and the plants shade the ground and rob the moisture and fertility below, and the sunlight above and get ahead in the race of life, and a great many of those will be barren stalks or stalks that produce mere nubbins.

A Member: Do you use the grader?

Prof. Moore: The corn grader is a good thing to use.

Mr. Hill: Don’t you think that in rejecting end and tip kernels in a long continued breeding course, you might breed the kernels all off the tip? They say you can get a muley breed of cattle by cutting off their horns.

Prof. Moore: I don’t think there is any danger of anything of that kind happening.

Mr. Scribner: We have never bred the tails off yet.

The Chairman: This gentleman that just spoke, Mr. Scribner, ought to know; we consider him the ‘‘cow’’ man here in Wisconsin.

The Chairman: Some twenty-two or three years ago when it was my privilege to first attend Farmers’ Institutes, I heard one of Wisconsin’s farmer talk on corn growing, and saw him exhibit some samples produced upon his farm, that in many respects were equal to the noted pure bred Wisconsin corn of today. I have kept pretty good track of that gentleman ever since, and I am pleased to introduce to this audience today one of Wisconsin’s veteran and best known farmers, Mr. G. C. Hill.

PLANTING AND CULTIVATION.

Geo. C. Hill, Rosendale.

You doubtless remember in those days when you taught the young ideas how to shoot, that when your lecturers came on the stage, they had different ideas as to how they should greet the audience. One was a sort of surface cultivation; the other was this low-down, deep cultivation. Now, I want to give my most profound greeting to the present farmers of Wisconsin and the future farmers of Wisconsin, especially.

With the soil prepared, and good seed provided as recommended, two prime requisites are furnished for growing a good crop. If the seed were properly planted and the field left with-
out further care, there might result half a crop. The other half is gotten by cultivation.

With wide variations of latitude and the growing season, no fixed rule for time to plant will apply to all corn fields of Wisconsin. When conditions are favorable the corn growing season extends from May 15 to September 10—about one hundred and twenty days. With less favorable conditions the time may be shortened to ninety or one hundred days. If the variety will mature within the shortest period, I should expect the best results by planting about the 25th of May. At that time we expect the conditions favorable for quick germination and vigorous growth. In earlier years it was my practice to plant two weeks earlier, resulting, probably, in a week’s gain in crop maturity.

But the chances for green fields were increased. On large fields planting should follow quite closely the plow and harrow rather than to wait until the whole is prepared.

Growing a crop of corn is like managing an agricultural fair, the success depends on how the weather turns out. It is sometimes the case that when the field is ready for planting there comes a deluge of rain, compacting the soil and leaving it soggy and liable to bake. In such case the field should be newly prepared, even if the extra work delays planting for a week or more.

In pioneer days the corn-planter was a man with an ox and a pouch of seed. The machine followed the breaking plow—a gash was cut in every third furrow slice, seed dropped, and covered with a press of the foot.

In these days, any machine that plants in straight rows, about two inches deep—enough seed to insure not less than three nor more than four plants in each check, may do the work. If the crop is intended for silage, and the variety grows eight or nine feet high—I would plant 3 to 3½ feet. For other purposes, and with a larger variety, the distance might be 3 feet 8 inches. Observation and experience has proven to me that cleaner culture results from growing in the check method.

To insure quick and even germination, the soil needs to be pressed over the seed. The wheels of the planter may do this, but where the hand-planter is used on light or dry soil, a roller should be used. Planting will not do the work, but the wheel marks of the planter and roller should not be left to cause bak-
ing and evaporation. As soon as a field is planted, harrowing should begin, repeating every day or two until the plants appear above ground.

This results in destroying millions of embryo weeds, and the young corn plants have a fair start in the race.

In all the operations thus far, it should be the aim to entirely rid the field of the first crop of weeds. I have had no experience with the weeder, and we do not now harrow corn after it is above ground. If such work is done, it should only be done in the afternoon of dry days.

My first corn crop was grown in 1854, and was cultivated with a 14 inch plow, operated by a yoke of oxen and a sixteen year old boy. Then a good deal of work was done in hand hoeing, and, after all, the crop was always choked with grass and the land left in ridges. Now we have a variety of machines that do vastly better and easier work than the old plow and hoe did. The main thing is to keep them moving.

Not having visited the recent "Great Corn Exposition" I am not prepared to recommend the last creation in cultivation. I would not use a machine with large shovels. The disc cultivator with the leveler attachment has done good work. I consider the levelers an important attachment to any "two-horse" cultivator. They smooth the ridges, and expose the weeds to the sun. Frequent cultivation should be the rule. You have heard of the man who always beat his neighbors in raising cabbage. When asked for the secret, he said "I hoe the patch every morning when the dew is on." Whether his success was due to the dew, or due to the frequency of cultivation, is a question.

