Corn Husker and Fodder Cutter. I make it a practice to utilize the "by" products of the farm, such as straw and fodder, and to which I attribute my success in farming."

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**Superb Train Service,  
Good Connections,  
Fast Time and No Delays**

Can all be secured by taking the

# Northern Pacific R. R.

BETWEEN THE EAST AND

**Dakota, Manitoba, Montana,  
Idaho, Washington Territory,  
British Columbia,  
Oregon and California.**

THIS IS THE

## Yellowstone Park <sup>AND</sup> Dining Car Route.

The NORTHERN PACIFIC RAILROAD is the SHORT LINE to HELENA, TACOMA, SEATTLE, and PORTLAND, ORE.; is the ONLY LINE running PULLMAN SLEEPING CARS to FERGUS FALLS, GRAND FORKS, GRAFTON, WINNIPEG, FARGO, HELENA and BUTTE CITY, and is the ONLY LINE reaching JAMESTOWN, BISMARCK, MILES CITY, BILLINGS, BOZEMAN, MISSOULA, SPOKANE FALLS, TACOMA and SEATTLE.

### Pullman Sleepers, Dining Cars,

AND

### FREE COLONIST SLEEPERS

ON EXPRESS TRAINS DAILY.

### This Line Offers Special Attractions to California Tourists.

For full information concerning rates, time, etc., call on or address your nearest ticket agent, any traveling passenger agent of this company, or

**CHAS. S. FEE,**  
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# THE IOWA HOMESTEAD



ONE OF THE FIRST PAPERS TO PUBLISH A FULL

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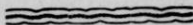
Containing Alliance news from all parts of the United States, and weekly discussions of Alliance principles, will be

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is a twenty-four page weekly, devoted to the advancement of the agricultural interests, and claims to be the cheapest agricultural paper in the western states. Whether this claim is well founded or not can be ascertained by any farmer at the expense of one cent, by sending his name and address on a postal card to the

**HOMESTEAD CO.,**

**DES MOINES, IOWA.**

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C. S. Clelland,

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Sheep.



350 ✦ REGISTERED ✦ SHEEP.

TWENTY-SIX YEARS IN THE BUSINESS.

LARGE SHEEP, STRONG CONSTITUTION AND A HEAVY FLEECE OF FINE WOOL.

COME AND SEE THE FLOCK.

ATTEND

The Northwestern Business College,

ACADEMY, AND SCHOOL OF SHORT-HAND AND TYPE-WRITING.

IF YOU

*Want a Good Business Education.*

*Want to Learn Short-Hand and Type-Writing.*

*Wish to Improve in Penmanship.*

IF YOU

*Wish to Prepare for the State University.*

*Wish to Prepare for Teaching.*

*Wish to Obtain a Practical Education.*

The Commercial and Short-hand Departments are open during the **entire year**,  
and Students can enter at any time.

The Fall Term of the Academy Commences September 1, 1890.

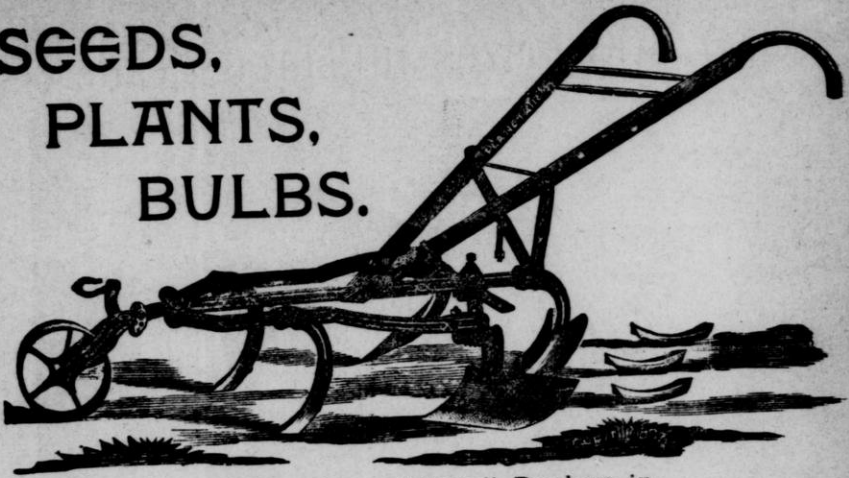
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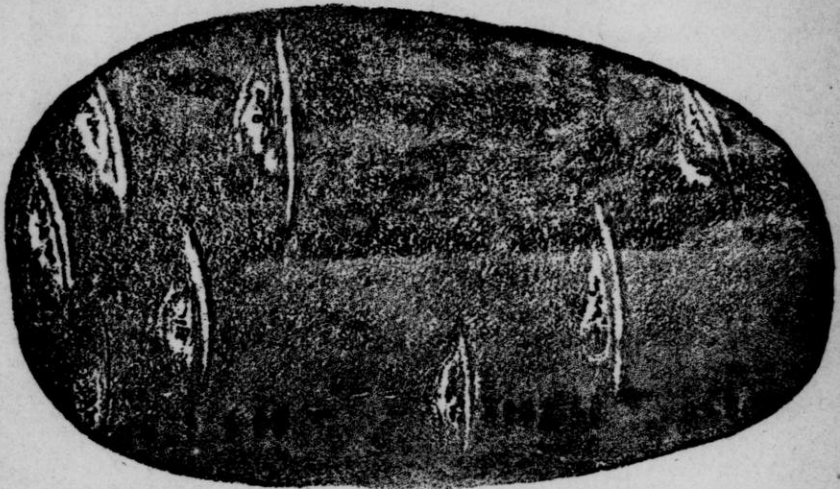
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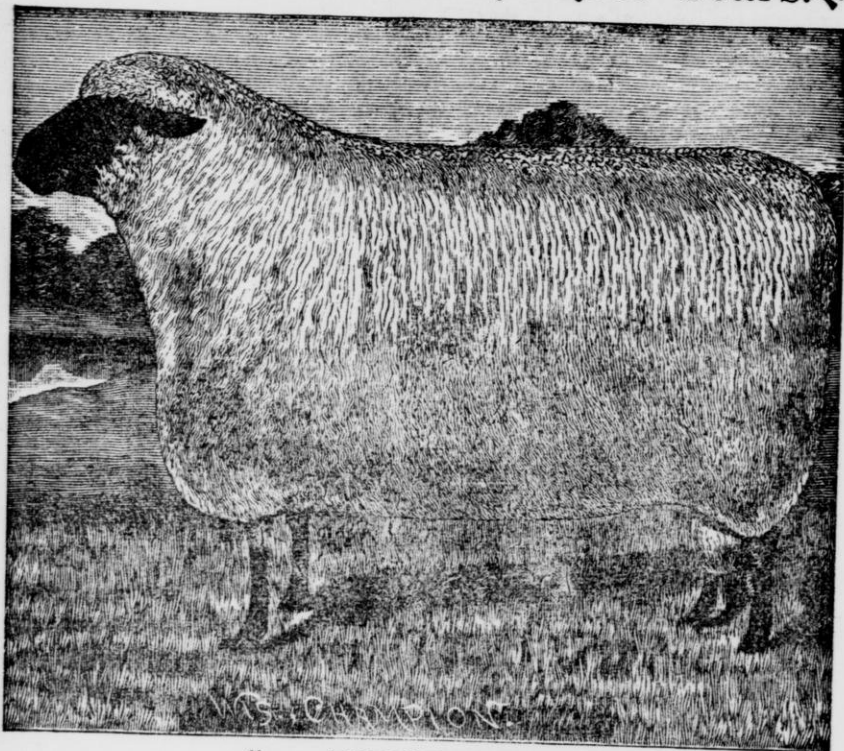
Introducers of this famous Potato; conceded by all growers as the best early Potato now in the market. It is a large yielder, cooks quick and dry very much like the old Snowflake. The flesh is pure white. As a keeper it is unsurpassed, showing no disposition to sprout until late in spring.

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Our 63 inch wide and 66 inch wide extra fine bleached Table Damask, at only 75c and 85c a yard, respectively, cannot be surpassed. New and elegant patterns, comprising large and small polka dots, checks and floral and running vine designs.

Our \$1.00 a yard heavy bleached Double Damask is splendid value, and a quality of which our sales are very large. The patterns of these goods are some choice novelties, in fruit, floral, leaf and geometrical designs, and are confined to our own trade.

\*\* We have 20x20 and 24x24 Napkins to match most of the designs of the above damask.\*\*

## TABLE NAPKINS.

Our 19x19 bleached Table Napkins at \$1.50 a dozen and 20x20 bleached double Damask Napkins at \$1.75 and \$2.00 a dozen are very cheap. These goods improve with the washing.

Our 23x18 double bleached damask Napkins at \$2.00 a dozen and our 23x23 double damask Napkins at \$2.50 a dozen are splendid values.

Our 24x24 bleached double damask Napkins at \$3.00, \$3.50 and 4.00 a dozen are both choice and cheap.

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Our 18x36 all-linen Huck and Damask Towels at 12 1-2c each are extremely popular.

22x45 all linen Huck and Crepe Towels at 20c each are much below regular prices.

Our 25c line of Towels comprises Huck, Damask, Crepe, Basket Weave, etc. This line is the best that can be had at the price.

We pay freight or express on all Linens sent to points in Wisconsin.

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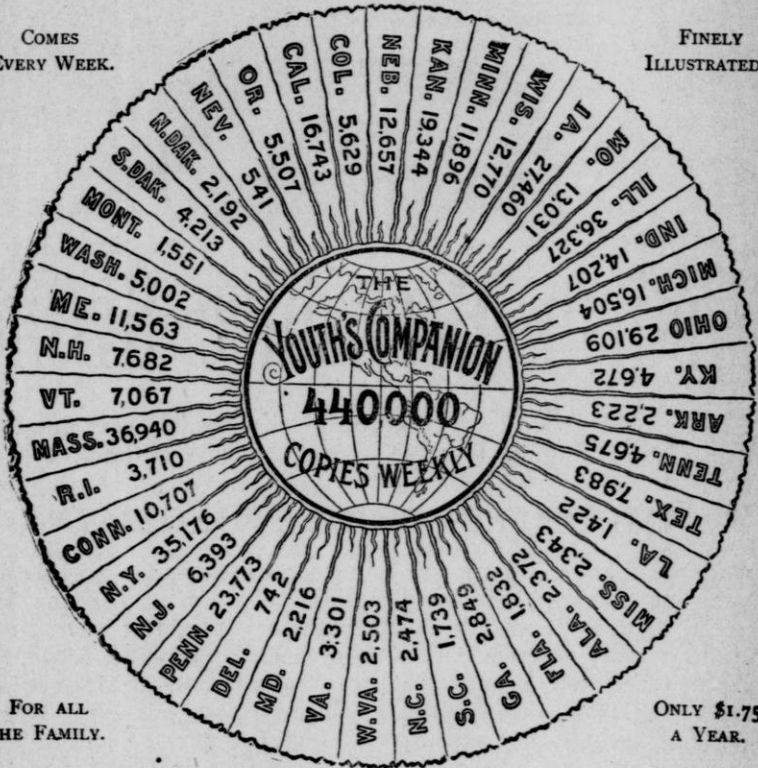


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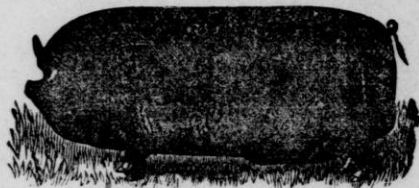
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I have now over Two Hundred head of Swine, every one either Registered or Eligible for Registration. I have at the head of my herd

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Have a large number of young Boars ready for service now. None but the best kept for breeding purposes. I use the knife freely. I have shipped to many different states this year. Have special rates by different express companies. All stock delivered at express office free of extra charge. I guarantee all stock sold by me breeders, and always sell at lowest prices possible. I breed Berkshire because they are an active hog, better calculated to follow cattle than any other breed. Commission men in Chicago say that they are worth more per cwt. than any other hog. Easily moved from one pen to another. Less cripples and dead ones in a car than any other breed. Packers as well as experience tell us that they have a larger per cent. of lean meat than any of the other pure breeds; and they are always ready for market if properly fed.

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Or, call on P. WAKEM, Manager of the Farm, Burke Station, five miles from Madison on the C., M. & St. Paul R. R.

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## SHORT HORN CATTLE.

My herd consists of such families as Barringtons, Princess, Kirklevington, Fennell Duchess, Roan Duchess, Mazurkas, Adelizas and a number of other very useful families. Headed by the imported bull Welcome Guest 101271, bred in England, assisted by the Booth bull, British Ensign 96490, and the two Bates bulls, Lord Kirklevington, of Erie, 1399193 and Marquis of Kirklevington 99395.