The special needs of the growing corn plant are heat and moisture. Both are supplied by surface tillage, resulting in decreased evaporation of soil moisture. It takes a lot of heat to evaporate water. Surface culture retards evaporation and retains heat, thus killing two birds with one stone.

We are almost tired of hearing so often of the dust mulch, but the years are few when at some time, the growing crop does not need to have it spread on. There were fields of corn in my neighborhood that went through the pinching drouth of last summer suffering little loss from lack of moisture. There were others where the crop was cut in half, largely due to improper or lack of cultivation.

Cultivation plays another important part in crop growing.
Frequent stirring aerates the soil and thereby increases its productiveness. If we do not know all about the chemistry of the process, we know the fact from experience.

Deep cultivation is unnecessary, and may be injurious. If for any reason weeds get a start, it may be necessary to go a little deeper to cover the weeds, throwing soil over them in the row. When this is done the ridges should be dragged down by crossing with the weeder or small-toothed cultivator.

The old farmers used to say,

"Fourth of July, wet or dry,
Leave off hoeing, go to mowing."

Modern methods harvest more hay in June, and more cultivation is done in July.

A single horse and fine tooth cultivator can be used until the tassels show on the field. I have looked over corn fields on our farm when being cultivated, and the horse's head was the only part of the operation that was visible.

The cultivation of the corn crop is relied on as the chief means for cleaning the land. I am not promising that the cultivation of the corn crop will entirely rid a field of quackgrass, but I have seen it so subjugated that it caused little harm to the corn, as well as to the immediate crop following.

Where land is infested with patches of quack and other perennial grasses and weeds, it is best to do some hand-hoeing for the good of the present and future crops. I am not referring now, to the great fields of the South and West, but to the smaller, better cared for, and more productive corn acreage grown in rotation on Wisconsin Farms.

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**DISCUSSION.**

Mr. Scribner: How do you lay out your rows, north and south, or east and west?

Mr. Hill: I never pay any attention to that. I go according to the shape of the field on level ground.

Mr. Scribner: I think we ought to lay out our fields so as to get the most possible sunshine in every row.

The Chairman: You would couple with that all other things being equal, wouldn't you? Suppose it was down a pretty
steep hill, you wouldn’t want to lay the rows so that the water would run down?

Mr. Convey: I never took any stock in that statement about getting more sunshine into a cornfield. I think if you get all the sunshine necessary and all there is when the sun shines, it is immaterial which way the rows run. Our rows run north and south, but I have been in all kinds of corn fields and I notice that the sun slants right down from above and I think if I cared to get into the argument at all, that I should feel that I would get more sunshine in rows that run north and south.

The Chairman: We will take Mr. Convey’s apology, because he is right down where if the sun does any good at all, he will know it.

Mr. Scribner: The trouble is he is in the shade, he doesn’t get the sunshine.

Mr. Stiles: What time in the season would you prefer to plant your corn for husking purposes?

Mr. Hill: I don’t make any difference. I want my corn planted in such season that it will cure for any purpose. As I said, I plant somewhere around the 25th of May and I find I have produced better results, all things considered, than when I used to plant two weeks earlier. That is in the lower and middle portions of the State, Fond du Lac County.

A Member: What is the depth of planting in ordinary prairie soil?

Mr. Hill: An inch and a half would be sufficient, providing there is plenty of moisture near the surface. But if the season was a little shy of moisture, I would want it down two inches deep.

Mr. Scott: Would you say that we would not have better results in planting the 15th of May than the 25th providing we have good, strong kiln-dried seed?

Mr. Hill: The main object in delaying the planting, is that we have a better opportunity to control the first crop of weeds. We can get them up and destroy them if we wait until the 25th of May, and this first crop is more difficult than any other to get rid of. If we do not kill them before the corn comes up we have a great deal more trouble.

Mr. Convey: What have you to say about the use of the weeder and the harrow?
Mr. Hill: I think they are two of the best implements to use in the corn field. We use the weeder immediately after the cultivator, if the ground is nice and mellow. I wouldn't attempt to keep a corn field clean without the use of the harrow and cultivator.

Mr. Underwood: Have you ever followed the planter with the cultivator and then harrowed?

Mr. Hill: No, I just depend on the harrow and harrow almost every day.

Mr. Underwood: I follow the planter as soon as I can, with a two-horse cultivator. Then I put on the harrow after that, and I think that the one cultivation that I give my corn before it is up is worth more than two afterwards. I cover up the row entirely, not too much of a ridge, and I want to level my ground again.