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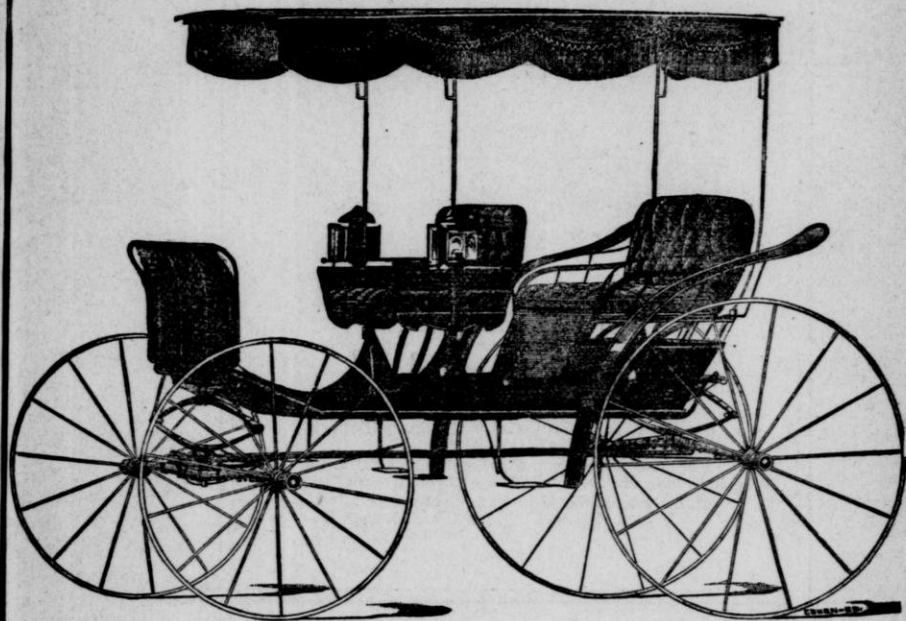
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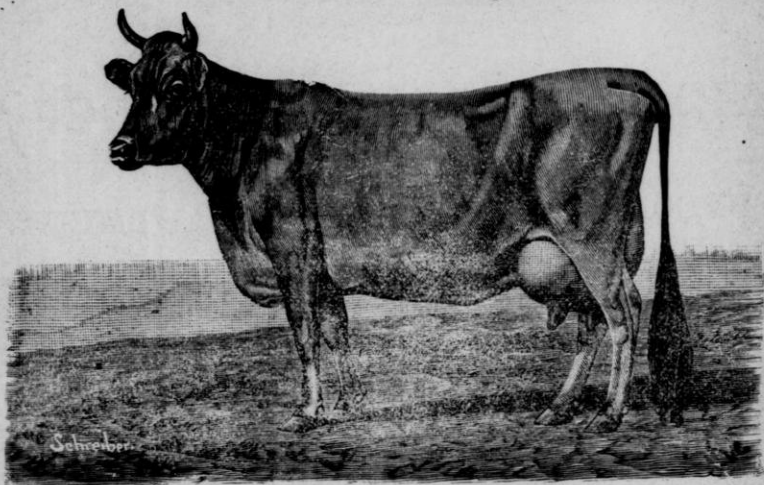
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## The Profit is in the Dairy.

**THE BEEF BUSINESS IS DISCOURAGING.**

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"The Maples" farm, the home of "The Maples Herd of Jersey Cattle," is situated at the eastern city limits of Madison, Wisconsin. It is easily accessible from the city, as any street car going east will take you within a few moments' walk. We would be glad to have you come out, whether you wish to purchase or not; you will feel repaid if you enjoy looking at fine Jersey cattle. The choicest strains of Jersey blood are represented in this herd, and the cattle have individual merit.

We trust your visit will be something pleasant to remember; it may result in your thinking of our herd should you ever want anything in Jerseys.

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Come and see us, write for Catalogue, Circulars and prices for anything in our line.

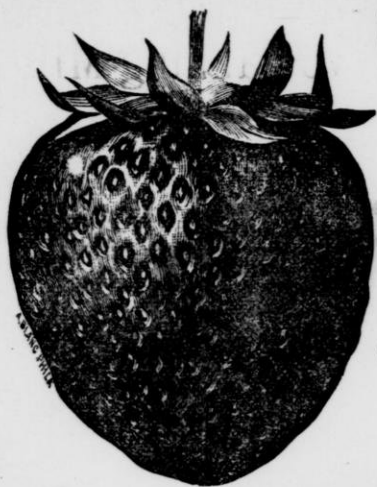
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*FRESH FRUITS IN THEIR SEASON.*

EVERY family that occupies a piece of land, whether a two rod garden or a thousand acre farm should grow fruit. We mention a few of the leading varieties that are easily grown, hardy, productive and every way good and reliable:

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**BLACKBERRIES**—Stone's Hardy, Snyder and Ancient Britton.

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**CURRENTS**—Red, White and Black.

**GRAPES**—Moore's Early, Worden, Brighton, Niagara and Concord.

We also have Fruit and Ornamental Trees, Roses, Flowering Shrubs and Vines, Bulbs, Etc.

Progressive Farmers find it pays to change their Seed Potatoes frequently. We are making a specialty of growing choice varieties for seed.

Send for one of our Catalogues which tells all about the varieties of Plants, Trees, Shrubs, Etc., that we have to sell and gives prices on them. We will be glad to send it to you free, and should like to correspond with you if you find anything in it you want. We want a good local agent in every county. Write us for terms, etc.



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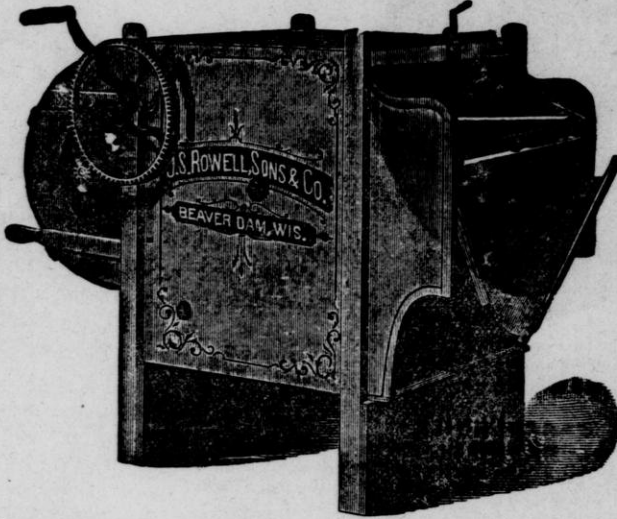


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We can now offer Farmers a Mill that is **Unsurpassed or Unequaled** as a Separator and Cleaner of every description of Grain and Seeds.

**THIS IS NO HUMBUG! ONE THOROUGH TRIAL ALWAYS CONVINCES!**

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*The "Leader" (Four-Wheel) Road Grader,*

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# LANDS

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## ST. PAUL, MINNEAPOLIS & DULUTH

**THE THREE BEST MARKETS** in the west for grain, stock and all farm products.

These lands are for sale on easy terms and low prices—Maps and circulars showing location of lands and terms of sale will be sent free upon application to

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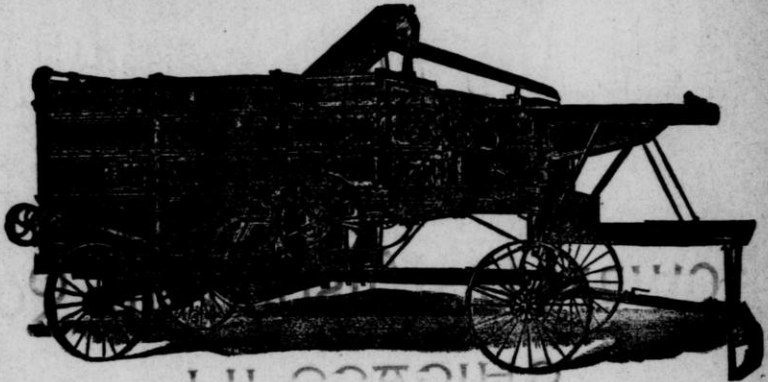


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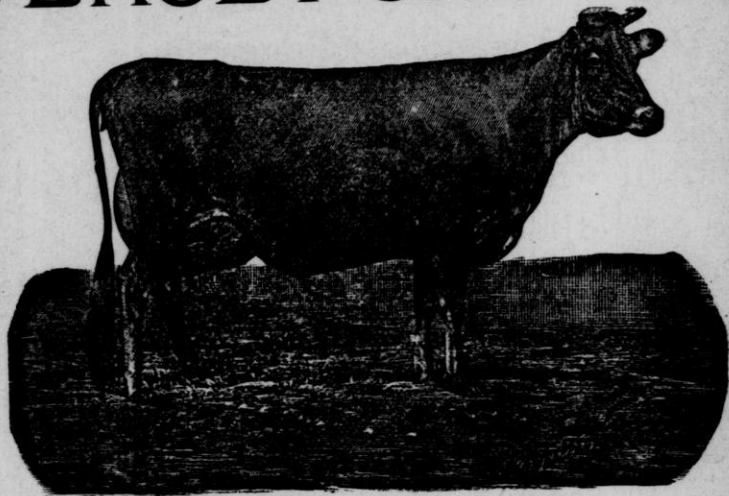
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**JERSEY CATTLE.**



MARY ANNE OF ST. LAMBERT.