Mr. Scribner: We have got to take into consideration different soils when we talk about this thing. If we are on clay soil, we can do the work and cover up the row again, but we are likely to have an entire failure. We must look out for the character of the soil.

The Chairman: But your harrow takes the ridge down again.

Mr. Underwood: That is the idea. After you get through your seed is no deeper than it was before. The idea of harrowing is to mellow your soil and kill the weeds.

Mr. Scott: On these heavy clay wet soils, you must have more shallow planting.

A Member: We cultivate, but instead of using a harrow we use a weeder. I would like to know if this gentleman runs his weeder the same way when he cultivates?

Mr. Convey: We cultivate all in one direction, we never throw up much of a ridge. We use the Tower cultivator and keep the ground level, so we go in the same direction as the corn is cultivated. If we went the other way, the horses would tramp more or less on the corn. We also plant corn almost double thick to what we planted it formerly, and try to harrow it thin, but we never succeed in harrowing it out any way.

A Member: Do you have any trouble with the harrow drawing down the hills where you harrow so much?

Mr. Hill: I never have seen any trouble from that, but of course I never would harrow corn when it is wet.
Mr. Nordman: Do you use this fine-tooth cultivator or do anything special to your cultivator?

Mr. Hill: No, the teeth are so fine it leaves the ground very fine.

Mr. Underwood: I follow my cultivator with this small tooth harrow; it is what we call a spike-tooth harrow. You can set your cultivator any width you choose, and I follow my cultivator with that after each cultivation, and I like it very much.

Mr. Nordman: A tool of that kind would be specially important in the part of the State where I live. There are a great many of these small cobble stones. If a fine tooth cultivator will work up that ground, it would be a very valuable tool.

A Member: I would like to know if any of the gentlemen in this section of the country have ever used a Tower cultivator?

Mr. Convey: For many years Mr. Wylie and I have traveled together in Institute work and we are always quarreling about cultivators. He used the Tower cultivator and I used the disk cultivator. He maintained his was the best, and I thought mine was the best. But I bought a Tower cultivator two years ago and I find it very nice. It probably is the best of all, because it is so much handier. In every case I would insist on having a lever attachment, because it not only cultivates the ground, but it also gets out the weeds.

The Chairman: Mr. Convey really likes the Tower cultivator the best, but he doesn’t want to give in altogether, because he doesn’t want to agree with Wylie.

Mr. Nordman: Can you use the Tower cultivator on gravelly ground?

Mr. Convey: The knives are inclined to get dull, that would be the only trouble, but in any case I would not be without a cultivator of that kind. We grind the knives on an emery wheel. If I had rooty or very stony land, I think I would prefer the disk cultivator, because you can’t always take care of that soil, but if the soil is in the right condition, the Tower cultivator is the best thing I have ever seen.

A Member: I have been in the territory where the Tower was used. The soil is somewhat stony in the territory where I live, and I find that it will not work there, because it is inclined to cut the corn off.

Mr. Cummings: In order to work successfully, I think the Tower cultivator must have fairly level soil and must be free
from obstacles, such as stones and roots. If you have such obstacles in your soil, I do not think you will have marked success with the Tower cultivator. On my land I have used it three years and find it very good.

The Chairman. The next topic is the "Harvesting and Securing of the Crop." As this is a job that needs muscle, we have got a man to handle it that has a lot of muscle and sinew.

HARVESTING AND SECURING THE CROP.

W. F. STILES, Lake Mills.

How shall we harvest and secure this crop, which in reckoning the grain alone is the greatest crop grown in this country. The farmers of Wisconsin believe that they cannot afford to harvest it as many of the farmers in the sister states in the South and West are doing, and I am sorry to believe there are some in our own state—though a fast diminishing number, so that at least 25% of the crop is lost.

Actual tests have proven that with the average field of corn which had been planted with the object of obtaining the maximum amount of ears, that 30% of the feeding value of the crop was still left in the stalks if then even harvested and cured as they should be.

Now with feed as high priced as at present, can we farmers afford to lose 25% of this "King of Crops?" I hardly think so. The manufacturers of machinery have come greatly to our aid in the past ten years. Yet, the corn harvester is not as satisfactory a machine as is the grain harvester. But there is one advantage the corn crop has over the grain crop, and that is that it can be harvested and secured by hand if the acreage is not too great, much better than the grain. But when the acreage is large, or the object sought in the crop is to secure the greatest amount of fodder possible, with a certain amount of grain to give it quality as well, then it is impractical to attempt to harvest the crop by hand. Here is where the corn harvesters come into use. The greatest objection I have to their use in fields that are planted to obtain the largest amount of grain, is that they knock off too many ears. Some years this is worse than others, and very likely the variety of corn will make some difference.