The foundation of this herd was selected with great care, only animals of great dairy merits were admitted. No color foolishness was allowed to prejudice us in making selections. The five cows purchased were good for an annual average of 500 pounds of butter each. The herd is headed by the two

**PRIZE AND SWEEPSTAKES BULLS,  
 JUMBO OF RIVERSIDE,**

SIRED BY PEDRO, A SON OF EUROTAS,  
 AND OUT OF A GRAND-DAUGHTER OF JERSEY BELLE OF SCITUATE: AND  
**FAITH'S PRINCE POGIS,**

Sired by the only son of the famous **MARY ANNE** of St. Lambert, and out of  
**FAITH OF OAKLANDS,**

— SWEEPSTAKES COW OVER ALL CANADA. —

The aggregate weekly butter record of the dam and sire's dam of **FAITH'S PRINCE POGIS** is over 54 pounds.  
 These two bulls individually have no superiors and but few if any equals. They are large, symmetrical, vigorous, muscular and strong in constitution. Their breeding combines the blood of the great cows:

**JERSEY BELLE OF SCITUATE**, 705 pounds of butter in a year; **EUROTAS**, 778 pounds of butter in a year; **MARY ANNE OF ST. LAMBERT**, 876 pounds of butter in a year, and **EUROTISAMA**, 945 pounds, 9 ounces of butter in a year; **FAITH OF OAKLANDS**, 17 pounds, 4 ounces of butter in a week, 9,265 pounds of milk in 365 days.  
 Stock is the very best; not overfed or "doctored," and always gives satisfaction.

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Grapes—All the Leading varieties.



Large Stock of First-Class Plants, and at reasonable prices. Correspond with me, if you wish to plant, and get prices. Yours truly,

**C. H. HAMILTON, RIPON, WIS.,**  
SEE SPARTA AND RIPON FRUIT FARMS, PAGE 321.

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(313)

# ON ITS MERITS

## The National Stockman and Farmer

### PITTSBURGH, PA.,

Has built up the Largest Circulation of any paper of its Class in the World.

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## BY ITS MERITS

It holds it. It is without doubt the brightest and best farmers paper published to-day.

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With its 24 PAGES and 24 DEPARTMENTS every week it is also the cheapest paper in the country. It is devoted entirely to the farmers' interests, has no axes to grind or hobbies to ride, is clean, fresh, reliable, and right up to the times in everything. The market reports are alone worth many times the subscription price to the enterprising farmer. The best agricultural, live stock and dairy writers contribute to its columns every week. All the live stock and agricultural news of the country is found in its pages.

In short, it is THE paper for the FARMER, and if you want to keep posted "right up to the handle" in your own line of work and chosen occupation you want to take THE STOCKMAN.

"All this being true, what more do you want?"

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BARABOO, WIS.

Headquarters for

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If you can induce your neighbors to pool  
their orders with yours, send them in,  
and save you all considerable  
expense.

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✻ **WRITE** ✻ **FOR** ✻ **DISCOUNTS.** ✻

Potted Strawberry Plants if ordered Early.

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# GENESEE SALT COMPANY.

MERCANTILE

PRODUCE

EXCHANGE,

EXCHANGE,

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WORKS AT PIFFARD, N. Y.

Manufacturers of the Justly Celebrated

## Genesee Factory Filled Dairy Salt,

IN SPECIAL GRAINS FOR

## BUTTER, CHEESE AND TABLE USE.

The only Dairy Salt that does not lump, harden or gather moisture.

**THE BEST**, because it is

**THE PUREST,**

**THE DRYEST,**

**THE WHITEST,**

**THE STRONGEST,**

**And Most Uniform Salt in the World.**

**FREE FROM PAN SCALES.**

For season of 1896 and 1899, butter and cheese salted with Genesee Factory Filled Salt were awarded First Premiums at the

**WISCONSIN, IOWA, MINNESOTA AND NEBRASKA STATE FAIRS.**

Eight First and Four Second Premiums at the

**AMERICAN FAT STOCK AND DAIRY SHOW.**

First Premium at the Iowa State Dairymen's Association. Second Premium at the Wisconsin. Grand Sweepstakes at the Illinois. First Premium at the Michigan.

An Unprecedented Record by any salt in the history of Dairying.

This salt is made from a natural flow of clear, fully saturated Brine; is in its natural crystal, and is not ground. It is now used by the

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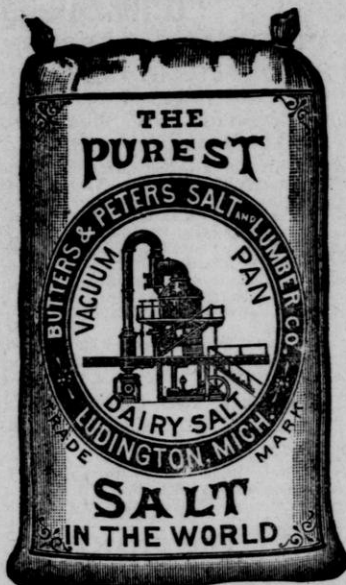
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# Vacuum Pan Dairy Salt

In Purity,  
Strength,  
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Grain and  
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Properties,  
Surpasses  
All Others



It is the  
Purest,  
Cleanest,  
Strongest,  
Cheapest  
and  
BEST DAIRY SALT  
In the World.

At Wisconsin State Fair 1889, Butter Salted with **VACUUM PAN SALT** was awarded 12 premiums out of 16.

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At Waukesha County Fair but one premium on Butter was given, it went to Butter Salted with **VACUUM PAN SALT**.

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At Belvidere, Ill., 1890, at the State Dairy Association Meeting, but one package of Butter Salted with Vacuum Pan Salt was on exhibition, it was awarded First Premium in dairy class.

## REFERENCES.

A. R. Hoard, Fort Atkinson, Wis.; Marr & Kachel Bros., Whitewater, Wis.; C. B. McCanna, Burlington; Harris & West, Spring Prairie, Wis.; J. G. Flack, Elkhorn, Wis.; Hon. Hiram Smith, Sheboygan, Falls; H. K. Loomis, Asst. Dairy Commissioner, Madison, Wis.; H. D. Morse & Son, Winona, Minn.; H. F. Pierce, Monticello, Iowa; A. J. Dunham, Almoral, Iowa; Geo. Whyte, Paton, Iowa; J. A. Decker, Fulton, Mo.

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**THE RURAL** means business and with the hearty support of the great farming interest can do a vast amount of good. We want an active representative in every neighborhood in the Union, to whom we offer special terms for clubs.

**THE RURAL** is making a substantial gain in circulation and with the plan we are now inaugurating we intend by your help, reader, to double our already large subscription list. We must reach the people at any cost. For particulars address,

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Our Rules of Order and Rallying Song Book for the farmers' organizations. The accepted standard. Thousands sold. It contains a history of the Farmers' alliance, Parliamentary rules for conducting meetings, and a large number of popular songs with music. Price 60 cents, ten or more copies 35 cents each, post-paid.

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The Career of the Stolen Boy Charley, in cloth and gold, a \$1.25 book sent post-paid for 80 cents. For above orders, address MILTON GEORGE, Pub., 158 Clark St., Chicago, Ill.

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For Alliances and other organizations to buy from first hands at the least expense. Having special arrangements with wholesale houses handling different classes of goods, we can furnish at wholesale, Dry Goods, Clothing, Boots, and Shoes, Watches, Harness, Buggies, Guns, Hardware, Paints, Drugs or nearly everything a farmer needs.

We call attention to our High Arm Sewing Machine, \$19.50; Scott's Charcoal powders highly medicated, for all kinds of stock. Also Binding Twine at lowest figures. When Groceries are ordered in quantities contained in Original packages a great saving may be made by farmers.

We help the farmers to buy and sell.

Write for price of what you want. Binding Twine at Anti-Trust prices.

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Send your orders for goods or consignments of grain to our address.


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SEE RIPON AND SPARTA  
FRUIT FARMS,  
PAGE 313.

SPARTA & RIPON  
FRUIT FARMS

M. A. THAYER,

C. H. HAMILTON,

HEADQUARTERS FOR

Choice Fruits, and Small Fruit Plants of Best Hardy Varieties.

**55 ACRES**

In Strawberries, Raspberries, Blackberries, Gooseberries,  
Currants, Etc.

**500,000 PLANTS FOR SALE.**

THE LARGEST STOCK OF

**PLANTS**

IN THE NORTHWEST, OF THE FOLLOWING HARDY VARIETIES.

**STRAWBERRIES.**

500,000 PLANTS.

Crescent, Wilson, Buback, Sharpeless, Captain Jack, Gandy, Haviland, Cloud,  
Jessie, Warfield.

**RASPBERRIES.**

200,000 PLANTS.

Gregg, Nemeha, Ohio Souhegan, Johnson Sweet, Carman, Shaffer's, Colossal,  
Golden Queen, Hansel, Marlboro, Cuthbert.

**BLACKBERRIES.**

200,000 PLANTS.

Ancient Briton, Snyder, Stone's Hardy, and Lucretia Dewberry.

**CURRANTS.**

100,000 PLANTS.

Fay's Prolific, Victoria, White Grape, White Dutch, Long Bunch Holland,  
Prince Albert, Red Dutch.

**GOOSEBERRIES.**

10,000 PLANTS. Downing, Houghton, Triumph, Smith's, Industry.

**GRAPES.**—All the Leading Varieties.

We sell plants of above varieties, and cultivate only such as are hardy, and do well in a northern climate. Immense stock of plants. Make your orders early, and buy *Home-grown Plants*. Correspondence solicited.

**M. A. THAYER, SPARTA, WIS.**

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# 5,000 FARMERS

Throughout the United States and Canada have bought and used the past season

## Breed's Universal Weeder and Cultivator.

For weeding and cultivating corn, potatoes, beans, peas, and all standard farm crops. For harrowing in all kinds of grain and grass seed, leveling and cultivating growing grain it has no equal. Read what well-known farmers say of the weeder:

UNIVERSAL WEEDER Co., No. Weare, N. H.

SUMMIT Co., O., June 10th, 1890.

*Dear Sirs:*—I have used your weeder now two seasons. One would think such a light harrow would do little good such a season as this, but it has been very valuable to me. After our potatoes were planted it rained heavily and quite constantly for nearly a month. This packed the ground very hard, so hard the weeder could hardly touch it. As soon as we could see the rows we cultivated the field and followed with the weeder, which hoed the strips along the rows left by the cultivator, nicely stirring every bit of soil. There was one outside row, too rough to use the weeder on (plowed nearer the fence than usual), which my man hoed by hand. While he was hoeing that row my son hoed with the weeder and one horse, more thoroughly, 36 rows. We had harrowed the piece between showers so there were no weeds. We had a shower last night and my son is running the weeder over more than an acre an hour to-day, doing the hoeing and cultivating both, as deep as we want it done now. I am sorry we have not another weeder so we could get over all the ground while it is just right to crumble nicely. Must have two next year. I have not used the weeder on corn except on sweet corn in the garden. It worked all right there.

T. B. TERRY.

BUTLER Co., OHIO, June 12th, 1890.

MANUFACTURERS OF BREED'S UNIVERSAL WEEDER:

*Dear Sirs:*—The spring has been most unfavorable for the use of your weeder, as there have been ten or fifteen days at a time that it rained continually, and by the time we could work the land it would be packed and weedy. I have for these reasons been unable to use it on only one field, but it has there given entire satisfaction, keeping the land clean and mellow, and is just what I have been wanting for years—an implement that would enable me to break the crust just at the right time after a rain, and thus stop the growth of weeds and check evaporation by furnishing an earth mulch. We find that with rows of fair length we can work two acres an hour with it. I think it would be especially adapted to a dry season, as the land could be worked level and kept mellow so as to largely control evaporation. We are using the weeder to day on a field of potatoes a foot high, and it does the best work it has done yet for we have hit just the right condition of soil.

WALDO F. BROWN.

UNIVERSAL WEEDER Co., No. Weare, N. H.

*Dear Sirs:*—Your favor of the 9th received. We did not use the weeder immediately after the planting, as the season was very late and we were obliged to put on both harrows and continue harrowing until the corn was up. The working capacity of the weeder being only 6 ft. 6, would not cover as much ground as the harrow. We think the weeder should be made considerably longer in order to do the same amount of work that the harrow will. After harrowing the ground thoroughly rains came and delayed the work for a week, corn was now 8 inches high, too high for the harrow, and the ground had become very compact and the weeds had got quite a start. My men looked with a sort of contempt on the weeder, and I let them go to work with their cultivators while I personally took the weeder, my object being to see how clean I could make hill culture in a separate field. The corn being about 8 inches in height, and also about one acre of potatoes which had been cultivated between the rows, but were very weedy in the hills. Indeed I was astonished at the result. The loose soil between the rows enabled the weeder to take hold in the hills and rooted out the weeds and exposed them to the sun with little harm to the corn or potatoes. If used rightly and intelligently in a field that has received proper cultivation, with favorable weather, it has no equal in weeding all hoed crops. I do not think anything can beat it in potato culture. I went into my garden where potatoes were 12 inches high and it did the tops no harm while it eradicates all the weeds. I have no hesitation in recommending it for general use. My only objection is that it does not cover as much ground as I should like. With a good walking horse, a man with judgment, understanding the art of cultivation, will get over 10 acres a day and do good work.

THEODORE LOUIS, LOUISVILLE, WIS.

(The weeder can be made any desired length.—U. W. Co.)

THE UNIVERSAL WEEDER Co., No. Weare, N. H.

*Gents:*—The Breed's Universal Weeder I bought from you this spring is one of the best tools I ever used in the early cultivation of corn. Early and often is the motto of the weeder. I have had it twice over 35 acres already, and shall make it follow the cultivator crosswise once more.

Respectfully,

A. J. EMERTON, PORTAGE, WIS.

C. R. Medlaugh, Woodbourne, N. Y., writes that the weeder is as near perfection as possible.

Let every farmer desiring clean, perfect culture and wishing to lessen expense in the cultivation of his crops, inquire into this matter. Circulars explaining the work of the weeder and giving testimonials from farmers from all parts of the United States sent to any address free of expense, from general agents or from the home office.

GENERAL AGENTS—Lindsay Bros., 121 & 123 Clybourne St., Milwaukee, Wis.  
Lindsay Bros., 104 & 106 3rd Ave. N., Minneapolis, Minn.

Manufactured and sold by

The Universal Weeder Co., No. Weare, Hillsboro Co., N. H.

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CONCAVE KNIFE.



STRAIGHT KNIFE.

We have three different styles of Knives, two shown on this page, and one (convex) shown on all prints of Machines.

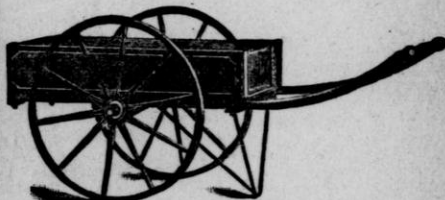
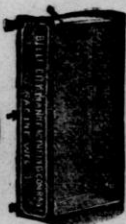
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RACINE, WISCONSIN.

Send for Illustrated Catalogue and  
Price List.



COMBINED CART,  
For box or barrel.



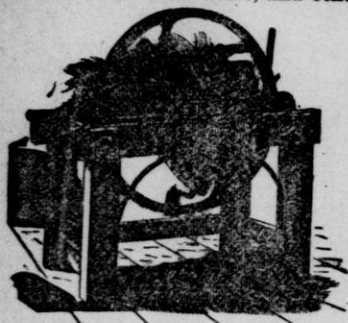
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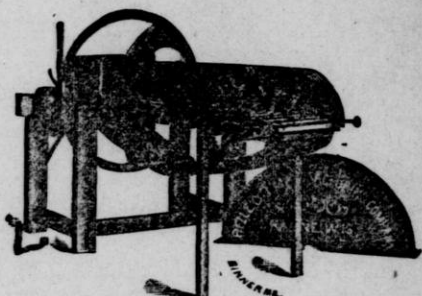
# The Belle City Manuf'g Co.,

RACINE, WISCONSIN,

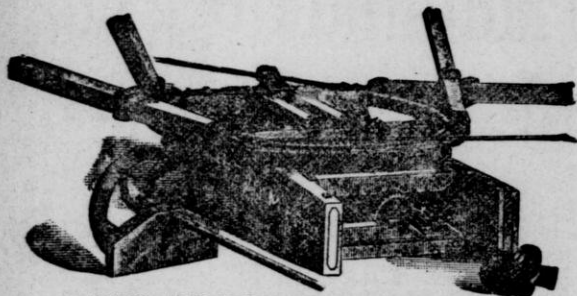
Will gladly send their illustrated catalogue and price list of Fodder and Ensilage Cutters, Horse Powers, Root Cutters, Feed Grinders, Water Carts, Truck Carts, Harrows and Cultivators, and other implements, to any who may write for it.



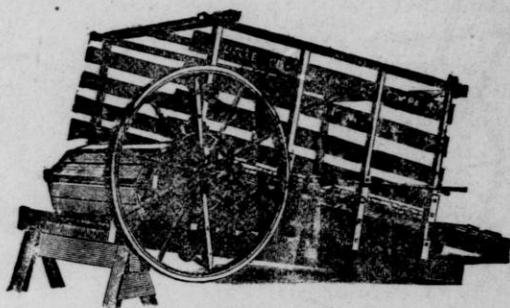
POWER CUTTER,  
With Chain Feed Attachment.



FRONT VIEW OF POWER  
MACHINE.



TWO AND FOUR HORSE POWER,  
With two sweeps.



TWO HORSE TREAD POWER,  
With Patent Governor and Brake.

See Opposite Page.

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# Power Machine With Carrier Run by Rope.

Carriers run in this way are giving the best of satisfaction, especially in long lengths.

Mail a postal card addressed to BELLE CITY MANUFACTURING CO., RACINE, WIS., and you will receive a finely illustrated Catalogue, and the most recent experience with the **810**.



## BELLE CITY DOUBLE ACTION ROOT CUTTER

For Power or Hand Use.

Different styles and smaller sizes furnished, if desired.

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# PROFIT IN THE DAIRY.

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## West Lawn Herd,

—OF—

## Thoroughbred Registered Jerseys,

### A. J. C. C.

---

The time has passed when Jerseys were considered only good as expensive playthings for wealthy farmers. They are going rapidly into the hands of practical men, because they are not only great cream and butter producers, but because they produce cream and butter fat in greater proportion to the food consumed than common stock. This is the vital point in the whole question of stock selection. The farmer who wants to make money believes in the Jersey because when he puts a dollar into her in the shape of feed he can get more than a dollar out if he handles the product properly. The cheap cow is the one that pays the interest on her cost, and a large profit on her feed and care. The expensive cow is the one which does neither. The most expensive cow can frequently be bought for twenty dollars. A cheaper animal can often be bought for one hundred dollars. A common cow costs \$25 and will produce 150 pounds of butter per year worth \$30 at creamery prices. A good Jersey cow can be bought for \$125 that will consume no more and will produce 300 pounds of butter worth \$60. The difference in first cost is \$100, upon which the interest charge is \$7 per year. The difference in value of butter products is \$30 per year, in favor of the high-priced cow; deducting the interest on the difference in price we have a difference of \$23. This leaves the calves out of the question. The average calf of the Jersey is worth \$30. The average calf of the common cow is worth \$3. The revenue from the common cow will just about buy feed enough to keep her. The Jersey yields enough to keep her and two more just like her. Can the poor man afford to keep a poor cow?

My stock has been selected largely for dairy purposes, and has been managed upon the idea that the most valuable dairy stock is obtained from cows that are brought near their limit of butter production. They have never been pampered or overfed, or subjected to any other treatment than is given upon all good dairy farms. A test of fourteen mature cows taken on the morning of July 9, 1890, at the State Experiment Station, indicated an average of 4½ per cent of butter fat. This in the hottest month in the year, when the average is unusually low. The butter yield indicated by this test was 140 pounds per week for the fourteen cows, or 10 pounds per cow per week. A single handful of shorts was fed twice each day.

The bull at the head of the herd is a pure St. Lambert, solid dark fawn, very prominent eyes, deep bodied, and with every indication of the great constitutional vigor of his family. Alpha blood is largely represented in the herd, and some strong line of Omaha, Lady Mary and St. Lambert.

West Lawn Farm adjoins the city of Madison on the southwest. It is one mile from the Mil. & St. Paul R. R. depot. Visitors will be met at trains any time, upon notice, and taken to the farm. Send for catalogue and descriptive circular to

**H. C. ADAMS, Madison, Wis.**

**SIR HUGO OF ST. LAMBERT (18726)**, who stands at the head of my herd, was dropped Jan. 12, 1881. Bred by R. H. Stephens, St. Lambert, Canada. He is of solid color; black tongue and switch. A very rich Victor Hugo-St. Lambert bull. See his pedigree and notes on opposite page.

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**Orloff, 3143**.....

Sire of

Carrie Pogis, 15 lbs. 9 ozs.  
Matchless of St. Lambert, 24 qts with third calf.

Grand sire of Niobe of St. Lambert, 21 lbs. 9½ ozs.  
Nell of St. Lambert, 48 lbs. milk, first calf, two years old.

Ida's Stoke Pogis, who sold for \$5,000. His daughter gave 45 lbs. of milk per day and sold for \$1,650.

**Lucy of St. Lambert, 5116**.....

Dam of

Corra of St. Lambert, 20 lbs. 8 ozs.

Nancy of St. Lambert, 14 lbs. 5 ozs. with second calf 3 yrs old.

Pet of St. Lambert, who is dam of Diana of St. Lambert, 16 lbs. 8 ozs., who is dam of nymph of St. Lambert, 13 lbs. 4 ozs., with second calf 3 yrs. 3 mos. old.

Grand dam of

Cowslip of St. Lambert, 17 lbs. 12 ozs.

Ida of St. Lambert, 30 lbs. 2¼ ozs.

Allie of St. Lambert, who gave 53 lbs. milk per day and tested at 26 lbs. 12 ozs per week.

**Lord Lisgar, 1066**.....

Great grandsire of Rubano, 8806, sire of

Duchess of St. Lambert, 15 lbs. 13 ozs. in 7 days.

Clematis of St. Lambert, 14 lbs. 3 ozs.

Jolie of St. Lambert, 15 lbs 13¼ ozs.

Sweet Briar of St. Lambert, 22 lbs. 12 ozs.

Lord Lisgar, 1066, sired the dams of

Ida of St. Lambert, 30 lbs. 2¼ ozs.

Cowslip of St. Lambert, 17 lbs. 12 ozs.

Minette of St. Lambert, 17 lbs. 4 ozs.

Brenda of Elmhurst, 17 lbs. 4¼ ozs.

Diana of St. Lambert, 16 lbs. 6 ozs.

Nora of St. Lambert, 14 lbs. 7 ozs.

Moss Rose of St. Lambert, 14 lbs. ½ oz.

Juliette of St. Lambert, 13 lbs.

Honeysuckle of St. Anne's, with 2d calf, 14 lbs. 10 ozs.

Jessie Brown of Maxwell, rate of 14 lbs. 7 ozs.

Honeymoon of St. Lambert, 20 lbs. 5¼ ozs.

Lord Lisgar's son, Lord Aylmer, sired Melia Ann, 18 lbs. ½ oz.

Lord Lisgar is g. g. sire of

Mary Anne of St. Lambert, 36 lbs. 12¼ ozs. in 7 days;

Naiad of St. Lambert, 22 lbs. 2 ozs in 7 days; Judith

Colman. at 2 years and 11 mos. old, 17 lbs. 5 ozs.; Al-

deph Julia, 15 lbs. 1¾ ozs.

**Ophelia, 493**.....

Dam of Maggie of St. Lambert, 16 lbs. 3 ozs.; 3 years old sold for \$3,000.

**Victor Hugo, 197,**

Gave from 12½ to 50 per cent to 55 butter cows, with tests from 14 lbs. 2 ozs. to 36 lbs. 12¼ ozs. Among them he gave 25 per cent to Ida of St. Lambert, 30 lbs. 2¼ ozs.; 25 per cent to Sweet Briar of St. Lambert, 22 lbs. 12 ozs.; and 18¾ per cent to Mary Anne of St. Lambert.

**Lydia, 495**.....

Grand dam of Clematis of St. Lambert, 14 lbs. 3 ozs., who is dam of Honey-suckle of St. Anne's, 21 lbs. 12 ozs.

**Victor Hugo, 197**

Victor Hugo has contributed of his blood to the following animals, with records of over 14 lbs. in addition to those shown under the heading of Lord Lisgar of this pedigree:

Mermaid of St. Lambert, 15 lbs. 13¼ ozs.

Niobe of St. Lambert, 21 lbs. 9½ ozs.

Rioter Pink of Berlin, 19 lbs. 10 oz.

Melia Anne, 18 lbs. 12 ozs.

Crocus of St. Lambert, 17 lbs. 12 ozs.

Dido Miss, at rate of 17 lbs. 1 oz.

Cill of Glen Rough, 16 lbs. 6 oz.

Moth of St. Lambert, 16 lbs. 2 oz.

Coquette of Glen Rough, 15 lbs. 1¼ ozs.

Nordheim Creamer, 14 lbs. 7 ozs.

Nancy of St. Lambert, 14 lbs. 5 ozs.

Pearl of St. Lambert, 14 lbs. 2 ozs.

**Pauline, 494,**

Maternal grand dam of Melia Anne, 18 lbs. 10¼ ozs.

Grand dam of

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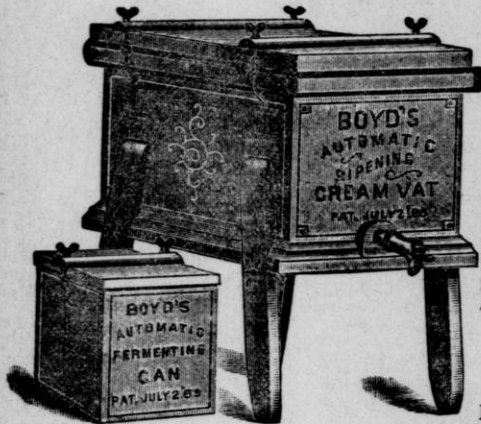
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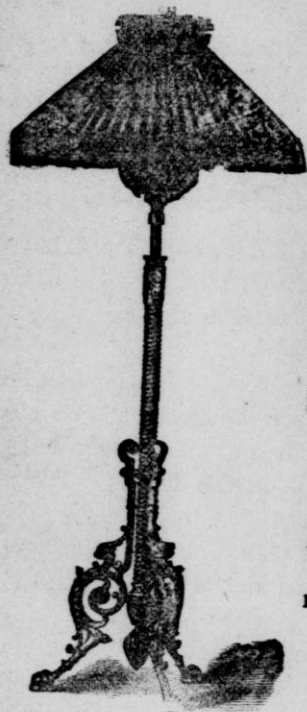
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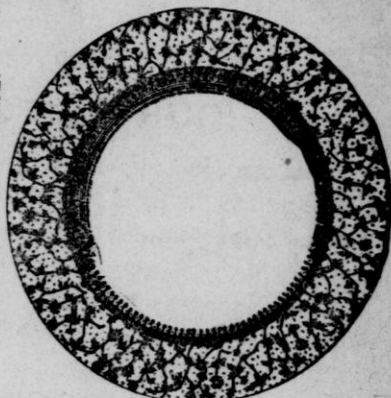
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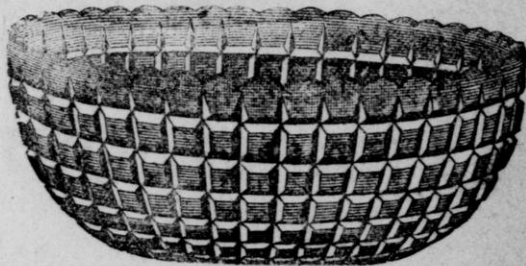
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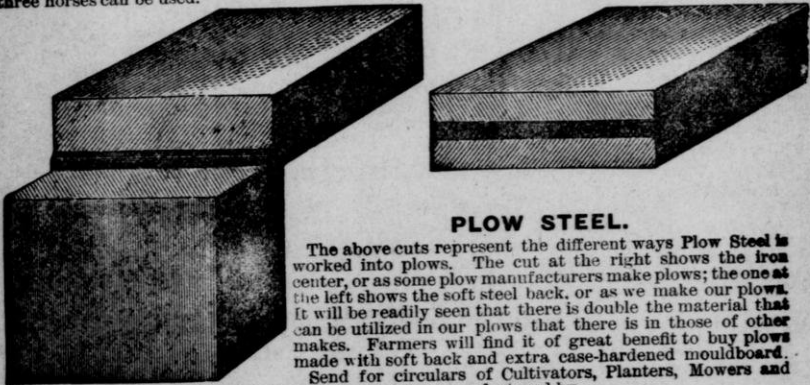
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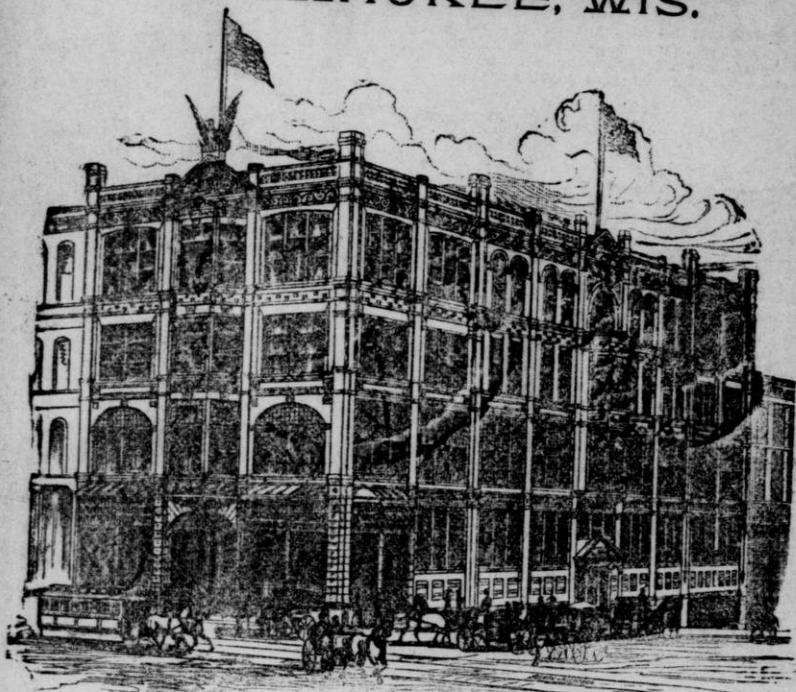
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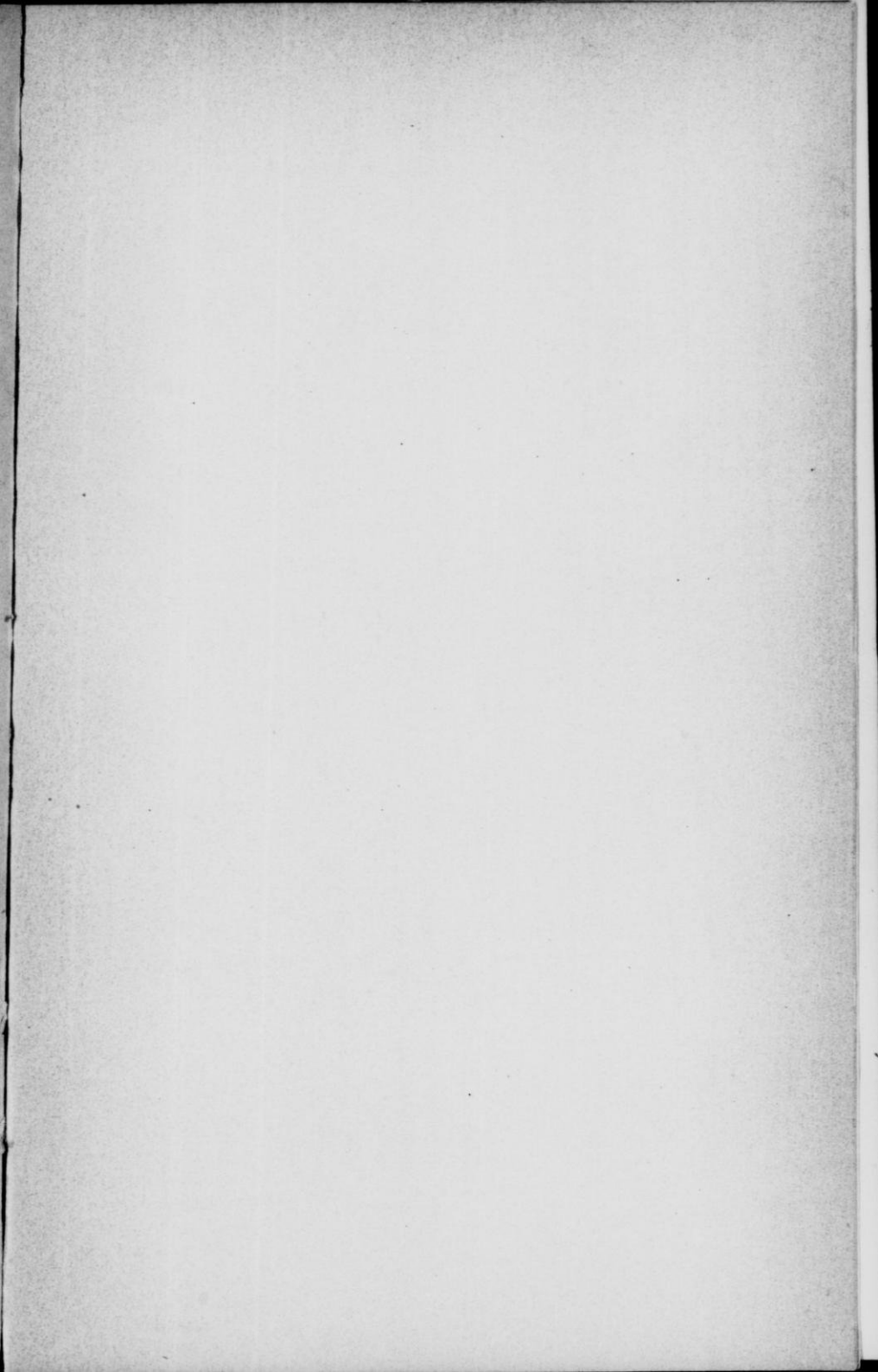
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